International Conference on

"Changing Perspective in Environment, Management, Humanities, Sciences and Technology"

(ICCEMST-2022)

Online mode

on

14th & 15th July 2022

Jointly organized by

IQAC CELL,

MARATHWADA SARVODAY SHIKSHAN PRASARAK MANDAL'S

LAL BAHADUR SHASTRI, SR. COLLEGE PARTUR, DISTRICT JALNA MS.

&

DEPARTMENT OF B.VOC & BIOLOGICAL SCIENCES

MULA EDUCATION SOCIETY'S

ARTS, COMMERCE & SCIENCE COLLEGE, SONAI

TAL: NEWASA, DIST: AHMEDNAGAR, MAHARASHTRA, INDIA.

In Collaboration With

IQAC CELL,

YUVARAJA'S COLLEGE (AUTONOMOUS),

(A CONSTITUENTS AUTONOMOUS COLLEGE OF THE UNIVERSITY OF MYSORE),

MYSURU, KARNATAKA, INDIA

&

LR FOUNDATION & SWATIDHAN PUBLICATION NASHIK, MS

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(ICCEMST-2022)

INVITATION:

On behalf of the Organizing Committee of the "**International Conference On "Changing Perspective In Environment, Management, Humanities, Sciences And Technology.**" We have the pleasure of inviting you to participate in the conference scheduled to be held during 14th & 15th July, 2022 online mode .The conference aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results on all aspects of effect of changing perspectives on environment and humanities. The Conference is expected to serve as a forum for discussion and dissemination of state-of-the-art research on climatic change and its effects and provide an exceptional value for students, academicians and industry researchers. We have great pleasure in inviting your online participation in (ICCEMST- 2022) and solicit contributions of abstracts, papers and e-posters that address themes and topics of the conference.

THE THEME FOR THE CONFERENCE IS "SAVE PLANET, SECURE FUTURE".

ABOUT COLLABORATIVE INSTITUTES

1. YUVARAJA'S COLLEGE (AUTONOMOUS), MYSURU

Yuvaraja's College is one of the four constituent Colleges of the University of Mysore. It was first established as an Intermediate College on 24 June 1928 and in the year 1947–48, after Independence, the college was upgraded to a First Grade College. In the year 1927,His Highness Sri Krishnaraja Wodeyar generously sanctioned the building for the Intermediate College. The foundation-stone for the structure was laid on 8th August 1927 by the eminent thinker and scholar Rajatantra Pravina Sir Brajendranath Seal, the then Vice-chancellor. The foundation stone was laid in the presence of a distinguished gathering which included amongst others, Sir Mirza Ismail, the then Dewan of Mysore, Pandit Motilal Nehru, father of our distinguished first Prime Minister Pandit Jawaharalal Nehru and Mahamahopadhyaya Siddhanti Shivashankara Shastry. After the completion of the construction of the main block in 1928, a two-year Intermediate Course in Arts & Science was introduced on 24 June 1928 and thus the college began its eventful career. The college has offered pre-medical courses for a number of years. Prior to the establishment of departments in the Manasagangotri campus some Postgraduate courses were also conducted in the college. In 1970–71, the college concentrated on degree courses and the pre-university course was closed down and it became the oldest Constituent Science

2. LAL BAHADUR SHASTRI SR. COLLEGE, PARTUR DIST. JALNA, MS INDIA.

Lal Bahadur Shastri Sr. College, Partur, District Jalna, Ms is a very popular college in the state of Maharashtra, established in 1984. It is one of the leading colleges in Arts, Humanities and Social Sciences, Business Finance and Commerce and Science and Mathematics. It is in Partur, Maharashtra. More than 9 courses are taught in this institution. Under the Arts, Humanities and Social Sciences, there are a total of 7 courses. For Under Graduate studies, B.A. and B.Com and B.sc are available for enrolment. Under the Post Graduate studies, 5 courses are taught which is M.A.- Marathi, Hindi, Economics, History and Political science. Under the Business Finance and Commerce, 1course is available for under science graduate five courses are available

3. ARTS, COMMERCE AND SCIENCE COLLEGE, SONAI TAL. NEWASA DIST. AHMEDNAGAR MS

The College was established in the year,1989 by Mula Education Society and is 33 years old. It is permanently affiliated to Savitribai Phule Pune University, Pune, and approved under section 2f and 12(b) of UGC Act. The College has been reaccredited (III cycle) during the academic year 2016-17 by National Assessment and Accreditation Council (NAAC), Bangalore and was awarded "A" grade. The college is an ISO 9001:2015 certified institution. It has been ranked 5th in Higher Education Review, Bangalore, Top 10 Arts and Commerce Colleges, 2019. It has also received 4 star rating from Ministry of Education, Government of India, for its Institution's Innovation Council (IIC) Principal Dr. S .L, Laware received the prestigious "Best Principal" award from the parent Savitribai Phule Pune University,Pune.

COMMITTEE MEMBERS

Chief Patron	**Dr. Ranjitsinh Nimbalkar** *Joint Director, Higher Education Aurangabad region, Government of Maharashtra*
Patrons	**Hon'ble Smt. Ashabai Babasaheb Akat** *President, Marathwada Sarvodaya Shikshan Prasark Mandal,Partur*
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Chairman	**Hon'ble Dr. B.N. Yashodha** *Principal, Yuvaraja's College (Autonomous), (A Constituents Autonomous College Of The University Of Mysore), Mysuru, Karnataka, India*
Co-Chairman	**Hon'ble Dr . Bharat Dattarao Khandare** *Principal, Lal Bahadur Shastri Sr. College Partur Dist.Jalna*
Convener	**Hon'ble Dr. Shankar Laware** *Principal, Arts, Commerce and Science College, Sonai. Dist. Ahmednagar*
Co-Convener	**Dr. Rajendra Dandawate** *Associate Professor, Arts Commerce and Science College Sonai Ms.*
Organizing Secretary	**Dr Ravi Pradhan** *Vice Principal & IQAC coordinator* *Lal Bahadur Shastri Sr.College Partur District Jalna MS*
Organizing Secretary	**Dr. Rohith L. Shankar** *Department of Sericulture,Yuvaraja's College (Autonomous), (A Constituents Autonomous College of The University of Mysore),Mysuru, Karnataka, India*
Joint organizing Secretary	**Mr. Sartaj Singh,** *Department of Political Science, Panjab University, Chandigarh*
Treasurer	**Prof. Vidya R.** *Coordinator IQAC* *Yuvraja's College (University of Mysore),Mysuru,Karnataka*

ADVISORY COMMITTEE:

1. Honorable Udyan Gadakh Patil, Vice President, Mula Education Society, Sonai, Ms
2. Dr. Rajbir Singh Associate Professor, Political Science SD College, Palwal Haryana, India.
3. Dr. W.A.H.P. Guruge, Head, Dept. of Zoology, University of Ruhuna, Matara, Sri Lanka.
4. Dr. Bimal K. Chetri, Dept. of Environmental Science, Royal University of Bhutan, Thimphu.
5. Dr. Sudeep Thakuri, Dean Science & Technology, Central Dept. of Environmental Science, Tribhuvan University, Nepal.
6. Dr. B. J. Apparao, Director, Collegiate Education, Mula Education Society, Sonai
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11. Dr. Laxmikant Shinde Senate member Dr. BAMU Aurangabad
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13. Dr. Kiran Bamel,Department of Botany ,Shivaji College,New Delhi
14. Prof. D.P.,Takle, Lal bahadhur Shasrti Sr.College Partur MS
15. Prof. S.D Talekar Lal bahadur Shastri Sr.College Partur MS
16. Dr S.D.Magar Lal bahadur Shastri Sr.College Partur MS
17. Prof. Shekhara Naik R. Head Department of Food Science Yuvaraja's College Mysuru
18. Prof. Mahesha H.B. Head Department of Sericulture, Yuvaraja's College Mysuru
19. Prof. Rajesha J. Head Department of Biochemistry, Yuvaraja's College, Mysuru
20. Dr. M.J Shaikh, Head Department of Zoology Arts,Commerce and Science College Sonai
21. Dr. A.R Tuwar , Administrative officer, Mula education Society, Sonai, Ms
22. Dr. S.P Khedakar Administrative officer, Mula education Society, Sonai,
23. Dr. D.E Zine ,Vice Principal Arts, Commerce and Science College Sonai,
24. Dr M.G.Varpe,Head Department of English Arts, Commerce and Science College Sonai MS.
25. Professor Jarardhan M.R. Head Department of Geology, Yuvraja's College Mysuru

ORGANIZING COMMITTEE:

Prof.Suresh S.	Dr. Divya S.H.	Dr. Manjunatha K. G	Dr. S.B Kadam	Dr. R.V Wagh
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Dr. S.Z Fakir	Mr Y.B.Salve	Mr Y.B.Tambe	Ms. S.J Ghadge	Mr. V. M Pawar

Who can participate?

Any interested student, researcher, academician, scientist or industrial personnel, from the following disciplines can actively participate in the conference.;

1. Pharmaceutical Sciences
2. Arts, Physical Education, Sports
3. Commerce, management and Economics
4. Education, Library Sciences and Information Technology
5. Social Science, Humanities, linguistics
6. Engineering, Law, Medical,
7. Physical, Chemical, Biological and Earth Sciences, Mathematical Science
8. Agriculture, Forestry
9. Environmental Sciences
10. Basic Sciences
11. Food Technology, Tourism,& Hotel management
12. All disciplines which are not highlighted above

Awards:

The organizing committee has instituted the following awards to encourage participation of delegates:

1. Best Oral Presentation Award
2. Best Poster Presentation Award
3. Young Researcher Award
4. Best Researcher Award
5. Life time Achievement Award
6. Highest Publication Award
7. Women Empowerment Award
8. Best Teacher Award

Link for Award:

https://docs.google.com/forms/d/e/1FAIpQLSesC3X7AWEVnier2XRY8wN6l5povY-cvofeqE0FRlY6v1P8Lg/viewform?usp=sf_link

GUIDELINES FOR SUBMISSION OF ABSTRACT:

We invite authors to contribute original research papers related to the subjects covered by (ICCEMST-2022) the abstract of the paper shall be prepared in MS Word format with Times New Roman font, size 12 and should not exceed more than 300 words. The authors should clearly mention whether the submitted abstract is for oral or poster presentation. Authors are advised to prepare a maximum of 10-15 slides for oral presentations and 4 for e-poster presentation. Time limit allowed for each oral presentation is 7 minutes (5 minutes for presentation and 2 minutes for discussion). Abstracts should be submitted online to the convener via conference e-mail id (iccemt2022@gmail.com), on or before 10th July 2022. The abstracts received will be scrutinized by the committee and the first author of the selected abstracts will be intimated about its acceptance latest by 10th July 2022.All selected abstracts and abstracts of the invited lectures would be published in the form of e-Book.

GUIDELINES FOR PUBLICATION OF RESEARCH PAPERS:

The organizing committee wishes to publish full length research papers, received from the participants, in **'Research Journey'** a reputed peer-reviewed, indexed and refereed e-journal and is designed for quality of research. It is an International Multidisciplinary Research Journal .Interested authors shall submit their full-length manuscript, online, to the convener via conference e-mail id (iccemt2022@gmail.com), on or before 5th July 2022.The research papers, accepted for publication in these journals, after peer reviewing will be informed to the authors.The author should note that the font size of article is 12, Times new Roman. It must include Name, email & designation of author/authors Abstract, Introduction, Rational of the study, Objectives ,Hypothesis ,Methodology, (Containing method, research design, sampling & tool, analysis and data Analysis, Conclusions, Recommendations, References which may be approximately 20 in number. Publication fee is Rs. 700/- per paper, Registration to ICCEMST-2022 is open now.

LIST OF UGC CARE JOURNALS

The participants who are interested to publish their papers in UGC care Journals, they can directly approach to Publishers. The details as below

1. **Panjab University Research Journal**
2. **Advances in Agriculture- Hindawi Limited**
3. **Advances in Environmental Research-Techno Press**
4. **Advances in Zoology and Botany Horizon Research Publishing**

IMPORTANT DATES:

Abstract submission deadline	10th July,2022
Confirmation of Acceptance	11thJuly, 2022
Paper Submission deadline	5th July 2022
Conference Dates	14th & 15th July, 2022

REGISTRATION:

Category	Registration fee	Full length Paper Publication fee
PG/Research Students	Rs.200	Rs.700
Faculty/Delegates	Rs.400	Rs.700
Foreign Delegates	$15	$ 20

The registration fee includes Soft Copy of Conference Proceeding, e- Certificate. The attendance of each participants for all sessions is mandatory. All interested participants may fill the online Google registration form through link.

LINK FOR REGISTRATION:

https://docs.google.com/forms/d/e/1FAIpQLSdQ2iTM9VhVPbjQkiJAahdMvTRAO1clYn_kRsY_oghpyH6P7A/viewform?usp=sf_link

PAYMENT DETAILS:

Pay your registration fees on the following Bank account:

Account Number: **41280100004248**

Account Name : MS B.R.SHIROLE,
Treasurer
(ICCEMST-2022)

Name of the Bank : **BANK OF BARODA ,**
Branch : **WALUJ, AURANGABAD**,
MAHARASHTRA,INDIA.
IFSC Code : **BARB0WALUJX**
Branch Code :**WALUJX**
MICR Code **343012007**

For any query, please Contact: -

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2. Dr. Ravi Pradhan - 9423459051
3. Dr. Rohith L.Shankar - 9611322755
4. Mr. Sartaj Singh - 7027208777

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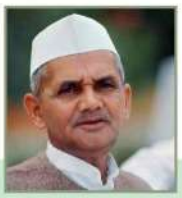
ICCEMST - 2022

SOUVENIR / E-ABSTRACT BOOK

ISBN-978-81-922690-2-3

International Conference on "Changing Perspectives in Environment, Management, Humanities, Sciences and Technology"

(ICCEMST-2022),
Virtual Mode
On
14th & 15th July 2022



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IQAC CELL,

MARATHWADA SARVODAY SHIKSHAN PRASARAK MANDAL'S

LAL BAHUDUR SHASTRI SR. COLLEGE
PRTUR, DICTRICT JALNA MS INDIA

&

DEPARTMENT OF B.VOC & BIOLOGICAL SCIENCES
MULA EDUCATION SOCIETY'S

ARTS, COMMERCE & SCIENCE COLLEGE SONAI
TAL: NEWASA, DIST.- AHMEDNAGAR MS INDIA

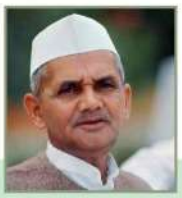
In Collaboration With

IQAC CELL,

YUVARAJA'S COLLEGE (AUTONOMUS),
(A CONSTITUENTS AUTONOMUS COLLEGE OF THE UNIVERSITY OF MYSORE), MYSURU, KARNATAKA, INDIA.

&

LR FOUNDATION & SWATIDHAN PUBLICATION NASHIK, MS



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PRTUR, DICTRICT JALNA MS INDIA

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IQAC CELL,

YUVARAJA'S COLLEGE (AUTONOMUS), MYSURU, KARNATAKA, INDIA.

MR. SARTAJ SINGH
Panjab University, Chandigarh
Joint Organizing Secretary
ICCEMST-2022

DR. RAVI PRADHAN
LBS. Sr. College Partur MS
Organizing Secretary
ICCEMST-2022

DR. ROHITH L. SHANKAR
Yuvaraja's College Mysuru
Organizing Secretary
ICCEMST-2022

DR. RAJENDRA DANDWATE
ACS College Sonai, MS
Co- Convener, ICCEMST-2022

DR.SHANKAR LAWARE
Principal ACS College Sonai
Convener, ICCEMST-2022

Our Inspiration

Hon. Yashwantrao Gadakh Patil
Founder President
Mula Education Society, Sonai
Tal. Newasa, Dist. Ahmednagar

Late Babasaheb (Bhau) Akat
Ex-Founder
Marathwada Sarodya shikshan
Prasarak Mandal Partur Dist- Jalana

Hon. Shankarrao Gadakh Patil
Ex- Cabinet Minister
Water conservation and Soil,
Government of Maharashtra

Hon. Prashant Gadakh Patil
President
Mula Education Society, Sonai
Tal. Newasa, Dist. Ahmednagar

International Conference on "Changing Perspectives in Environment, Management, Humanities, Sciences and Technology"(ICCEMST-2022)

Message from :

Hon'ble . Kapil Babasaheb Akat,

Secretary,

Marathwada Sarvodaya Shikshan Prasarak Mandal, Parutr Dist. Jalna Ms

On behalf of our planning committee, it is a pleasure and an honour to welcome you to the International Conference on "Changing Perspectives in Environment, Management, Humanities, Science and Technology". I hope you all are able not only to use this great opportunity to network and enjoy the exciting line up of the conference events and sessions but also to reconnect with old friends and colleagues to enjoy this event after the Covid- 19. In this conference we expect to attract a substantial number of participants from research faculty who will come together to share their thoughts and knowledge. Such sharing is essential for a healthy and productive collaboration between researchers, teaching and students which in turn is the key for management to maintain the current issues and global threats. Our planning team has done a great job under the guidance and with the support of our President Hon'ble Smt. Ashabai Babasahed Akat.

Once again welcome you all and wish you all a very bright future.

Hon'ble . Kapil Babasaheb Akat,

Patron, (ICCEMST-2022)

International Conference on "Changing Perspectives in Environment, Management, Humanities, Sciences and Technology"(ICCEMST-2022)

Message from :

Dr Shankar L. Laware

Principal, Mula education Society's
Arts Commerce and Science College Sonai Dist Ahmednagar Ms

Honorable Yashwantraoji Gadakh Patil galvanized the academic ambience of this rural side of Newasa Taluka by establishing the Mula Education Society, Sonai. With its diverse branches, the society at present is educating more than 20000 rural students to shape their future. The college is an outcome of his social commitment. Today, the rural students are reaping the opportunities of high tech education in this rural side of Ahmednagar district through conventional as well as need based vocational skill courses.

Our young enthusiastic President, Honorable Prashant Patil Gadakh made crowning glory through by a number of ambitious projects, such as International Conference on " Changing Perspective in Environment, Management, Humanities , Sciences and Technology"(ICCEMST-2022) held during 14th & 15th July 2022, With his leadership, the college is empowering rural talents through distinctive drives in association with Yashwant Samajik Pratishthan, Sonai. Environment factors are so closely related with one another, the neglect of one, worsens the other. At this backdrop, this international conference would serve as an academic platform to share and to instill the theme of the conference. The invited expertise shall avail the solutions on these burning issues. The conference is a confluence of academics and academicians to raise the knowledge on the subject.

I wish the conference grand success.

Dr Shankar L. Laware

Convener, (ICCEMST-2022)

International Conference on
"Changing Perspectives in Environment, Management, Humanities, Sciences and Technology"(ICCEMST-2022)

Message from :

Prof. Dr. B.D. Khandare

Principal, Marathwada Sarvoday Shikshan Prasarak Mandals's
Lal bahdur Shastri Sr. College Partur Dist.Jalna Ms India

Hello and a warm welcome to the Delegates, Teachers, Researchers, Students and dear friends. I am here for wishing all the best for conference organized on "International Conference on Changing Perspectives in Environment, Management, Humanities, Science and Technology". I might likewise want to offer my thanks to our regarded chief guest who acknowledged our invitation to direct this conference. Our college organizes conferences consistently for students to gain knowledge and associating them on various aspects of life. Indeed! These conferences help all the participants to get into self-introspection as well as their achievements in the field of global challenges and awareness. This encourages participating in various events and seeing their blossom into an individual and Society. I would also like to thanks our Management President Hon'ble Smt. Ashabai Babasahed Akat for all the enthusiasm and energy she carries for this conference. A special thanks to our Secretary Hon'ble Shri. Kapil Babasahed Akat and Hon'ble Shri. Kunal Babasaheb Akat who is developing us as a confident person with definite goals in the life. In this Conference there will be a question and answer round where our participants can clear their doubts in discussion with the experts. There will also be an awarding ceremony where researchers and research students will be awarded for their of oral, poster presentation.

Dr. B.D. Khandare
Member, (ICCEMST-2022)

International Conference on
"Changing Perspectives in Environment, Management, Humanities, Sciences and Technology"(ICCEMST-2022)

Message from :

Mrs. Prof. (Dr.) Yashodha B.N.

Principal Yuvraja's College Mysuru, Karnataka, India
(Constituent Autonomous College with Potential for Excellence)

This gives & immense pleasure to collaborating & conducting the international conference ICCEMST-2022 on 14th -15th July 2022. My greetings & best wishes to the management of both the associated colleges, Lal Bahdur Shastri Sr.College Partur & Arts, Commerce & Science College Sonai, Maharashtra. The conference aims to create a platform for scientist, researchers & students of all the disciplines in relation to environmental aspects & brings awareness among the participants to undertake serious concerns about the environment surroundings us & also motivates to gather & conduct many more events like this in the future thank you.

Mrs. Prof. (Dr.) Yashodha B.N.
Member, (ICCEMST-2022)

International Conference on "Changing Perspectives in Environment, Management, Humanities, Sciences and Technology"(ICCEMST-2022)

Message from :

(Dr) Ravi Gyanoji Pradhan

Vice Principal and Head Department of Zoology,
Lalbahadur shastri Sr. College,Partur Dist.Jalna Ms,India

I would like to personally welcome each of you to the "International Conference on Changing Perspectives in Environment, Management, Humanities, Science and Technology". It is an exciting time for scientists, academicians, professionals and researchers, as we continue to grow and adapt systematic manuscript management, constructive and critical blind review process. ICCEMST-2022, is facing a time of many changes since last decade. This effort will continue to meet and bring inspired people together in forums like this.

I would like to thank each of you for attending "International Conference on Changing Perspective in Environment, Management, Humanities, Science and Technology" and bringing your expertise to this awesome gathering. You, as researcher, have the vision, the knowledge, the resources and the experience to help us pave our way into the future activities. Throughout this conference, I request you to stay engaged, keep us proactive and help us bringing out more such events in future. My personal admiration and gratitude goes out to all of you.

I sincerely thank the Management, Principal and staff members of ICCEMST in an impressive manner.

(Dr) Ravi Gyanoji Pradhan

Organizing Secretary, (ICCEMST-2022)

International Conference on
"Changing Perspectives in Environment, Management, Humanities, Sciences and Technology"(ICCEMST-2022)

Message from :

Prof (Dr.) Rohith L. Shankar

Yuvraja's college Mysuru,Karnatka
(Constituent Autonomous College with Potential for Excellence)

I am very happy to be a part of International Conference on Changing Perspectives in Environment, Management, Humanities, Science and Technology (ICCEMST-2022) scheduled to be held on 14-15 July, 2022 .It gives me an immense pleasure to be associated with the prestigious lal bahdur shastri Sr. College Partur & Arts, Commerce & Science College Sonai, Maharashtra. Initially I would like to thanks Professor (Dr) Rajendra Dandawate,Head Department of B.Voc ,Arts Commerce and Science College Sonai and Professor (DR) Ravi Pradhan , Vice Principal and IQ to bring this idea of collaborating the Conference and taking all the responsibility, our beloved Principal Prof Yashoda B.N. and IQAC coordinator Prof Vidya R.,for supporting me and also my colleagues who whole heartedly encouraged me to organize this conference .Thank You

Prof (Dr.) Rohith L. Shankar
Organizing Secretary, (ICCEMST-2022)

International Conference on "Changing Perspectives in Environment, Management, Humanities, Sciences and Technology"(ICCEMST-2022)

Message from :

Dr Rajendra R.Dandawate

Head Department of B.Voc

Arts Commerce and Science College Sonai Tal Newasa District Ahmednagar,Ms

It is our pleasure to welcome all participants to these International Conference on"Changing Perspectives in Environment, Management, Humanities , Sciences and Technology"(ICCEMST-2022) via Online mode jointly organized by Sarodaya Shikshan Prasarak Mandal's Shri Lal Bahadur Sr.College ParturDist Jalna,Collboration with Yuvraja's College Mysuru &Laxmi rural foundation. Mula Education Society's Arts, Commerce and Science College, Sonai, India. The significant feature of it is to bring academic scientists, young researchers, and industry researchers together to exchange and share their experiences and research results about most aspects of science and social research, tourism, Commerce and Management, Arts and discuss the practical challenges encountered and the solutions adopted. In this conference scientific program covered a wide spectrum of topics along with guest lecturers key note addresses and provided right mix to enlighten you all with latest need of environmental awareness.

Dr Rajendra R.Dandawate

Co –Convener, (ICCEMST-2022)

International Conference on
"Changing Perspectives in Environment, Management, Humanities, Sciences and Technology"(ICCEMST-2022)

Message from :

Mr. Sartaj Singh

Department of Political Science, Panjab University, Chandigarh

My best wishes to all the Academicians, research scholars and students who are participating in this two-days international conference. I sincerely hope that through this conference, all of you will get an opportunity to hear a very informative talk. After listening to the great scholars who came to this international conference, you will play your special role in environmental protection in the coming times, which will make the environment of our earth completely clean and which will be beneficial for our future generations. Good Luck to all of you.

Sartaj

Mr. Sartaj Singh
Joint Organizing Secretary, (ICCEMST-2022)

Conference Program

Day and Date	Time	Event	Name/Details
14.7.2022 Thursday	10.00 am to 10.30 am	**Inauguration Function**	
		Chief Guest	**Hon'ble Dr.Satish Deshpande** Joint Director, Higher Education, Aurangabad Region Government of Maharashtra
		Patron	**Hon'ble Kapil Babasaheb Akat** Secretary, Sarvodaya Shikshan Prasarak Mandal ,Partur Dist.Jalna
		Patron	**Hon'ble Udayan Gadakh Patil,** Vice president Mula Education Society, Sonai
		Inaugurator	**Dr V.K.Deshmukh,** Joint Secretary, Mula Education Society, Sonai
		Chairman	**Hon'ble Dr. B. N. Yashodha** Principal Yuvraja's College, Mysuru
		Co-Chairman	**Hon'ble Dr. B. D. Khandare** Principal, LBS Sr.CollegePartur Dist.Jalna MJS
		Convener	**Hon'ble Dr. S. L. Laware** Principal, Arts, Commerce and Science College,Sonai Dist.Ahmednagar MS
	10.30am to 11.15 am	Keynote Address-1	**Dr. Abhay Khandagale** Chairman, BOS, SPPU, Pune Topic: Vector Management Strategies & Challenges
	11.20am to 01.20pm	Oral Presentations	Botany/Agriculture/ Life Science **Chairman:** Dr.A.U. Kulkarni **Co-Chairman:** Dr. S. A. Survase Department of Botany, LBS Sr. College Partur, MS
		Oral Presentations	Zoology / Microbiology (All Branches) **Chairman:** Dr. S.S. Nanware **Co-Chairman:** Dr.D.B. Bhure Department of Zoology Yeshwant Mahavidyalaya, Nanded
		Oral Presentations	Arts/Humanity (All Disciplines other than Science) **Chairman:** Dr. Raibir Singh Department of Political Science, Palwal, Haryana **Co-Chairman:** Mrs Dr.Shalini Sharma Department of Political Science Markanda National College,Shahabad

		Oral Presentations	Commerce And Management **Chairman:** Dr. Anil Sharma Department of Management, Sant Kabir Institute of Professional Studies, Ahmedabad **Co-Chairman:** Dr. Soumyakant Dash Dr. D . Y Patil Vidyapeeth's Globel Business School & Research Center Pune.
	1.20pm to 2.00pm	Break	
	02.40pm to 6.00pm	Keynote Address: 2	**Dr. W.A.H.P. Guruge,** Senior Lecturer, Department of Zoology, University Of Ruhuna, Matara, Sri Lanka. Topic: Circular Economy: A tool to tackle biodiversity loss
		Oral Presentations	Botany/Agriculture/ Life Science **Chairman:** Dr.A. U. Kulkarni **Co-Chairman:** Dr. S. A. Survase Department of Botany, LBS Sr. College Partur, MS
		Oral Presentations	Zoology/Microbiology **Chairman:** Dr. S.S.Nanware **Co-Chairman:** Dr. D. B. Bhure Department Of Zoology YeshwantMahavidyalaya,Nanded
		Oral Presentations	Arts /Humanity (All Disciplines other than Science) **Chairman:** Dr. Raibir Singh Department of Political Science, Palwal, Haryana **Co-Chairman:** Dr.Shalini Sharma Department of Political Science Markanda National College,Shahabad
		Oral Presentations	Basic Science/Pharmacy /Food **Chairman:** Dr. Mrs. S.R.Dandwate **Co-Chairman:** Dr. Mrs. V.D.Patil Department of Basic Sciences & Humanities SRES, Sanjivani COE, Kopargaon
	10.00Am-10.40Am	Keynote Address: 3	**Dr. K. G. Dhanwate** Head, Department of Geography, Topic: Environment and Environmental Issues.
		Oral Presentations	Botany/Agriculture/ Life Science **Chairman:** Dr.A. U. Kulkarni **Co-Chairman:** Dr. S. A. Survase

			Department of Botany, LBS Sr. College Partur, MS
Friday 15.7.2022	10.40am to 01.00Pm	Oral Presentations	Zoology/Microbiology **Chairman:** Dr. S.S.Nanware **Co-Chairman:** Dr. D. B. Bhure Department Of Zoology YeshwantMahavidyalaya,Nanded
		Oral Presentations	Arts/Humanity (All Disciplines other than Science) **Chairman:** Dr.Yashodha Nanjappa Dept. of English, Yuvraja's College, Mysuru **Co-Chairman:** Dr.R. Thimmarayappa Prof. & Director Dr. Babu Jagivanram, Research center University of Mysuru.
		Oral Presentations	Basic Science/Pharmacy /Food **Chairman:** Dr. Mrs. S.R.Dandwate **Co-Chairman:** Dr. Mrs. V.D.Patil Department of Basic Sciences & Humanities SRES, Sanjivani COE, Kopargaon
	02.00pm to 2.40pm	Keynote address	**Prof C.J. Hiware** Ex-Director, Department Of Sericulture, Maharashtra State, Nagpur Region Ex-Head Department of Zoology Dr BAMU Aurangabad Topic:: Phytonematodes Curse To Agricultural Crops
	02.45 pm to 04.00pm	Poster presentation	All Groups **Chairman:** Dr.Yashodha Nanjappa Dept. of English, Yuvraja's College, Mysuru **Co-Chairman:** Dr. Sharvani K.A. Dept. of Botany,Yuvraja's College, Mysuru
	05.00 pm to 05.30 pm	Valedictory	**Chief Guest : Dr. B.J.Apparao** Director of Collegiate Education,, Mula Education Society, Sonai **Chairman:** **Hon'ble Dr. B. N.Yashodha** Principal Yuvraja'sCollege,Mysuru **Co-Chairman:** **Hon'ble Dr. B. D.Khandare** Principal,LBS Sr.College Partur **Convener:** **Hon'ble Dr. S.L. Laware** Principal, Arts, Commerce and Science College,Sonai

International Conference on Changing Perspectives in Environment, Management, Humanities, Sciences and Technology (Iccemst-2022)

On 14th And 15th July 2022 (Online Mode)

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SECTION-A ORAL PRESENTATION, AGRICULTURE

OPAG-1

ROLE OF AGRICULTURE IN INCREASING GROSS DOMESTIC PRODUCT (GDP) IN INDIA

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ABSTRACT

India has made tremendous progress in agricultural production after the green revoluti Agriculture is inseparable part of the Indian Economy. In a country like India, agriculture sec plays an important role in relation to empowerment of women making them independent. T agricultural growth is relatively more important than the other sectors, as most of the populatio engaged in agriculture and allied sectors. Thus agriculture can contribute positively for pove reduction and increase in GDP. The share of agriculture in GDP increased to 19.9 per cent 2020-21 from 17.8 per cent in 2019-20.

In case of limited agricultural growth, imports are definitely one of the ways to impr the supply situation of the country in the short term. But for the long term, the country needs focus on increase in productivity, through public investment in sectors like irrigation, research a efficient use of available water resources, plant nutrition and other inputs.

Increasing Population, Dependency on Monsoon, Less agricultural yield, uneven acc of modern technology increasing use of chemical fertilizers are the key issues related to agricultural growth. Implementation of micro-irrigation techniques, enhancing access to qua seeds, use of digital knowledge to spread awareness regarding agriculture, etc are some of recommendations to support and enhance agricultural sector in India.

Keywords: *Agriculture, India, Economy, GDP*

OPAG-2

EFFECT OF COMPOST COATED AND BLENDED PHOSPHATIC FERTILIZERS ON GROWTH, YIELD AND NUTRIENT UPTAKE OF MAIZE IN *ALFISOLS*

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ABSTRACT

A field experiment was conducted at College of Agriculture, V. C. Farm, Mandya during *kharif* 2020 to study the effect of compost coated and blended phosphatic fertilizers on growth and yield and nutrient uptake of maize. The investigation was carried out in Randomized Complete Block Design with eight treatments that include 100, 75 and 50 per cent of compost coated DAP (T_3, T_4 and T_5, respectively) and compost blended rock phosphate (T_6, T_7 and T_8, respectively) along with recommended dose of nitrogen and potassium, keeping 100% RDF (using uncoated DAP) as check and are replicated three times. The results revealed that application of 75 per cent RDP through compost coated DAP with recommended dose of N and K (T_4) recorded higher growth parameters *viz.*, plant height (222.75 cm), no. of leaves plant^{-1} (12.98 plant^{-1}), leaf area (6387.55 cm^2 plant^{-1}) and total dry matter accumulation plant^{-1} (167.20 g plant^{-1}) and was on par with T_7, T_3 and T_6, respectively. Similarly, yield parameters like cob length (21.87 cm), cob girth (20.76 cm), no. of rows cob^{-1} (16.56 cob^{-1}), no. of kernels row^{-1} (36.03 row^{-1}) and test weight (35.73 g) were significantly higher in T_4 when compared to T_2, T_5 and T_8, respectively. Kernel and stover yield (82.19 and 91.44 q ha^{-1}, respectively) was observed to be higher in T_4 coupled with higher uptake of N, P, K, Ca, Mg, S, Fe, Mn, Cu and Zn which clearly indicated that application of 75% RDP through compost coated DAP is optimum for obtaining higher growth, yield and nutrient uptake of maize respectively.

Keywords: *Maize, coated, blended, growth, yield.*

OPAG-3

BIO-ENERGY FROM FOOD WASTE: A NEW GENERATIONBIOFUEL

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ABSTRACT

Food waste production worldwide is expected to increase by 33% within the next decade.Significant quantity of global food wastage throughout the value chain right from harvesting to storage, processing and consumption is overlooked due to rapid industrialization and population growth. To meet the escalating demand for fuel and at the same time slowing down the fast-depleting fossil fuel resources through conversion of food waste to bio-based liquid or gaseous fuels appears to be an attractive option. Biofuels are also called as agrofuels i.e., any fuel whose energy is obtained through a process of biological carbon fixation. There are several factors that decide the balance between biofuel and fossil fuel use around the world. Those factors are cost, availability, and food supply. Finding new uses for waste has renewed interests for the solution to the constraints of a resource system. Food waste is indeed an untapped resource with great potential for generating energy. Huge quantities of food waste is generated worldwide and currently its disposal is becoming a challenge. In future, this can contribute to resolve the waste disposal, energy scarcity and energy security problems which could contribute substantially to bio-based economy. Since food waste is considered zero cost material, conversion of food waste into biofuel will provide an innovative food valorisation strategy and it is possible to develop cost-effective commercial methods. By this, energy from food waste can emerge as the next-generation biofuels along with lignocellulose, non-food materials, algal biomass, and energy crops grown on marginal lands.

Keywords: *Biofuels, food waste, fossil fuel, agrofuels, algal biomass, and energy crops.*

OPAG-4

STUDIES ON THE EFFECT OF IRON AND ZINC NUTRITION ON QUALITY AND YIELD OF LINSEED (*LINUMUSITATISSIMUM* L.)

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ABSTRACT

In rabi 2020–2021, a field experiment was carried out at the College of Agriculture, Vijayapura, to examine the impact of iron and zinc nutrition on quality and yield of linseed given that the iron and zinc concentration of the soil is below the critical limit. The experiment was laid out in RCBD with ten treatments and three replications. The treatments included RPP (Recommended package of practices) and application of ferrous sulphate @ 5, 10 and 15 kg ha^{-1} and zinc sulphate @ 5, 10 and 15 kg ha^{-1} in various combinations along with RPP (Recommended package of practices @ 40:20:20:3000-N:P_2O_5:K_2O:FYM kg ha^{-1}).The experiment's findings showed that the application of iron and zinc together led to a noticeable increase in growth parameters, Major and micronutrient content in linseed seed over RPP alone. Among the different treatments RPP + 15 kg $FeSO_4$ ha^{-1} + 15 kg $ZnSO_4$ ha^{-1} was resulted maximum plant height (46.5 cm) at flowering and at harvest (49.1 cm), dry matter accumulation (5.08 gram $plant^{-1}$), Major nutrient content like Nitrogen (3.30%), phosphorus (1.22%), Potassium (3.57%) and sulphur (0.56%) and micronutrient content like Iron (83.6mg kg^{-1}), zinc(35.07 mg kg^{-1}), Manganese (42.0 mg kg^{-1}), Copper(17.0 mg kg^{-1})were recorded. These results were on par with the application of RPP + 15 kg $FeSO_4$ ha^{-1} + 10 kg $ZnSO_4$ ha^{-1} and lower values were recorded in the treatment that received RPP alone. Finally it could be concluded that the application of fertilizers containing iron and zinc helps to improve growth parameters, Major and micronutrient content in linseed seed in linseed crop.Based on the results of the experiment, it can be said that applying these micronutrients (iron and zinc) in combination with RPP is a better way to provide a balanced nutrition for linseed crops and ensure greater output.

OPAG-5

Natural Farming: A new dimension for sustain ability

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ABSTRACT

Agriculture in India has witnessed several technological advancements. 'GreenRevolution' (GR) technology-led intensification of agriculture transformed India fromfood scarce country to food surplus. However, it also led to adverse impacts like, soildegradation, biodiversity losses, rising cost of cultivation, etc. Rising application of chemical fertilizers and pesticides with stagnating/declining crop productivity dovetailed with uncertain market conditions and climate change effect resulted in to unremunerative agriculture. Consequently, large number of farmers falling in to debt trap and distress in farming sector became pervasive. The prevailing agriculture system inIndia is characterized by high production costs, high interest rates for credit, volatilemarket prices for crops, and rising costs for fossil fuel-based inputs and private seeds.As a result, Indian farmers (especially the smallholders) increasingly find themselves ina perpetual cycle of debt. More than a quarter of a million farmers have committed suicide in India in the last two decades. In the light of these growing concerns about the sustainability of the current input intensive agriculture system, the need for an alternative farming system has arisen. Various forms of alternative low-input farmingpractices have emerged in different corners across the world, promising reduced inputcosts and higher yields for farmers. Sustainability in agriculture is one of the majorconcerns of humanity as on today. To find farming systems which bring down the cost of production and working harmony with nature rather against it, one of themis'NaturalFarming'. It involves application of Jeevamritha, Beejamritha, mixed cropping system, home-made preparations for plant protection and seed/plantingmaterials, and mulching.Thus, it envisages complete freedom from chemicals from farming.

Keywords*: Green, Revolution, Natural Farming, Jeevamritha,Beejamritha,Mulching.*

SECTION-B ORAL PRESENTATION, ARTS AND SOCIAL SCIENCE

OPAS-1

PEDAGOGICAL PRACTICES INCORPORATING TECHNOLOGICAL INNOVATIONS TOWARDS REDUCING NATURAL RESOURCES AND GOING PAPERLESS

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ABSTRACT

Adversities prove to be the best teachers many a time. The recent global pandemic situation, though was very cruel and terrifying on humanity, has taught many life lessons for a world that was otherwise highly negligent and lavish on ruthless exploitation of natural resources. We in the University of Technology and Applied Sciences (UTAS), Nizwa from the Sultanate of Oman, have learned, tested and adapted a host of teaching and learning methods and techniques in online education thereby saving tons of valuable natural resources that include paper, stationery and photocopying supplies. Technological advancements and Internet based software solutions can be wisely and widely used to drastically reduce indiscriminate use of natural resources. This paper aims to share our knowledge and experience gained through a number of best teaching and learning practices which we employed in effective online educational practices, mainly through paperless teaching and learning methods. As primary data collection methods, we employed one-to-one interviews with staff members, technicians and store department personnel as research tools to collect primary data. The results confirmed that there was a significant drop in the use of supplies and procurement expenditure besides highlighting staff improvement in learning and effectively using latest technology. The results also indicated that they were also innovative on time and cost effective teaching & testing methods, giving written and oral feedback on students' assignments that brought in excellent student participation, interaction and desired results in their performance.

Keywords: *Online Teaching Practices, Paperless Teaching,Online Learning.*

OPAS-2

POPULATION DYNAMICS *OF MONIEZIA* SP. (BLANCHARD, 1891) IN *CAPRA HIRCUS* (LINNAEUS, 1758) FROM SOLAPUR DISTRICT (M.S)

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ABSTRACT

The present communication deals with the population dynamics of*Moniezia* Sp. (Blanchard, 1891) in *Capra hircus* (Linnaeus, 1758) from various places of Solapur district (M.S)India. 51.57% of *Capra hircus*(L.) were infected with Cestode parasites i.e. *Moniezia* Sp. during the period of July-2021 to June-2022. A total 98*Moniezia* sp. were recorded from 190 hosts. The report summarizes the data of incidence, intensity, density and index of infection of *Moniezia* Sp. from*Capra hircus* with effect of environmental factors.

Keywords *– Capra hircus,Moniezia, Population dynamics, Solapur.*

OPAS-3

SUSTAINABLE TOURISM DEVELOPMENT: A STUDY ON CULINARY PROSPECTS OF KHAMTI AND MISING COMMUNITY OF ASSAM

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ABSTRACT

Unconventionality coupled with inventiveness has long been asserted as a key to attract the explorers in the tourism industry and post pandemic era has coaxed the tourism industry to be both and endorsed with heightened sense assuredness. The industry suffering from survival crises is banking upon sustainable forms of tourism and surprisingly food is the only item which can provide all the three, unconventionality coupled with inventiveness and heightened sense assuredness. Though food is only considered as a necessary appurtenance for tourism industry but the recent changes are repositioning the status of food in the industry. This review article intends to explore the potential of tribal food as a salvation for shrinking tourism industry for the state of Assam. The results show that the essence is essentially congenial to convictions regarding the sustainability of traditional traits and this sustainability can definitely be transferred to the trade of tourism, making it sustainable. Further discussions are required regarding tourism as a form of social movement and congruence effect of country stereotype and message appeals.

Keywords: Sustainability, Tribal food, Traditional traits, Tourism.

OPAS-4

SELECTION OF HIGHLY SUPERIOR RICE LINES FROM F_1 POPULATION FOR DROUGHT TOLERANCE

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ABSTRACT

Rice (*Oryza sativa* L.) is highly vulnerable to a wide range of abiotic stresses caused by global warming. Among them, rice is frequently affected by severe drought since it is cultivated in a wide range of ecosystems which could be easily converted into drought-prone environment by unpredictable climate changes. Drought stress in rice results in considerable yield losses and this loss poses a major threat to food security at world wide. Hence, the rice researchers have to think about an alternate way to improve yield under drought stress in order to feed increasing world population. Here, in the evaluation of F_1 rice plants (ADT43 x IR81869-B-B-195) under drought condition, drought tolerant line (IR81869-B-B-195) accounted for more value of shoot and root length and dry weight of shoot and root compared to drought intolerant line (ADT43). In this evaluation, more number of F_1 plants (8-43%) was identified to be superior to tolerant line for these characters. Among these, percentage for the superiority of root length was higher (175%) than that of tolerant line in this study. Since root length plays a significant role in the rice growth and drought tolerant, further analysis of this work would be useful to rice farmers in order to increase rice yield under drought condition.

Keywords: *Rice line, ADT43, F1 population, Drought stress/tolerance, root length and dry weight*

OPAS-5

PSYCHOLOGICAL WELL-BEING OF COLLEGE TEACHERS IN RELATION TO THEIR PROFESSIONAL DEVELOPMENT

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ABSTRACT

The purpose of conducting this study was to find out the Psychological well-being of college teachers in relation to their professional development. A sample of 150 women college teachers (75humanities and 75 science stream) from Ludhiana district was selected through Simple Random sampling technique. Psychological Well-being Scale developed by D.S. Sisodia and PoojaChoudhary (2019) and Professional Development scale by Butia (2014) was used for data collection. Mean, SD and t-test were used to compare the psychological well-being and professional development of humanities and science stream of women college teachers. The findings of the study revealed that i) there is no significant difference in the psychological well being of humanities and science women college teachers. ii) Significant difference was found in the professional development of humanities and science women college teachers. Humanities and science Stream of women college teachers were found to possess higher level of psychological well being as compared to professional development.

Keyword: *Psychological wellbeing, Professional development, College teachers*

OPAS-6

NEW AGE WRITING: A MOVE TOWARDS DECENTRALIZATION OF PUBLICATION IN THE AREA OF LITERATURE

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ABSTRACT

High-speed access to internet through mobile phones and computers has changed the lives of many in many ways. The scope for learning is now effortless and it caused a man to be impatient, edgy and hungry forknowledge. None has time to stop and read a book for pleasure as the busy life of an individual leaves him/her no time for hobbies and enjoyment. In this fast pacedworld, knowledge is available in the form of familiar and little words. Somehow, words are no more complicated at the same time not as important as they used to be in the earlier periods of time. Books, newspapers,journals have taken a back-seat in their traditional form yet available to the reader in their new form in this electronic-age. Most of the magazines and newspaper publications like the New York Times or the wallstreet Journal in America, the Hindu in India are having trouble in surviving as the alternate media reaching the readers quickly and effectively over the internet. Cybernetic reading is the reality now, which has become an alternative to closed, linear and solitary reading. It has brought many changes in the process of literary reading. The reader is constantly provided with inter-textual links andvirtual linksto mass media due to intervention of information technology. People, of all age groups, today have short attention-spans. They are not willing to go through long drawn sentences or never ending paragraphs and detailed or elaborated description is not their choice of reading.

Keywords: *Literature, creative, trends, decentralization, style, space, publication, fiction, reading*

OPAS-7

SHIRPUR PATTERN OF WATER CONSERVATION: A STEP TOWARDS SUSTAINABLE DEVELOPMENT

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ABSTRACT

Water is essential for the survival of living organisms. However, as its spatio-temporal distribution is highly uneven, there is a need of water conservation, particularly in the areas of water scarcity. Today, there are various methods available for the conservation of water. Shirpur pattern is one of them. The present paper based on primary data and empirical evidences, attempts to know about the effectiveness of this well-known method of water conservation.

Keywords: *Water, Conservation, Sustainable, Development, step*

OPAS-8

SUSTAINING PLANET & SAVING MOTHER EARTH

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ABSTRACT

Our Earth is the only planet with the continuity of life so it becomes more and more important to generate a sense of urgency of saving our mother earth from all sorts of planet harming activities. Our mother earth needs to be saved as our survival depends completely on this planet. It is our responsibility to raise awareness about saving our mother earth. Earth provides every resource for sustaining living things and inanimate things. Our planet harming activities are resulting in causing an irreversible damage to the environment which results in degrading the condition of this planet By taking care of this planet, we can improve our well-being as healthy environment will help in improving the quality of our life. It is our collective responsibility to raise public responsibility regarding the well-being of our responsibility regarding the well-being of our mother earth. We've rounded up a few reasons to understand the importance of saving our mother earth. We all are aware of the fact that this is the only planet where life is possible. It is the only home we all have and that is why it is highly important to take important measures to save this plant. It is time to part our ways from planet harming activities as for all generation to live a healthier life. it is important to save our planet.

Biodiversity

One of the basic things that plays essential role in survival of all sorts of living beings is biodiversity. Because of biodiversity of our planet, we all are able to co-exist together. All variety of plants and animals are able to exist together to due to diversity of life. Negative human forces can disrupt the biodiversity which can result in loss of biodiversity. So, we need to take ample steps to prevent the damage to biodiversity

Keywords: *planet, earth, environment, measures, human forces*

OPAS-9

ATTITUDE TOWARDS ICT OF THE TEACHERS OF HIGHER SECONDARY SCHOOL

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ABSTRACT

Information and communication technologies (ICT) has emerged as one of the most important aspects of human life and it has affected every aspects of school working including administration, time table, lesson delivery, project work, evaluation, examination system etc. It makes teaching-learning more interesting and goal oriented. It can significantly develop interest and curiosity among the learners. It can also save the time of teachers and students which is very important in this present time, considering time-management an important aspect of education as the efforts, time, and resources of the schools can be used effectively. In present study, attitude of higher secondary school teachers of Paschimmedinipur district towards the use of information communication technology in education was studied.

Keywords: *Attitude, Information and Communication Technology, Rural, Urban*

OPAS-10

CHANNEL PATTERNS OF THE YAGACHI DRAINAGE NETWORK BASED ON CONVENTIONAL AND MODERN APPROACHES

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ABSTRACT

The Yagachi watershed covers an area of 551.45 sq km and is located between $75^0 38' 44''$ E and $75^0 54' 8''$ E longitudes and $13^0 6' 28''$ N and $13^0 23' 19''$ N latitudes. The linear and areal morphometric characteristics of the basin were evaluated in the current study using both conventional and contemporary approaches. The toposheetsof 1:50000 scale procured from Survey of Indiawere georeferenced in ArcGIS software. The boundary of Yagachi river basin was delineated using both toposheets and Digital Elevation Model (DEM). The watershed shows dendritic and subparallel patterns.Drainage texture varies from very coarse to fine and stream frequency values suggest that the watershed area is covered in a good amount of vegetation and has good infiltration capacity.Drainage density values in the study vary between 1.26 and 1.93 indicating low drainage densities. In general, poor drainage density leads to places with dense vegetation, low relief and coarse drainage texture. Greater discharge is related to higher stream order.In the watershed, the streams up to six orderis seen. In the Yagachi watershed, bifurcation ratio ranges from 3.759 to 4.769, suggesting that structural disturbance have little of an impact. Generally, shorter lengths of stream indicate steep to moderate slopes and finer textures whereas longer point to gentle to flat gradients and coarser texture. The values of the stream length ratio range from 1.049 to 4.618, which can be attributed to variations in topographic features and slope. The study area has reached a mature geomorphic stage as evidenced by the increase in stream length ratio from lower to higher order.The present study helps in the planning for development, management, and protection of watersheds for sustainable development.

Keywords: *Drainage morphometry DEM GIS Yagachi watershed*

OPAS-11

ANTINUTRITIONAL FACTORS IN PULSES: HUMAN HEALTH AND PROCESSING METHODS

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ABSTRACT

India is the largest producer of pulses in the world. Pulses belong to family Fabaceae. They have higher proportions of protein content ranges from 17 to 30 % of dry weight which is twice the content present in cereals. They are helpful in reducing the risk of diseases such as diabetes, heart disease, cancer and cardiovascular disease. They are also beneficial for overweight due to its low content of fat. They are rich sources of macronutrients and micronutrients but they also contain anti-nutritional factors. Major anti-nutritional factors, which are present in pulses include saponins, tannins, phytic acid, gossypol, lectin, protease inhibitors, amylase inhibitor, and goitrogens. They interact with nutrients and reduce nutrient bioavailability. They lessen the protein digestibility and minerals absorption which causes nutrient deficiencies in humans. There are various processing methods used to reduce anti-nutritional factors in pulses such as milling, soaking, germination, autoclave, microwave treatment and fermentation.

Keywords: *saponins, phytic acid, gossypol, lectin, goitrogens*

OPAS-12

INFORMATION TECHNOLOGY SECTOR LISTED IN BOMBAY STOCK EXCHANGE SENSEX AND CORPORATE GOVERNANCE PRACTICES: AN INDIAN PERSPECTIVE

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ABSTRACT

Information Technology sector is one of the prominent sectors of India that has contributed a lot towards economic development of our country. It has made efficient and responsive governance services at ease. IT sector is the main reason behind the digital transformation of the country and thereby making towards its global presence. Effective corporate governance ensures the economic growth and development of the country. An effective implementation of sound Corporate Governance is gaining its importance due to increasing number of corporate failures, frauds, scam, unethical business practices, corrupt practices and insufficient disclosure. It is now widely held belief that good governance is very essential to prevent financial crisis and bankruptcies and to encourage investment in domestic market and foreign market. Therefore, good governance in this sector is important. The study aims to identify the applicable sections on Corporate Governance of The Company Act 2013 and regulations of Security Exchange board of India Listing Regulations and Obligations Disclosures. To explore the corporate governance practices followed in IT companies namely Tata Consultancy Services, Infosys, HCL Technologies and Tech Mahindra listed in BSE Sensex. Also, to determine the final score of mandatory parameters based on corporate governance for each company. For the study, researcher will gather secondary data from Annual reports of 2020-21 for each selected companies available at their websites.

Keywords: *Corporate Governance, Information Technology Sector, BSE Sensex, the Companies Act 2013, Security Exchange Board of India Listing Regulations and Disclosures Requirement 2015, Economic Growth*

OPAS-13

HEALTH CARE SYSTEM IN HARYANA: A GEOGRAPHICAL ANALYSIS

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ABSTRACT

The Indian Health Care System is presently facing several challenges. For attaining thegoal of Health for All, India requires not only logical pulling of existing Strategies in education and training of medical services and health personal, but also a fundamental restructuring of health services infrastructure. Health of the people must be remains the primary concern. Government of Haryana is committed to provide quality health care to all its citizens. With the objective to make healthcare reasonable to all, several path-breaking initiatives have been taken and innovative schemes launched in Haryana. Health services are being provided through a network of many Hospitals including PGIMS Rohtak, Community Health Centres, Primary Health Centres, Sub-Centres, and Trauma Centres, District T.B. Centres/Clinics, Urban RCH Centres and Delivery huts etc. And for health education MBBS seats have also been increased in medical colleges. This article has given an overview of status of Health infrastructure development & innovative health care schemes in Haryana. The study is based on the secondary data. The data has been collected from statistical abstracts and economic survey reports of the state of Haryana, newspapers, journals and various websites.

***Keywords**: Health, Haryana, Infrastructure, NRHM, RCH*

OPAS-14

"ROLE OF COMMERCE EDUCATION TOWARDS ENTREPRENEURSHIP"- AN EMPIRICAL STUDY

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ABSTRACT

Entrepreneurs are the individuals who are innovative, creative, dynamic, flexible, and brave and risk – taking. They are opportunity recognizers, network builders, independent and self – dependent with leadership skills. Entrepreneurship is considered as a vital element in economic growth and development of a country, reducing unemployment, increasing production and productive abilities, promoting innovation and creativity and creating wealth. In the process of entrepreneurship, all the innovative and creative ideas are converted into products and services to increase profitability of an organization. Commerce education provides a prospective fertile ground to develop entrepreneurial skills and abilities like thinking independently, identification of opportunities, risk taking abilities etc. Today every country needs entrepreneurs for 360 degree development of that particular nation. Commerce education could provide a hunting ground to identify the hidden entrepreneurs from the talented crop of the students. Entrepreneurs are the persons who take risks and invest resources for innovation and create new markets for existing as well as new products. As commerce education sector is a living discipline and is completely divers from other disciplines, it must charter new routes to serve the ambitions of the nation. The offerings of undergraduate and postgraduate commerce courses in entrepreneurship development is a unique and valuable qualification intended for those who are having the interest in trade and commerce and a strong entrepreneurial drive. This is an outstanding discipline for those interested in their own venture, enabling them to learn commercial skill and grow precious knowledge to help them to make their business enterprise a success. Though having an entrepreneurship development courses in commerce education is also an immense way to have a better chance of getting into a business enterprises as an employees and having great prospectus in career. This paper aims to study the role of commerce education in entrepreneurship development.

OPAS-15

"IFRS-Converged IND AS in India Benefits and Challenges"-

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ABSTRACT

Accounting Standard Board (ASB) of the Institute of Chartered Accountants of India(ICAI), New Delhi issues accounting Standards for its application by the Indian concerns.ASB has issued 41 accounting Standards till now. ICAI has issued convergence report forconvergence to IFRS with effect from April 1st,2011. The move comes as a relief for manyIndian firms that could have been forced to re-adjust these financial statements as per IFRS.Thus, the major problem to cope upwith convergence is the lackof awarenessamongpracticing accountants, academicians, financial managers and financial controllers. To copeupwiththispressure,theonlysolutionistotrainthetrainersandmostimportantlyacademicians. This paper attempts to study the impact, benefits and challenges of IFRSConvergedINDAS.

Keywords: *ICAI = Institute of Chartered Accountants of India, ASB = Accounting Standard Board, IFRS = International Financial Reporting Standards, IND AS = Indian Accounting standards.*

OPAS-16

TEACHING BUSINESS VOCABULARY TO UNDERGRADUATE TECHNICAL STUDENTS: ANEED IN DEMAND

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ABSTRACT

Words are of utmost importance in any form of communication irrespective of the language used by the communicators. Rich in it repository of words English language offers more choice to an individual who wants to master the language. Indian students in general,and undergraduate students of Technology in particular find it difficult to enhance their English vocabulary. Moreover, there is a lot of difference in English to be learnt by students of general courses and students of technical courses. Every technical student is expected to prepare a project report, present papers, write for journals and do a lot for which he/she requires a lot of technical vocabulary. Unfortunately technical students are not tested for their technical vocabulary in the interviews as some interviews are always there to test their business as well as general vocabulary. This paper addresses the problems faced by undergraduate technical students in learning business vocabulary, the short comings of materials, methods to follow and the related issues.

Keywords*: technical words, vocabulary, technical students, curriculum, business vocabulary*

OPAS-17

INVESTIGATING GRAMMATICAL ERRORS OF ENGLISH TEXTS IN YEMENI EFL LEARNERS' WRITINGS AT THE FACULTY OF EDUCATION-YAFEA – ADEN UNIVERSITY

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ABSTRACT

This study investigates the grammatical errors and the causes of the amount of using English vocabulary in texts presently used by the 2nd level students at Aden University's Faculty of Education-Yafea. It exploresthe causes that lead EFL students to make numerous grammatical errors when using English words in their writings. This study's instrument was the test, which was utilized to collect the necessary data. The subjects were twenty EFL students at English Department, second level, faculty of Education-Yafea, Aden University, Yemen. On the basis of the findings of the study, the researcher suggested some recommendations and suggestions that may help to solve such of these problems that encounter EFL students when using English vocabulary as a whole and using adjectives as particular.

OPAS-18

A REVIEW OF AIR POLLUTION CONTROL MEASURES IN INDIA UNDER MODI GOVERNMENT

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ABSTRACT

Air pollution is increasing at the alarming rate all over the world. India too is facing various issues arising out of it. When certain issue affects at large level, government intervention becomes necessary. National government which is the apex decision making body in the country forms various policies and attempts to address the issue. This Paper discusses Prime Minister Narendra Modi Governments one such effort towards the mitigation of the air pollution. This paper is an attempt to review the air pollution control measures in India under PM Modi government.

OPAS-19

AN OVERVIEW THE STATE OF THE DEBATE IN CLIMATE CHANGE ADAPTATION AND DEVELOPMENT

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ABSTRACT

Increasing fossil fuel burning and land use changes have increased emissions, and are continuing to emit, increasing amounts of greenhouse gases in the Earth's atmosphere. These greenhouse gases include carbon dioxide (CO_2), methane (CH_4) and Nitrogen dioxide (N_2O), and the increase in these gases increased the amount of heat the Sun was trapped in Earth's atmosphere, heat that could normally be radiated back into space and reduced snow cover, and increases in ocean temperatures and ocean acidity. According to scientists, this is the largest and fastest warming trend in Earth's history that they have been able to understand. The goal of the revised the policy is to achieve sustainable development and, in particular to (i) securing an environmental quality sufficient for good health and well-being; (ii) raise public awareness and promote understanding of linkages between environment and development; (iii) restore and maintain the ecosystem and ecological processes and preserve biodiversity; (iv) promote the sustainable use of natural resources; raise public awareness and promote understanding of linkages between environment and development; and (v) to cooperate with government bodies and other countries and international organizations on environmental matters. India and other developing countries will face the challenge of promoting mitigation and adaptation strategies, bearing the cost of such an effort and its implications for economic growth.

Keywords: *Climate change, greenhouse gases, environmental, biodiversity.*

OPAS-20

SENTIMENTAL AND EMOTIONAL ANALYSIS OF AMISH TRIPATHI'S IMMORTALS OF MELUHA

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ABSTRACT

There is a need to perceive literature from new perspectives and experience literature with new flavors. The researcher explored the sentimental and emotional analysis of famous writer Amish Tripathi's novel Immortals Of Meluha. Python, R studio, and a few online websites are taken into consideration. Data is prepared using a conversational analysis approach for dialogues of shiva. The study analyses the sentiments and word cloud of the character shiva's conversations in the First and last chapters. This paper gives the readers a newer perspective to understand the emotions, sentiments, and words.

The results revealed that the character Shiva carried the highest negative Sentiment throughout all the chapters. The negative Sentiment in chapter one is 71.6%, followed in chapter twenty-six with 75.6%, and Social Issue: The Elimination of vikarma Law chapter is 69.2%. The emotional analysis of these chapters is calculated using R software's syuzhet package. Character shiva has built trust in chapter one and the Social issue chapter with 26% and 18%, respectively. The emotion of trust is very high compared to any other emotion in these chapters. In chapter twenty-sixth, the character shiva had much Sadness compared to any other chapter. To conclude, the Sentiment in selected chapters are negative, whereas the emotions of the selected chapter are high, Anticipation, Fear, and trust.

Keywords: *Sentiment analysis, emotional analysis, syuzhet package, text blob package, word cloud, Jupyter notebook, R studio.*

OPAS-21

WORSHIP OF TREES - FOLK BELIEF IN INDIA : ITS RELEVANCE TODAY

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ABSTRACT

Trees have always been held with due importance in Indian culture. They have been revered for their attributes of benefits in medicine, giving us oxygen, improving the quality of the air around us, providing food, helping in climate amelioration, giving shade, helping in conserving groundwater, preserving soil, supporting wildlife, providing habitat for various species of flora and fauna, firewood for cooking and heat, materials for buildings and places for residential purpose as well as of spiritual, cultural and recreational importance, all these things being essential to the existence of life - human beings, animals, insects, birds and other smaller creatures. They are considered dear to the Gods and planting plants is considered as a ritual of worship. In Hinduism, the peepal tree represent the three supreme Gods – the trees represent Brahma, the trunk represent Vishnu and the leaves of the tree represent Shiva. Here, one should keep in mind that tree worship is an ancient practice of India. Our ancient mythologies say that planting trees can even help people to lead a better life with God's grace for the same. Trees have been looked upon as auspicious down the ages and worshipped as an important part of our popular ritual and folk-lore and felling of trees has been banned. They may be worshipped for various purposes – for attaining moksha, immortality, fertility or for fulfilling one's wishes, symbolizing eternal youth, eternal progress of life and eternal spirit. They play a significant role in our lives and tree worship as such is relevant even today.

OPAS-22

A SURVEY OF EDUCATIONAL PROBLEMS OF GUJJARS AND BAKARWALS INJAMMU AND KASHMIR OF DISTRICT DODA

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ABSTRACT

This investigation is related to the educational problems of Gujjar and Bkarwals in Jammu and Kashmir of District Doda. During investigation, the researcher took many suggestions from various experts for better results. It was considered that the proposed investigation be confined to an backward area of Jammu and Kashmir Union Territory . On the basis of demographic conditions and the situation of tribal population of Gujjars and Bkarwals, the researchers conducted a survey of various surrounding areas in the neighborhood of Jammu and Kashmir of District Doda. The rationale of the study is to discuss the educational problems of Gujjars in Jammu and Kashmir of District Doda. Gujjars and Bkarwals occupy a large portion of state population of J&K state, whereas in adjoining states they show very small part of state's population. The population of the Gujjars and Bkarwals even after the seven and half decades of freedom of India are neglected and deprived by Education. It cannot be believed that a millennium has gone by, without even remotely touching the Gujjars and Bkarwals community especially regarding their educational problems and educational development. This paper uses secondary data from the Census of India, and from different reports of the state and central governments. For this study, primary data related to educational problems have also been collected through survey. Data were collected through stratified random sampling technique from District Doda of Jammu and Kashmir Union Territory. In this paper researcher tried to find out the educational problems of Gujjar and Bkarwals. An attempt has also been made to give suggestions to overcome the educational problems of Gujjars and Bkarwals. Educational Problems

OPAS-23

Exploration and Projection of Nakedness of Socio-Political and Administrative System in Article 15 Film: A Review

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ABSTRACT

Article 15 through the lights on Dalit stereotypes that are represented in the movie. The research paper discusses projection and exploration of nakedness of socio-political and administrative systems depicted in the movie, the research paper also lays emphasis on themes revolving around 'Brahminic Heroes', 'Dalit Victims and Dalit Protest Silenced' and 'Interlinkage of Gender and Caste Violence'. In the movie, Brahminic/ Savarna heroes are presented with certain visual cues and cultural markers. This includes certain privilege, fairness, well-dressed, confident, handsome, articulate and upper-class characters. Ayan Ranjan checks all these stereotypes. He is portrayed as an ideal for the audience and a saviour for his Dalit counterparts. However, his cultural cluelessness makes him caste-blind. He has achieved this privilege due to caste-hegemony which does not look at other spaces. The character is not just Brahminic but urban Brahminic. The movie depicts that caste space only exists in rural India which is clearly flawed. While the movie tries to interrogate it when Aditi hints to Ayan how even their mothers used to have separate sets of utensils for people from lower castes but it never addresses caste in urban spaces. Through analysis, we will discuss the depiction of a stereotypical Brahminic hero. Dalits are portrayed as dark-skinned, unhygienic, skinny, powerless characters who are dependent upon the social elites for justice. In the film, the Dalit community lives in the conditions of helplessness, abject poverty, performs filthy jobs and faces daily violence and social ostracization. Even the law enforcement is seen harassing them. Very little resistance by Dalits is shown.

Keywords: *Film, Article 15, Casteism, Humiliation and Representation*

OPAS-24

SCIENTIFIC AND FUTURISTIC PROJECTION IN H G WELL'S THE INVISIBLE MAN

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ABSTRACT

Scientific inventions and discoveries have often ruled the literary world by means of English Literature. Rather, English Literary Fiction has instrumentally negotiated the human being's intention to rule this factual world by means of scientific and technological power. The same has become reflexive through the literary backdrop of many novels. This has caused the emergence of Science Fiction as the distinguished genre to talk of the scientific possibilities supported with extreme scientific detailing, its validation through logic. Many times, these projections have been glorified with fanciful and fascinating details in its first instance. Authors such as H G Wells, Marry Shelley, Kafka, J G Ballard and others have projected their scientific world through utmost scientific detailing coupled with partly factual and partly fictional narration of the world. Their scientific and futuristic world has delineated their extreme sense, awareness of this universe in its real sense.

H G Well's *The Invisible Man* delineates the painful story of the protagonist Griffin who attains invisibility as a result of his scientific experiments. Soon he turns to be pompous, greedy of the power and arrogant towards the society. His voracity, hunger and appetite urge him to rule the entire world with his power. He compromises the prescribed norms of the society and turns insane, evil minded and a killer. His greediness for extraordinary power takes him towards his tragic isolation and ultimate death in the story. The present paper intends to postulateon the extreme scientific awareness of H G Wells and simultaneously explores his futuristic projection to its fullest possible extent.

OPAS-25

THE CRITICAL VIEW ON THE UAPA IN THE CONTEXT OF RIGHT TO PROTEST

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ABSTRACT

The Unlawful Activities Prevention Act (UAPA) was initially passed in 1967. This Act allowed Parliament to impose constraints on the fundamental rights of freedom of expression, assemble without arms, and form alliances. The justification given by government regarding this Act that these restrictions were to be imposed only to safeguard the sovereignty and integrity of India. The initial version of the UAPA granted the central government the power to deal with activities levelled against the sovereignty and integrity of India. The terrorism was not incorporated under the UAPA, between 1967 and 2004, hence the UAPA was not a terror law. However, it was realised that in the changed circumstances the UAPA should be amended to include the changing routines of terrorism, shifting the burden of proof to executing extra-territorial arrests. So, in the year 2004, the Parliament included a chapter assigned to punishing terrorist activities. Later on this law on various occasions has been amended, the last one in 2019.

OPAS-26
Utilization and Availability of Resources in the VJTI Library

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ABSTRACT

The present research paper aims to investigate how students at Veermata Jijabai Technological Institute in Mumbai use library information resources. A descriptive survey method was used in this study, with a questionnaire used as a data collection tool. A questionnaire was distributed to 60 library users at random from the VJTI Library, and 52 copies are completed and returned. The frequency counts and simple percentages are used to analyze the research questionnaires. It was concluded that 'for the proficient and effective use of the library for teaching, learning, and research, the academic institution must provide a live library of updated library resources to meet the information needs of library users.' It was suggested that library or university administration implement library literacy education to teach users how to properly manage the library. This will entice more users who are unaware of the library's resources. Finally, Board Display Services should be sufficiently expanded to reflect the available resources to users, thus representing all library resources.

Keywords: *Library Resources, VJTI Library, Availability, Awareness and Utilization*

OPAS-27

MGNREGA: IMPROVING EFFICIENCY THROUGH SOCIAL AUDIT

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ABSTRACT

Mahatma Gandhi National Rural Employment Guarantee Act MGNREGA is the largest and most ambitious project for poverty not only in India but world over. Rs 61,084 crore in 2018-19crorewas allocated for the scheme.In order to ensure effective implementation an elaborate monitoring and evaluation mechanism has been provided for. The scheme also recognize the role of the non-state actors and their inclusion in the monitoring process for collective accountability and ensuring transparency. Social audits are joint mechanism of governance which ensure participatory programme evaluation exercises and ensure empowerment of the poor. Social audit and jun sunwais are the mechanism through which the vulnerable and socially concerned raise their 'voice' and assert their 'rights'; to hold the administration accountable and assume collective responsibility. This action translates social protection to social justice. Under this article social audit mechanism is analysed from a policy design perspective with the given field reports and consequent changes in the rules and aimsto explore that despite so many good provisions, it has not yet been able to alleviate poverty.

Keywords: *Social Audit, MGNREGA*

OPAS-28

NEED OF E-RESOURCES IN ACADEMIC LIBRARIES

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ABSTRACT

New technologies have always been of interest for libraries both for the potential ofincreasing the quality of service and for improving efficiency of operations. At present librariesof all kinds whether public, research academic or special libraries are overwhelmingly lookingforward to adopt new technologies mostly use of e-resources due to its potential for cost savingsin operations and the management of collections and Patrons. E- Resources are digital objectscontaining electronic representation of books, journals and other form of reading materials andthey are converted into a digitized form in order to be read by a computer. Many Libraryresources are now available electronically and can be access via the web. You can get theinformationyou want, when you need it,24 hours a day, 7 days aweek.

Keywords: *Library Automation, Eresources, Academic Library.*

OPAS-29

SURVEY OF E-RESOURCES IN THE UNIVERSITY LIBRARY AT MAHATMA PHULE AGRICULTURAL UNIVERSITY RAHURI (M.S)

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ABSTRACT

This paper seeks to study the use of electronic information resources, its impact on the collection of print and electronic resources, and user awareness and issues where users are using these resources. The survey was organized in the academic year 2021-22 at Mahatma Phule Agricultural University Rahuri (M.S). A total of 108 professors, readers and librarian were selected and their responses were obtained with the help of questionnaires. The findings show that users were using e-resources; awareness of e- resources inspires users to make maximum use of such resources; and users are progressively using departments and homes to access information. This paper presents an overview of these resources, describes a few advantages and disadvantages and gives addresses of few web sites.

Keywords :*Mahatma Phule Agricultural University, Electronic information resources, E-Resources.*

OPAS-30
CHHATRAPATI SAMBHAJI MAHARAJ AGRICULTURAL POLICY

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ABSTRACT

During the time of Chhatrapati Sambhaji Maharaj, the following information Can be given about the condition of the farmers. Agriculture was the main occupation of the State and the means of Livelihood of theRayat and the main Source of income of the state.

Farmers were called by various names like - Rayat, Kunabi, kulwadi during this period. The class of rayats who toiled in agriculture was the basis of agriculture. So, the income earned by the rayats by toiling in the fields was the income of the state. In Maharashtra, Prime Land was not even one Percent of the total Land. Agriculture depended on nature. So, during the time of Chhatrapati Sambhaji Maharaj, farmers faced drought. Then. Chh. Sambhaji Maharaj reduced the severity of drought by taking important measures. For example, the Cultivation of agriculture was encouraged by Providing financial assistance. Efforts were made to Provide relief to the drought victims by Providing financial assistance in the form. of grain, money for the Purchase of agricultural implements and Seeds. The Maharaja had ordered that only the Principal of the Loan should be recovered by installments according to the demand of the farmers.

OPAS-31

HISTORICAL BACKGROUND OF NANDIWALE COMMUNITY – A PERSPECTIVE

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ABSTRACT:

It has been 67 years since India got its independence. After independence, India has progressed economically, socially, technologically and scientifically with the help of modernization and globalization, yet the fountain of prosperous development has not flowed in all areas. Eighteen *paggad* caste people are seen living in our country. The Nandiwale are a nomadic community, Birth of the Nandiwale community. It is seen that these people have created many sub-castes by spreading the belief that the community was born for the work of roaming around with the Nandi bull and telling fortunes. Nandiwale society seems to be backward even today. Due to superstition, ignorance and poverty, the Nandiwale society is sitting without self, losing self-consciousness. History of society, place of society in religious culture, antiquity of society, caste and sub-caste of society. This community has come to Maharashtra from the state of Andhra Karnataka etc. due to the uniqueness of the village, salient features of the community, geographical and cultural features of the area, its uniqueness from other communities. In the same way, this testimony of their living conditions, cultural and social differences is convincing.

Keywords: *Nomadic society - Nandiwale, Tirmal and Davari Gosavi society.*

OPAS-32

"EXPLORING PROTAGONIST IN DALIT AUTOBIOGRAPHIES : BALUTA AND UNTOUCHABLES"

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ABSTRACT

The production of Dalit literature dates back to the post-independence period. In the post-independence period, the pace of social change began to accelerate. The idea of 'Learn, Organize and Struggle' seems to have had a profound effect on the Dalit class. Dalit literature came to be known as a distinct genre. In the early and middle of the 20th century Dr. B.R. Ambedkar gave a new dimension to the cause of dalits.Dr. Ambedkar questioned every established outworn religious norms that allow the inhuman treatment to Dalits.He questioned 'varnvyavastha of Hinduism and proclaimed importance of Buddhism in the life of Dalits.After 1945, he prepared the constitution which place for the equality, liberty and freedom and all kind of justice to all people in India. Many organizations like Dalits' Panther, Bheem Army , Dalit Sangharsh Samiti,BheemSena, SamtaSainik dal such many movements that brought marvelous changes in the status of Dalit communities.Firstly,it was Ambedkar's literature that influence many dalits to come up with their own literature.Therefore,dalits wrote essay, poems editorials, news, latest magazines, short stories,novels and biography.Apart from those forms of literature ,it was autobiography that caught the dalit experiences meticulously centred around dalit identity, social upliftment,anddalitconsciousness.Dalit autobiography is tried to demolish all traditional boundaries with their sharp weapon that is language. Autobiography depicted life as it was. Their original life stories were caught in the words, the experiences of untouchability, oppression, castism form a common attitude among the Dalits.They express their sorrows, expectations, aspirations, dreams, identity crisis, through literature. Dalit literature in particular autobiography plays a vital role in creating self-awareness, respect and collective consciousness of dalits.Baluta by Daya Pawar and Untouchables by Dr Narendra Jadhav are two masterpieces in Dalit literature.

Keywords - *Dalit, Varna-vyavstha, Movements, Autobiography, Protagonist*

SECTION-C
ORAL PRESENTATION, BOTANY

OPBS-1

"ETHNOBOTANICAL WILD EDIBLE PLANTS USED TO CURE PILES BY THE TRIBAL PEOPLE OF AKOLE TALUKA OF AHMEDNAGAR DISTRICT"

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ABSTRACT

India has a rich variety of medicinal plants growing under different geographical and ecologicalconditions. 1500 out of 15,000 privileged plant species have been reported to have medicinal uses. The paper provides information about the plants use for treatment of Piles by tribal peopleof Akole taluka of Ahmednagar districts. The ethnomedicine comes from 26 plant species belonging to 20 genera and 18 families have been recorded. The documentation of these medicinal plantsuses to cure piles reveals that these tribalpeople are still dependent on local vegetation for their life care.Objective of the present study to gather first-hand information about Pile plants used by tribal peoplefrom June 2019 to June 2020.

Keywords: *Ethnomedicine, Tribal people, Akole taluka*

OPBS-2

REVIEW OF *HYLOCEREUS UNDATUS* HAWORTH. (DRAGON FRUIT)

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ABSTRACT

Our environment is filled with a broad range of plants, many of which have therapeutic capabilities. The evolution of human culture has benefited greatly from the use of these therapeutic herbs.*Hylocereus Undatus* Haworth belongs to the family *Cactaceae*,it is frequently referred to as "dragon fruit" or "pitaya."It was initially used as an ornamental plant but later became a new fruit crop due to its market value and health advantages. It is becoming more and more well-known as a sugar fruit due to its high nutrient content and antioxidant properties.It helps in the prevention of cardiovascular diseases, and controlling blood sugar levels thus considered to be important fruit for diabetic patients. It plays a vital role in fighting against cough, asthma, wound healing, etc.

Keywords: *Hylocereus Undatus, Asthma, Antioxidant, dragon fruit.*

OPBS-3

STUDIES ON GROWTH AND PHYCOBILINS IN A CYANOBACTERIUM *LYNGBYA POLYSIPHONIAE*

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ABSTRACT

A cyanobacterium*Lyngbyapolysiphoniae*was isolated from the collected soil samples from different locations of Ahmednagar district of Maharashtra state(India). Identification was carried out using morphological variation and taxonomical approaches according to Desikachary. The axenic culture of *Lyngbyapolysiphoniae*was obtained in the laboratory. For the biomass production, different culture media were used namely BG-11, Fogg's medium, Allen and Arnonmedium, Zarrouk's medium and CFTRI medium. The biomass was harvested by filtrationthrough double layered muslin cloth and dried using air blower. After harvesting, thebiomassobtained was subjected to the growth analysis. Phycobilins were estimated byfollowingthemethod described by Bennett and Bogorad .Out of the different culturemediaused,BG11medium supported the growth of *Lyngbyapolysiphoniae*properly as compared to other media used.Phycobilins content was found tobemorein*Lyngbyapolysiphoniae* grown in Fogg's medium followed by the Zurrouk's medium.

Keywords*:* *Lyngbyapolysiphoniae,Phycobilins,BG-11, Fogg's medium, Allen and Arnon medium, Zarrouk's medium and CFTRI medium.*

OPBS-4

IN VITRO RESPONSE OF COWPEA TOWARDS SALINITY STRESS AT SEEDLING STAGE.

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ABSTRACT

Cowpea is a leguminous, adaptable plant which yields nutrient-rich food for human welfare. Salinity stress, which is adversely impacted by the consequences of climate change, negatively affects cowpea at the germination and seedling phases reducing its growth and produce. The present investigation was undertaken to study the *in vitro* response of Cowpea (*Vignaunguiculata* (L.) Walp) towards salinity stress at seedling stage. Seeds were germinated on Murashige and Skoog's basal medium supplemented with different concentrations of NaCl (0 to 80 mM).Salt stress inhibited the germination percentage, root and shoot length of the seedlings. At higher stress (80 mM) the length of seedlings decreased by 75% as compared to control.This significance of this study is in selecting tolerant varieties of Cowpea seeds and their cultivation in salt affected fields.

Keywords: *Cowpea, salinity, germination, in vitro*

OPBS-5

Literature Review of *Passifloraedulis* Linn.

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ABSTRACT

The plant *Passiflora edulis* is a perennial, climber under the family *Passifloraceae*. The plant is found in tropical regions of America and Asia, bearing purple-colored fruit of 4-5 cm in diameter and weighing 35-45 kg. It's having therapeutically active compounds used for treating diabetes, cancer, etc. Theplant can bear 150-180 fruits per year. The farmers yield the highest number of production of fruits and earn the best profit in this crop cultivation. Therefore, it is very essential to know about the potential of this fruit by researching the growth and economic factors for the sake of increasing the cultivation and production of this fruit.

Keywords:*Passiflora edulis*, diabetes, cancer, therapeutically active Compounds.

OPBS-6

POPULAR FOOD GRAIN VARIETIES IN KARJAT: A MARKET SURVEY

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ABSTRACT

Many varieties of staple food were found in the nearby area of Karjat, District Ahmednagar. The common varieties are most found popular, due to its taste, aroma, appearance, size and shape. A market survey was carried out to study which are the varieties among pulses and cereals was popular and well known in Karjat tehsil. The visits/ survey was made to analyse to study thedifferent types of cereals(Wheat, Rice) and pulses (Chick pea, Moong bean &urd bean). Frequent visits were made to bazars as well as glossary shops. The data was collected from the manager of Bazar and owner of shops. The physical analysis was carried out by external characters of the seeds as per seed shape, size, colour, prize etc. The most popular the food grains of Karjat include Rice (4 Local and 4 hybrid varieties), Wheat (one local and 6 hybrid varieties), Chick pea (3 varieties), Urd bean (2 varieties), Moong Bean (6 varieties). They are richest sources of nutrients and available easily in local market at affordable prizes. If we are made by the continued raise in changes of the food habits of as a part healthy and nutritional diet, staple food consumption will also become moreraised especially in Karjat tehsil as a substitute to western food.

Keywords: - *Food grains, Survey, Staple food, Variety*

OPBS-7

A REVIEW ON ANTIULCER ACTIVITY OF MEDICINAL PLANTS

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ABSTRACT

Antiulcer activity means those plants which are useful for the treatment of the ulcer disease. Now a days it's a measure issue due to modern life style. It may be due to the regular usage of drugs, irregular food habits and stress.Ulcer is a common gastrointestinal disorder which is seen among many people. It is basically an inflamed break in the skin or the mucus membrane lining the alimentary tract. Ulceration occurs when there is a disturbance of the normal equilibrium caused by either enhanced aggression or diminished mucosal resistance. A number of synthetic drugs are available to treat ulcers. But these drugs are expensive and are likely to produce more side effects when compared to herbal medicines.

On the basis of literature and survey of traditional medicinal practitioners, there are many medicinal plants and polyhedral formulations used for the treatment of ulcer. In this review attempts have been made to know about some medicinal plants which may be used in ayurvedic as well as modern science for the treatment or prevention of ulcer. The most used plant species for the treatment of ulcer are *Carica papaya* L.(Caricaceae), *Zingiberofficinale* (Zingiberaceae), *Musa paradisiaca* L. (Musaceae) and *Allium sativum* L. (Amaryllidaceae).

Key words- *Antiulcer,Ulcer,Gastrointestinal,Polyhedral formulations*.

OPBS-8

PHYSIOLOGY OF SEED GERMINATION AND ABIOTIC STRESSES

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ABSTRACT

Germination is the process of seeds developing into new plants the seed germination has influence of many abiotic factors like water, temperature, pH and light. Availability of these environmental factors are crucial for germination, otherwise the seeds suffer from abiotic stresses. A experiment was conducted on seeds of cereals and legumes during Feburary-March 2021 at Karjat, Dist Ahmednagar to understand the effect of various abiotic stresses on the germination process.

The seeds germination percentage, length of radicle and plumule and growth of plants was excellent under proper abiotic conditions of germination. It was observed that the seeds showed best germination under adequate moisture content. The temperature of 30-35oC 6 to 7 pH and moderate light conditions helped in better seed germination and growth. Similarly the lower pesticides concentrations helped in better seeds germination. These results indicate that seed germination in the agricultural fields is completely affected by the abiotic conditions. . If these are not proper, the physiology of seeds change. They undergo stress; the germination percentage reduces and thus may affect the agricultural productivity.

Keywords: *Seed germination, Abiotic stress. Karjat.*

OPBS-9

STUDY OF EFFECT OF PLANT GROWTH REGULATORS FOR CALLUS INDUCTION IN *CISSUS QUADRANGULARIS* LINN.

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ABSTRACT

Cissus quadrangularis Linn commonly known as 'Hadjod' belongs to family Vitaceae. The plant is known for its bone healing properties from ancient times. It contains different alkaloids, glycosides, flavonoids and steroids. β- sitosterol is an active principle present in *C.quadrangularis*responsible for bone healing. The plant extract also shows anti- osteoporotic, anti- diabetic properties. Recent studies have revealed that the plant extracts are effective against breast cancer. *C. quadran*gularis is slow growing succulent climber. It is propagated by vegetative propagation method using stem cuttings. Therefore, *in vitro* propagation is suitable method for large scale production of plant. Present study is focused on *in vitro* propagation of *C. quadrangularis* using Murashige and Skoogs medium supplemented with various plant growth regulators (MS + 1.5mg/lit NAA +1.5mg/lit BAP,MS + 2.09mg/lit 2,4 D,MS + 1.99mg/lit BAP + 1.99 mg/lit Kin, MS + 1.5mg/lit 2,4 D + 1.5mg/lit BAP) were used. Different explants such as apical meristems, nodal regions, internodal regions, leaves and tendril were used for inoculation on above media compositions.

MS + 2.09mg/lit 2,4 Dhave shown callus initiation in 7 days after inoculation and maximum callus was obtained after 12 days of inoculation when nodal regions were used as explant. Other parts did not show callus induction or the callus died soon after formation. Hence, nodal regions are the most suitable explant for callus induction in *C. quadrangularis*. Other media compositions have shown callus initiation 9days after inoculation (MS + 1.5mg/lit NAA +1.5mg/lit BAP and MS + 1.99mg/lit BAP + 1.99 mg/lit Kin). From the results obtained it can be concluded that MS medium supplemented with 2.09mg/lit 2, 4 D is suitable for callus initiation in *C. quadrangularis.*

OPBS-10

INTEGRATED EFFECT OF BIOFERTILIZERS ON GROWTH AND NUTRIENT UPTAKE OF SUGARCANE

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ABSTRACT

A field experiment was conducted on Adsali sugarcane during the year 2019-20 at the Research farm at Mula sugar factory Sonai, Dist. Ahmednagar (M.S.) India. The main objective was to study integrated effect of biofertilizers on growth and nutrient uptake of sugarcane. The experiment was laid down in randomized block designs (RBD) with three replications and seven treatments. The treatment consists of T_1-Control, T_2-RDF, T_3- RDF +FYM +PSB + Azotobacter, T_5- RDF + FYM + PSB + Acetobacter, T_6-RDF + FYM + PSB + Azospirillium, T_7-RDF + FYM + PSB + Azotobacter + Acetobacter + Azospirillium.The results showed the significant response to growth parameters viz., Germination percentage, Plant height, Leaf area. Among the different treatments, maximum increase in the growth parameter was found in treatment T_7 = RDF + FYM + PSB + Azotobacter + Acetobacter + Azospirillium which was followed by treatment T_5& T_6. The similar results were also obtained for biochemical properties viz., total Chlorophyll contain 1.993 mg fr.wt& nitrate reductase activity 675.96 nm. NO_2^- g^{-1} fr. Wt. hr^{-1} for treatment T_7. The maximum increase in nutrient uptake was recorded in treatment T_7- 258.95 N, 82.19 kg ha^{-1} P 363.15 kg ha^{-1} P which was followed by treatment T_5& T_6. among the different seasons. The maximum dry matter in cane and green top was recorded53.46 and 12.66 t/ha respectively and total dry matter in a plant was 66.12 t/ha where nitrogen was supplied through 50% pressmud and 50% urea.

Keywords: -*Biofertilizer, Sugarcane, Nutrient uptake, PSB-Phosphorous solubilizing bacteria*

OPBS-11

"HERBACEOUS PLANTS DIVERSITY OF SURGANA TEHSIL'S OF NASHIK DISTRICT, (MS), INDIA"

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ABSTRACT

The paper is deals with the study of herbaceous plant diversity of the Surgana tehsil of Nasik district. Since the beginning of the 19th century the taxonomical work has been carried out in the Nashik district (T.Cooke -1901-1908). About 61.2 % of the total vegetation of district Nashik is considerd as herbaceous plant flora & about 5.14% is considered medicinal plants. (Lakshminarasimhan and Sharma 1991) The paper focused on herbaceous plants of Surgana tehsils only. The herbaceous flora is seasonal and changes with climatic conditions. Animal grazing, deforestation for farming, and overuse of traditional medicinal plants by the tribal people inhabiting the herbaceous flora of the area. The present work is an attempt to maintain the record of such herbs. In this paper 106 different species from 41 families have been recorded during the study.

Keywords - *Herbaceous, diversity, Surgana tehsil, Nasik District*

OPBS-12
MUTATION BREEDING IN *PHASEOLUS VULGARIS* L.: A CRITICAL REVIEW

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ABSTRACT

Phaseolus vulgaris L. belongs to family Fabaceae, also known as Rajmash, Rajma (Hindi) Kidney bean, French bean, common bean, navy beans. It is also known as Ghewadain Marathi. It is an annual legume crop and native to Mexico and South America. French bean is good source of human food as it contains carbohydrates, proteins, vitamin C, calcium, iron and phosphorus and vitamins i.e. folic acids, pentatonic acids like thiamine, riboflavin, nicotinic acid, ascorbic acids, etc. The genetic variability in pulses has been exhausted because ofnatural selection and therefore traditional breeding methodsaren't very useful. The desirable genetic variation is not achieved with traditional breeding method.

To increase the genetically conditioned variability of a species within a short time, mutation breeding methods are the best methods and through which many crop varieties developed. Induced mutation breeding plays key role in induction of desirable & useful traits in crops. Many researchers have induced the mutation in Kidney bean using Chemical mutagens like EMS, NMU, SA and Physical mutagens like Gamma radiation and X-rays single or in combination. Kidney bean mutants induced by mutation breeding are reported by many researchers like disease resistance mutant, chlorophyll mutants, morphological mutants and seed coat color and size mutants, flower color mutants, leaf mutants, height variant mutants etc. Frequency and spectrum of chlorophyll mutants induced by EMS and Gamma rays in Kidney bean havestudied.Yield contributing parameters, percentage of pollen sterility and more seed protein content by using EMS and Gamma rays also reported. Effectiveness and efficiency for EMS SA, Gamma rays were studied& it has good results. It is also used to reduce anti nutritional factors like Phytic acid in Kidney beans. So induced mutation breeding is effective tool to improve & develop varieties of *Phaseolus vulgaris* L.

OPBS-13

PHYTOCHEMICAL ANALYSIS AND ANTIOXIDANT PROPERTIES OF LEAVES EXTRACT *BARLERIA CUSPIDATA*

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ABSTRACT

Plants with medical properties that are used for pharmacological purposes are known as therapeutic plants. The medicinal plant i.e. *Barleria cuspidata* used in the study were collected from Village Badami in Karnataka State. In the present study the aqueous, methanol, ethanol, and acetone extracts of *Barleria cuspidata* leaves were found to contain phytochemical components. The antioxidant property of the extracts leave of *Barleria cuspidata* was examined using the DPPH free radical scavenging assay. There were anthraquinones, alkaloids, saponins, tannins, glycosides, and phenolic compounds detected in the acetone extract; however, the methanol and ethanol extracts had a slightly higher antioxidant than aqueous extract. *Barleria cuspidata* leaves extracts have antioxidant characteristics, which will help to create some chemicals that might be used to create new and improved natural medicines. These results indicate the antioxidant activity of the extracts, which may help to explain why some of these plants are utilized medicinally.

Keywords: *Barleria cuspidata, leaves extracts, phytochemical Screening, Antioxidant properties*

OPBS-14

"PRELIMINARY STUDY OF POLLEN GRAINS OF PUNE (M.S) "

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ABSTRACT

The air sampling was carried out at Shivajinagar, Pune by using air sampler from November 2021 to April 2022. This aerobiological study provides an estimate of the pollen grain contribution to total airspora as well as general vegetation distribution in this region. During the study period, 27 different types of pollen grain were detected in the air. Amongst them the pollen of *Parthenium hysterophorus* L. had the highest percentage (17.28%), followed by *Alternanthera sessilis* L. (15.97%). In November, *Altrernanthera* accounts for 34.71% of the total pollen flora, while *Nerium oleander* L. dominated the months of December and January, contributing 28.46% and 22.82%, respectively. Poaceae members contribute a higher percentage of the pollen grains in March and more pollen taxa of *Parthenium hysterophorus* L. were observed in April. Pollen grains showed a high total count (2840/m^3) in the month of February whereas it showed a total count (1455/m^3) only in November. Meteorological factors have also been recorded that seem to be affecting pollen grains and their distribution. During the winter season, high pollen concentrations were associated with low temperatures, as well as lower humidity and wind velocity whereas the early summer season has most trees and shrubs' flowering period to increase the incidence of airborne pollen. Thus, the current study contributes to developing a pollen calendar for the accurate diagnosis of pollinosis and other allergies caused due to pollen.

In addition to this study, reference slides of pollen grains were also made by collecting flowers from 54 different taxa from the surrounding area. Pollen grain morphology has been studied that offers data regarding size, shape, aperture, and exine ornamentation which will be helpful characters in the study of plant taxonomy as well as in process of pollination, dispersal, and germination.

Keywords: *air sampling, pollen grain, morphology, allergy*.

OPBS-15

DETECTION OF PHYSICAL AND CHEMICAL PROPERTIES OF SOIL FROM UKKALGAON AREA

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ABSTRACT

Soil testing is to be a effective means of evaluating fertility status of soil , hence in the present investigation efforts were made to check the physical and chemical parameters of soil frompravara area (Ukkalgaon area of shrirampurtahsil), for this ten soil samples were collected from the ten different farmers field and detected for its acidity, alkalinity and its nutrient status. From this investigation it was noticed that the soil collected from the Tambe farm showed alkaline pH (7.9) and highest macro nutrient level of Nitrogen, Prosperous and Potassium with the ratio (5:4:2) as compare to other collected samples.

Keywords: *Soil, analysis, pH, nutrients.*

OPBS-16

"ANTIOXIDANT ACTIVITY OF *ORIGANUM VULGARE*(BADRITULSI) COLLECTED FROM DIFFERENT LOCALITIES OF UTTARAKHAND"

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ABSTRACT

Oregano (*Origanum vulgare* L.) iscommonly known as Badri tulsi, Vantulsi in Uttarakhandit is aromatic perennial herbs belongs to Lamiaceae family. Plant is native to hills of the Mediterranean countries and Western Asia.In India, the herb is found in the temperate Himalaya from Kashmir to Sikkim between 1500-3600m.*O. vulgare* L. found in hilly regions of UttarakhandThe essential oil of Oregano is composed of carvacrol and/or thymol as dominant components, followed by y-terpenine, p-cymene, linalool, terpenine4-ol, and sabinene hydrate, mostly possess anti-bacterial, anti-viral, anti-septic, anti-microbial, anti-oxidant, anti-fungal, anti-bacterial, anti-coagulant and energetic action and flavouring properties. Increasing demands of *Origanum vulgare* in pharma and other industries, it is necessary to produce it on large scale because due to its higher demands it can become threat in coming generation. The main goal of this study to determine the antioxidant activity of ethanolic leaf extract of *O. vulgare*collected from different localities of Uttarakhand. The antioxidant activity tested by DPPH method.The obtained result shows remarkable antioxidant acitivites. The present study will be beneficial for pharmacological studies.

Keywords: *Origanum vulgare (Badri Tulsi),antioxidant, ,pharmacological*.

OPBS-17

"PHYSICOCHEMICAL ANALYSIS OF WATER FROM DIFFERENT SITES OF UJANI RESERVOIRAND THEIR COMPARATIVE STUDIES"

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ABSTRACT

Water is one of natural resources known on earth. It is important to all living organisms, most ecological systems, human health, food production and economic development. The safety of drinking water is important for the health. The quality of drinking water is affected by chemical and microbiological contaminant. Such contaminants cause serious health problems. Due to these contaminants quality of the Drinking Water becomes poor. Sometimes such poor-quality water causes many diseases in the humans so that quality of the water must be tested for both the chemical as well as for the microbial contaminants. During the study it was found that maximum number of physical and chemical parameter were within the desirable limit, as suggested by WHO (1971) and BIS (1991). The objective of the present research is to provide information on the physicochemical characteristics & detailed ecological studies of Potable water and Lake water (Habitat) in order to discuss its suitability for human consumption. Physicochemical and bio-chemical aspects of the water have been investigated to assess the quality of water. The variations of the physicochemical properties of water samples directly influence the biotic communities and primary productivity of the water bodies at different areas ofUjani reservoir.

OPBS-18
CHITINOLYTIC BACTERIA HELPING IN THE RESTORATION OF AN URBAN FRESHWATER LAKE

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A wide range of bacterial diversity is found in aquatic ecosystems. Among them, the heterotrophic bacteria play an important role in the cycling of substances directly or indirectly thereby helping in lake restoration.
Anasagar lake, an important freshwater lake in Ajmer, Rajasthan is located in the heart of the city. This lake beingthe chief recreational centre and a place of tourist attraction, receives an influx of many pollutants in the form of agricultural runoff and human interferences due to restaurants and hotels nearby. A study was undertaken of heterotrophic bacteria utilizing chitin. Chitin being an important substance in exoskeleton of coelentrates, molluscs, protozoans,cell wall of various algae and fungi etc. is present in large amounts in the sediments of the lake. A variety of chitinolytic bacteria were isolated from Anasagar lake water thereby helping in degrading the chitin and thus adding to the self-purification process of the freshwater lake .

Keywords*: Chitinolytic Bacteria, freshwater lake, anasagar, chitin*

OPBS-19
PHYTOCHEMICAL ANALYSIS AND MICROBIAL ACTIVITY OF *MIMOSA PUDICA* L.

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ABSTRACT
A creeping perennial or annual herb, *Mimosa pudica* L. It was known as 'Lajjalu' in Ayurveda and was found to have analgesic, antidepressant, and anti-inflammatory qualities as well as antiasthmatic, aphrodisiac, and characteristics. The phytochemical investigation's active phytocomponents verified the existence of *Mimosa pudica* L. The effectiveness of antimicrobial drugs *Mimosa* was examined using the good diffusion technique. Tests were conducted on the exercise. *Aspergillusfumigatus, Citrobacter divergence,* and*Klebsiella pneumonia*, are the results of varied doses of 50, 100, and 200 g/disc, respectively.

Keywords:*Antiinflammatory,Microbial,Antidepressant,AnalgesicActivity,PhytochemicalActivity,Mimosapudica*

OPBS-20

PERFORMANCE OF *PLEUROTUS SAJOR CAJU* AND *PLEUROTUSEOUS* AGAINST THREE DIFFERENT SUBSTRATES AND MARKET STUDY.

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ABSTRACT

Mushroom is gaining popularity worldwide as an important component of human diet. Mostly button mushroom, Oyster and Paddy straw mushrooms were cultivated worldwide as a source Protein. In past Different agricultural wastes were used by various workers as a substrate to cultivate mushroom commercially. Oyster mushroom Cultivation is a profitable business eco-friendly enterprise especially in Maharashtra as climatic factors of Maharashtra are suitable for the cultivation of Oyster. In present study two different varieties of oyster namely ***P. sajarcaju and P. eous*** were selected to evaluate their performance on three different substrates. Fruiting body of *P.eous* is pink in appearance whereas *P.sajorcaju* is gray in color. The study was carried away in monsoon and winter season of 2021 in Pune region. Wheat straw, Soybean waste and Cotton stalk were used as substrates. The maximum yield of *P. sajorcaju and P. eous with respectively with 78 % and 72 %* biological efficiency was recorded on Cotton waste in monsoon season and 74 and 71 % BE in winter season whereas least B.E was recorded on Soybean waste with 53 and 56 % in monsoon and in 51 and 48% in winter.

During the incubation CO_2 concentration is important for maximum colonization of mycelium. Average incubation period for both the species was recorded as 18-20 Day for full ramification of mycelia in all the substrates.

It was also recommended that oyster mushroom cultivation should be practiced in Monsoon and winter especially in Pune region as summer season gives poor yield and drying of Pinheads occurs. Cotton waste gives good performance against both the species of Oyster in Pune region. Feedback from consumers was obtained and it shows that supply of oyster mushrooms is not constant. Mushrooms are not available to the suppliers as and when required.

Keywords: - *P. eous, P.sajorcaju,* Incubation, Substrates, Biological efficiency

OPBS-21

CHITINOLYTIC BACTERIA HELPING IN THE RESTORATION OF AN URBAN FRESHWATER LAKE

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A wide range of bacterial diversity is found in aquatic ecosystems. Among them, the heterotrophic bacteria play an important role in the cycling of substances directly or indirectly thereby helping in lake restoration.
Anasagar lake, an important freshwater lake in Ajmer, Rajasthan is located in the heart of the city. This lake beingthe chief recreational centre and a place of tourist attraction, receives an influx of many pollutants in the form of agricultural runoff and human interferences due to restaurants and hotels nearby. A study was undertaken of heterotrophic bacteria utilizing chitin. Chitin being an important substance in exoskeleton of coelentrates, molluscs, protozoans,cell wall of various algae and fungi etc. is present in large amounts in the sediments of the lake. A variety of chitinolytic bacteria were isolated from Anasagar lake water thereby helping in degrading the chitin and thus adding to the self-purification process of the freshwater lake .

OPBS-22

STUDIES ON SOME BLUE GREEN ALGAE FROM AURANGABAD CITY AND ITS SURROUNDING REGIONS

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ABSTRACT

The present work deals with the studies on some blue green algae collected from selected location of Aurangabad region. Soil samples were collected from Kannad, Ajanta, Ellora, Gavtala, Vaijapur, Aurangabad caves, Bhagur and Paithan, during the monsoon season of the year (i.e.2019, 2020, and 2021).The collected soil samples were cultured in $BG11^0$ (Nitrogen absent) medium. The cultures were maintained at 20± 2^0C temperature, light intensity 2000 lux and photoperiod of 12hrs. light and12hrs. dark condition. The following algal forms isolated viz. *Cylindrospermum Sp., Nostoc Sp., Anabaena Sp., Calothrix Sp., Desmonostoc Sp., Scytonema Sp., Anabenopsis Sp., Scytonematopsis, and Aulosira Sp.etc.* Following heterocystous algal genus were identified on the basis of Morphology viz. *Cylindrospermum Sp., Nostoc Sp., Anabaena Sp., Calothrix Sp., Desmonostoc Sp., Scytonema Sp., Anabenopsis Sp., Scytonematopsis, and Aulosira Sp.* identification up to species level on the basis of molecular studies is in process.

Keywords: *Blue Green Algae, $BG11^0$ medium, Aurangabad*

OPBS-23

PLANTS SPECIES USED BY TRIBES OF MURBAD TAHASIL IN DYING AND TANNING.

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ABSTRACT

Present work is the outcome of Ethnobotanical exploration of Murbad Tahasil, Dist.Thane. Recording of plant species used by tribes to obtain dyes in Murbad Tahasil was done. Tribal people obtain dyes from plant sources and use them for coloring bamboo crafts/articles, draw pictures on walls, colour horns of cattle, and prepare colored masks.

Keywords: *Ethno botany, plant species, dying and tanning*

OPBS-24

PLANTS SPECIES USED BY TRIBES OF MURBAD TAHASIL IN TREATMENT OF HUMAN DIARRHOEA AND DYSENTERY.

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ABSTRACT

'Ethno botany' word was coined for the study of plant species used by aboriginal people (Hershberger, 1895). Ethnic's knowledge of plant resources is documented in 'Ethno botany'. Ethnobotany is a promising field of research. Ethnobotanical exploration of Murbad Tahasil, Dist.Thane was done. Various medicinal plants employed by tribes of Murbad Tahasil in curing of human diseases were recorded. Out of total medicinal plants, Thakur and Katkari tribes use about 20 species in the treatment of diarrhoea and dysentery.

Keywords: *Ethno botany, diarrhoea and dysentery, medicinal plants*

OPBS-25

PLANTS SPECIES USED BY TRIBES OF MURBAD TAHASIL IN TREATMENT OF VARIOUS HUMAN DISEASES SUCH AS TUBERCULOSIS, LEPROSY, HERPES, DIABETES AND ULCERS.

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ABSTRACT

Murbad tahasil is rich in floristic as well as ethnic diversity. Murbad is mountainous and tribal populated Tahasil of Thane District lying approximately at 19^0 31^1 N and 73^0 35^1 E (Collectorate of Thane District, 2014). It includes about 906.36 sq. km area, 207 villages and 159 'padas'. 'Ethnobotanical exploration of Murbad Tahasil, Dist.Thane was done. Various medicinal plants employed by tribes of Murbad Tahasil in curing of human diseases such as Tuberculosis, leprosy, Herpes, Diabetes and ulcers were recorded.

Keywords: *Ethno botany, medicinal plants, human diseases.*

OPBS-26

PLANTS SPECIES USED BY TRIBES OF MURBAD TAHASIL IN TREATMENT OF SOME COMMON HUMAN AILMENTS LIKE STOMACHACHE AND STOMACH DISORDERS.

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ABSTRACT

Present work is the result of intensive, systematic, Ethnobotanical exploration of Murbad Tahasil, Dist.Thane. Genera and species of medicinal plants used by tribes of Murbad Tahasil in treatment of human ailments were recorded.Out of total medicinal plants Thakur and Katkari tribes employ 20 genera and species in the treatment of stomachache and 17 genera in gastric disorders. Various plant parts viz. Leaves, flowers, fruits, seeds and barks ofmedicinal plants are used for curing ailments like stomach ache and gastric disorder.

Keywords*: Ethno botany, human ailments, stomachache, stomach disorders, plant resources.*

OPBS-27

ECOLOGICAL SURVEY OF A PROMINENT WEED *MIMOSA PUDICA* L FROM KONKAN REGION OF MAHARASHTRA, INDIA.

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ABSTRACT

Mimosa pudica L. is one of the problematic weed. It is occurring in Konkan region of Maharashtra under varied ecological conditions. It has colonizing nature. It perpetuates through seed germination but has an outstanding capacity of tiller formation. It forms impenetrable thickets in horticultural fields.

Keywords: *Mimosa pudica* L.Weed, Ecological

OPBS-28

STUDY OF FOREST NURSERIES TO LOOK FOR FUNGAL DISEASES THAT INFECTED THE TREE SEEDLINGS

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ABSTRACT

In this study, we sought to concentrate on the frequent fungal diseases that affect tree seedlings of different species in the forest nurseries in Buldana district in Maharashtra state, India. During the extensive and thorough study to gather and observe the severe fungal infections in forest nurseries in various forest nurseries throughout the district, 10 plants out of 12 tree seedlings species were reported to be affected. *Aegle mormelos, Gmelina arborea, Bauhinia variegata, Tamarindus indica, Samanea saman, Dalbergia sisso,* and *Cassia fistula* were a few of the plants. Other species included *Azadirachta indica, Albezialebbeck, Tectona grandis*, *Terminalia bellerica, Acacia auriculiformis*, and *Tamarindus indica*. These studies covered a wide range of diseases, including root rot, leaf spot, rust, and powdery mildew. With the use of literature that was available and professional confirmation, pathogens were identified.

Keywords – *Forest Nursery, Fungi, Diseases, Pathogen*

OPBS-29

BIOCHEMICAL AND PHYSICAL CHANGES OF STORED OIL SEEDS DUE TO STORAGE FUNGI.

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ABSTRACT

In India, seed-borne fungi are a major problem during storage. The most common cause of degradation during oil seed storage is fungi. Seeds in the field and in poor storage circumstances interact with a variety of pathogens, causing them to decrease qualitatively and quantitatively. An investigation was carried out to detect seed-borne fungi in stored oil seeds as well as their impact on biochemical status. The survey was undertaken for stored oil seeds (*soybean, mustard, sesame, Niger, flaxseed and castor*) under different conditions in the western Vidarbha region of Maharashtra. In all, about 15 types of species of fungi were found in the laboratory using different media. From these, the main five types of dominant fungi were isolated and identified as *Alternaria alternata, Aspergillus flavus, Aspergillus niger, Curvularialunata*and *Fusarium oxysporum*. This was carried out based on specified characteristics. In comparison to healthy oil seeds, the study of year-wise germination percentage, colour change of seeds and odour. The biochemical analysis revealed a considerable reduction in fatty oil and crude protein content, throughout the different infection levels.

Keywords*: Storage Oil Seeds, Fungi, Biochemical and Physical changes*

SECTION-D ORAL PRESENTATION, COMMERCE AND MANAGEMENT

OPCM-1

SUSTAINABLE LEADERSHIP IN TOURISM INDUSTRY IN RAJASTHAN: A REVIEW AND CONCEPTUAL FRAMEWORK

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Abstract

The tourism sector contributes to around 8% of global greenhouse gas emissions as a result of aviation (40%), transportation (30%) and the consumption of goods and services (30%) including food and accommodation. The United Nations Environment Programme (UNEP) estimates that 4.8 million tonnes, 14 per cent of all solid waste, is produced each year solely by tourists. This waste can potentially overload waste management systems, especially in destinations that are more rural in nature or have a low population.The objective of this paper is investigate the role of sustainable leadership practices in achieving sustainable development goals in the tourism industry in Rajasthan, which is one of the most sought after tourist destinations, both for domestic as well as international tourists. This paper conceptualizes that sustainable leadership can promote sustainable business practices which help to minimize and solve the various waste issues like plastic pollution, food waste, water pollution and carbon emissions. Sustainable leadership is when organizational leaders operate with the triple bottomline in mind. The paper analyses the three pillars of sustainable business, economic, social and environmental. It reviews the various dimensions of sustainable leadership and builds a conceptual framework how sustainable leadership can contribute to sustainable development goals. The paper concludes that **s**ustainable leadership practices are very helpful for the tourism industry to achieve sustainable development goals. Sustainable leadership practices play a key role in minimizing and solving various waste issues.All the key stakeholders in the tourism industry, such as hotels, restaurants, tour operators, travel services and others must promote sustainable business practices. They need to focus on long-term goals, balancing social welfare and environmental protection while maintaining financial performance.

Keywords: *- Sustainable Leadership, Business Sustainability, Sustainable Development Goals, Tourism, Rajasthan.*

OPCM-2

A BIBLIOMETRIC ANALYSIS CONCERNING EVOLUTION OF GREEN MARKETING RESEARCH OVERTIME FROM 1999 TO 2021

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ABSTRACT

A bibliometric review was done for investigation of the worldwide available articles regarding Enviropreneurial Marketing for assessing its current status as well as growth and performance tendencies during the past 22 years.This study employed the VOSviewer to evaluate collaborations network among authors, organizations and countries along with co-occurrence of all keywords in finding five prime clusters based on Scopus data (from 1999 to 2021).Initially, a total of 1,822 documents were found in Enviropreneurial Marketing research, but after applying the Inclusion and Exclusion Criteria, the number of documents was reduced to 336. During this time frame, 9 authors produced over 4 publications out of 160 authors contributing towards Enviropreneurial Marketing research. China and United States has risen to the top of the Enviropreneurial Marketing research field, with 38 publications each, followed by Indonesia, United Kingdom and Malaysia. The document published on Enviropreneurial Marketing research increases from 1 in 1999 to 90 in 2021. Green Marketing and Marketing is the mostwidely used terms in this topic, reflecting the present leading research and getting greater consideration in recent years. Enviropreneurial Marketing research may be grouped into five core clusters built on the results of keyword clustering analysis.The findings of this study serve as a foundation for future research on growth and performance tendencies inEnviropreneurial Marketing, as well as recommendations for related governmental and business development plans.Meagercontribution of the researchers to Enviropreneurial Marketing as well as the growth and performance tendencies in this field are quite vague.

Keywords: *Bibliometric ,Enviropreneurial Marketing, Green Marketing, Sustainable Marketing, VOSviewer etc.*

OPCM-3

A STUDY ON BUYER PREFERENCE OF AMWAY PRODUCTS IN THANE DISTRICT

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ABSTRACT

Customers are the king of the market.Success of an organization depends upon its ability to satisfy the present and potential Customers. The present study attempts to study Customers preferences of Amway products in Thane district. This study will help the manufactures to adopt new strategies which would help not only to attract new customer but also maintain the loyalty of the existing customer.

Keywords: *Customers, Product, Marketing*

OPCM-4

PERCEPTIONS AND ATTITUDES TOWARDS RETIREMENT PLANNING BY TEACHING FACULTIES OF SELECTED UNIVERSITIES IN KARNATAKA: AN ANALYTICAL STUDY

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ABSTRACT

The drive of the present study is to know the perception of retirement by Teaching Faculties of Selected Universities in Karnataka. Universally Teachers would be pensioned off after attaining 62 years of age, which is the obligatory superannuation age. The key issue is that the majority educators are not ready to break working up to they reach 62 years of age. Maximum number of teachers is not equipped for superannuation which causes pressure and anxiety. To resolve these problems, numerous resolutions were elevated. The teaching faculties should capitalise early and save to lead comfortable life during retirement and enable them to manage their finances, educate them about areas to invest in order to reap extreme paybacks out of their investments. This study is aimed to determine Teaching Faculties insights and attitudes towards retirement in Selected Universities in Karnataka.

Keywords: *Retirement Age, teaching faculties, Perceptions, Attitudes, Universities*

OPCM-5

"A STUDY ON ORGANISATIONAL CULTURE WITH SPECIAL REFERENCE TO PRAGATI STEEL CASTING PVT LTD MACHANAHALLI SHIVAMOGGA DISTRICT"

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ABSTRACT

Organisational Culture is defined as the Values and Behaviours that Contribute to theunique social and psychological environment of the organization. Organizational culture includes an organisations expectations, experiances, philosophy and values that hold it together and is expressed in its self-image, inner workings,interactions with the outside world and future expectations.This article is going to study about the organizational culture.

OPCM-6

EFFECT OF PRIVATE SECTOR ORGANIZATIONAL CULTURE ON PERFORMANCE OF FEMALE EMPLOYEES

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ABSTRACT

This article describes the definition and measurement of private sector organizational culture and its impact on employees' performance through the analysis of existing studies and empirical models related to organizational culture and performance. The results show the relationship and impact of organizational culture on employee performance as a whole. However, the extent of this impact depends on the sub-elements of the organizational culture: change management, goal achievement, and so on. The relationship between organizational culture and innovation has been the subject of various studies in recent years. The numerous cultural variables studied have led to the fragmented notions of innovation culture. In addition, management practices require a foundational structure for deciding which culture to implement for innovation and assessing whether a particular culture is an effective and efficient coordination tool. The motive of this text is to discover the factors of organizational way of life in groups imposing innovation and to try to gift its model. After evaluation of huge literature, it's miles discovered that organizational way of life has deep effect at the sort of businesses process, personnel and its performance. This additionally describes the special dimensions of the way of life. When employees are engaged and share the same norms and values as organizations, they can increase performance to achieve the organization's overall goals. Managers and leaders are encouraged to develop a strong culture within the organization to improve overall employee and organizational performance.

Keywords- *Impact, Organization Culture, Organization Performance, Employee Performance.*

OPCM-7

AN INVESTIGATION ON AWARENESS AND PERCEPTION OF SELF-DRIVE CAR RENTAL COMPANIES IN AHMEDABAD CITY

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ABSTRACT

A car rental, hire car, or car hire agency is a business that hires cars for short periods of time, often between a few hours and several weeks. It is often structured with multiple local branches (which let users to return vehicles to other locations), is typically situated around airports or major metropolitan areas, and is frequently supported with a website that allows for online bookings. The purpose of this research is to determine the degree to which the residents of Ahmedabad are aware of self-drive automobiles and to analyses their attitudes toward car rental firms in South India. This research may assist the firm in analyzing public perceptions of self-drive vehicle rentals in Ahmedabad and in determining their market position. According to the research, the organization might implement a new marketing plan in order to outperform their competition. The term "research design" refers to the process of arranging the settings for the collection and analysis of data in a specific way that tries to balance the relevance of the research objective with the economy of the technique. The study used a descriptive research approach. Descriptive research is conducted with clear goals in mind, and hence results in a definitive conclusion. The purpose of this study is to characterize the respondents in connection to a certain product. The research opted for a sample size of 336 respondents. The sampling unit for this study is composed of common public men and women from various socioeconomic strata who reside in Ahmedabad, Gujarat. Simple percentage technique, cross tabulation, and the Chi square test were all employed in this data study.

Keywords*:* *Consumer Preference, Self-Drive Rental Cars, Industry Analysis and Policy*

OPCM-8

A CRITICAL STUDY ON TOOLS AND TECHNIQUES CONTEMPLATED FOR EMPOWERINGTHE FACULTIES WORKING IN EDUCATIONAL INSTITUTION

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ABSTRACT

The Study is to know the techniques and tools that are used for empowering faculties working in Educational Institution. The Teaching is the noblest among all the profession around. The faculties from teaching fraternity should be knowledgeable and possess some good set of skill, qualifications and feel empowered,which would further be an obvious reflection on the student who are our future generation of our country. So the Study is to critically evaluate the techniques and tool used for empowering the faculty .An empowering emphasizes on autonomy, proper communication, individual participation for academic excellence, rewarding them on achievements and feedback on their performance. In order to achieve empowerment, the Management and higher authority in colleges like Principal, Dean, Director and HOD's must ensure that faculties must have the right mix of information, Skill, Supremeknowledge in the subject and Power. Which in turn builds one's Self-esteem and energizes them for perform better and move with upward trend in their career and further motivation in conduction of class and organizing and participating in several programs like Seminar, Conference, Workshop's ,induction and Refresher training for the well being of the student's Community. A Self satisfied and motivated faculty will try to develop a positive rapport among the students which helps the Student's to outperform and achieve greatheights So the study is to find out if employees are aware and satisfied with the empowerment techniques followed in their institution

The Questionnaire consisting of 20 statements was used for collection of data and was distributed among 250 faculties working Self finance Arts and Science College. Convenience Sampling techniques were used for this study. Data was analyzed by using Excel & SPSS package by using techniques of Simple Percentage Analysis, ANOVA, Chi-square, and Correlation.

OPCM-9

A SYNTHESIS OF E-BANKING SERVICES AT THE BOTTOM OF THE PYRAMID

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ABSTRACT

Globalisation and technological advancements have paved the way for the emergence and development of new market areas, reaching to the masses and catering to their needs. Post demonetisation and COVID19 following a cashless economy, e-banking has the now became the need of every individual to fulfil their banking needs. In this context the paper aims to study the e-banking services at the bottom of the pyramid. These low income consumers comprises of 4 billion of population and in India, 70% of the population falls into the broader category of bottom of the pyramid laying a huge opportunity for the marketers to explore. The paper theoretically reviews the literature from secondary sources to understand the factors affecting the bottom of the pyramid customer perception like perceived usefulness (PU), perceived ease of use (PEOU), perceived risk (PR)regarding e-banking services to examine and analyse the e-banking needs of the BOP consumer. This paper will help the marketers to gain an insight of the BOP market and help them to understand their e-banking demands and then strategically embedding those demands into their e-banking products or services to offer them a better experience and building sustainable relationships with their customers creating a competitive advantage for them over their competitors present in the market.

Keywords: *e-banking, mobile banking, bottom of the pyramid, low income consumers*

OPCM-10

THE EMPIRICAL STUDY ON RETAIL BANKING WITH SPECIAL REFERENCE TO CANARA BANK

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ABSTRACT

The landscape of India's financial sector is changing. Anytime, anywhere banking, using differentiated channels and technology, will enable a multi-fold increase of reach in rural and remote areas. Powerful forces are reshaping the banking industry. Customer expectations, technological capabilities, regulatory requirements, demographics and economics are together creating an imperative to change. Banks need to get ahead of these challenges and retool to win in the next era. Banks must not only execute on today's imperatives but also radically innovate and transform themselves for the future.

OPCM-11

IMPACT OF GST ON HOTEL, TOURISM AND TRAVEL INDUSTRY: AN EMPIRICAL STUDY

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ABSTRACT

Tourism is one of the prime activities which play a vital role not only in the generation of employment and income but also in holding firm socio-political relationship with the other countries. India is one of the most fascinating destinations to the world tourists as it is known for its diversity in culture, languages, rituals, traditions, ethnicity with rich civilization. The tourism sector in India is one of the rapidly growing sectors. It contributed 9.2 percent of GDP in 2018 and is expected to contribute 9.9 percent of GDP by 2028. Goods and Service Tax (GST) is said to be a non-discriminatory tax, which affects various layers of the economy. The boom in travel and tourism has led to the further development of hospitality industry. Consequently the hospitality industry is expanding globally and promoting its growth in a changing multicultural environment. Hotels contribute to the output of goods and related services which build the well-being of their nations and communities. India is worlds most attractive tourism spot. India has different cultures among which have varieties of food.Attracted by these varieties of foods domestic and international tourists aspire to visit.

OPCM-12
ANALYSIS OF DIGITALSERVICES PROVIDED BY THE PAYMENTS BANKS (A CASE STUDY OF HYDERABAD CITY)

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ABSTRACT

The intention of this research paper is to analyse thedigital services provided by the Payments Banks in Indian**.**The sample size was 103 respondents and data were collectedby using structured questionnaire and followed snowball sampling method and other relevant data was collected from different websites, journals, and newspapers. The statistical tool used were correlation and regression.The selected respondents are satisfied with the digital services offered by the payment banks and particularly Banking Cards is the major impacting service i.e., one percent change in “banking cards” leads to 0.38 percent changes in “satisfaction levels”. The payment banks should concentrate on the all the digital services provided by them,because all the digital services are statistically significant.This is the first attempt to analyse the digital servicesprovided by the Payments Banks to know the customers satisfaction levels.

Keywords: *Analysis, Digital Services, PaymentBanks, and India*

OPCM-13

STUDY ON MEASURING THE EFFECTIVENESS OF ONLINE MARKETING ON INTEGRATED MARKETING COMMUNICATION: A SPECIAL REFERENCE TO ANAND CITY

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ABSTRACT

IMC mergers various promotional tools and communication/marketing/advertising services and techniques to maximize profit. IMC is ultimately achieved through concise and reliablemessaging that fosters familiarity and consumer affinity. In the thisresearch study, Descriptive research is followed. Descriptive research is usually a fact-finding view generalizing a cross - sectional study of currentsituation. The main goal of descriptive research is to describe any particular event, phenomenon and situations on the basis of observations.Survey for research work was conducted in the Anand city for keeping inmind that online marketing is still a metropolitan phenomenon in the developing country like India. Sample of 200 respondents was selected for survey

OPCM-14

USE OF E- LEARNING FOR CONTROLLING POLLUTION IN ENVIRONMENTAL

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ABSTRACT

COVID-19 has disrupted most of the industries in the world. Education is the only industry that is completely transferred to online mode in most countries around the world. Online learning was the best solution for continuing education during the pandemic, especially in tertiary education.

Keywords: *Online Learning, COVID-19, INDIA, Technology.*

OPCM-15

CORPORATE FRAUDS AND ROLE OF FORENSIC ACCOUNTANTS

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ABSTRACT

The Vijay Mallya scam of Kingfisher group, Coalgate scam, 2G spectrum scam, Nirav Modi scam of PNB, Scam of Sathyam Computers, Harshad Mehta Scam like that the list goes.Accountants must be attuned to detecting fraud at every level of service, including standard accounting services, compilations, reviews, and bank reconciliations. If there is fraud and it is not detected means it is subjected to be sued, and there will be likely lose, as the public perception that accountant is the watchdog. Companies have a responsibility to their stakeholders to ensure all business and accounting activity is handled ethically. Integrity and client confidentiality are of utmost importance in accounting ethics. Forensic accounting is an area of expertise field of accounting that analyzes and investigates white-collar crimes such as embezzlement, corporate waste and misrepresentation of a company's financial statements. Forensic accountants are held to high ethical standards as they are overseers of ethical behavior for corporations. They spend many man-hours poring over income and expense statements, balance sheets and other earnings statements. Benford's law is widely used for detecting probability of frauds and manipulation in various fields.

Keywords: *Benford's law, Fraud, Identification of errors, Misappropriation, Forensic Accounting*

OPCM-16

INDIA'S INDIGENOUS BANKING SYSTEM

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ABSTRACT

Indigenous banking is one of the oldest forms of banking that existed in India from the mediaeval period until the first half of the nineteenth century. The indigenous banking system is a monetary system in which local entities function as bankers by offering financial services such as loans and accepting deposits.It entails a private form and an individual performing fundamental banking operations such as accepting public deposits and lending money. Prior to the arrival of foreign banks and commercial banks, it was the only type of banking available in India. This further collapsed after the emergence of cooperative and commercial banks in the late 1990s.The financial system of India is dominated by nationalized banks. The banking industry's success is undoubtedly more directly tied to the economy than any other sector. The objective of this paper is to examine all private loans and money transactions made up to the nineteenth century i.e. indigenous banking and weigh their benefits and drawbacks.

Keyword : *Indigenous Banks, Banking System, Security, Hundis*

OPCM-17

CINEMATIC REPRESENTATIONS: MODES AND MEANS

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ABSTRACT

Abstract- The visual mode always offers choices which the written narrative may not. The multiple agencies of cinematic representations of gender masculine or feminine greater freedom in the choice of different outlooks. The camera eye, narrator, the spoken dialogues, body language, facial expressions, the high, high middle and low light angle of camera as well as the silence and space are to be called the multiple Agencies or the modes of expressions. It is really fascinating to critically discover the psychological relationship between a life on the screen and the actual life of once in a society. Philosophical observation proves that cineml film always comprises several components within itself. We may list down several concepts which must combined to form it (cinemal film) e.g. the perception, representation, signification, adaptation, evolution, identification, figuration and interpretation. These all factors together complete to form the art called as 'cinema.'Present paper will focus on the technical modes which are used to make a film as a complete or sole object. The present research article will explain the role of the camera and different angles of Film/ Cinema interpretations. Certain keywords will be analysed and discussed as per the need of discourse. Representation of social reality when comes from life to pages and from pages to screen, it goes through different techniques. As we will study critically the high, middle, front & back camera lights too in order to gain proper effect of any theme. Every film is based on raw structure and that structure makes a solid framework for any level of film. Under the title of films has listed down such as commercial film, realistic, psychology based Art or parallel films. Every cinematic presentation always prepares a discourse. That may be a discourse of social issues, gender realities etc.

Keywords- *Perception, representation, signification, adaptation, evolution, identification figuration and interpretation.*

OPCM-18

A PERSPECTIVE OF CHANGE MANAGEMENT

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ABSTRACT

Managing change is a significant element of any major revolution. It is a essential process that assist companies to effectively implement new strategies. Change management gets results by building sponsorship from the top, creating leaders who will act as change agents, and by changing behaviors in frontline teams and individual employees in business units We typically consider change management as three separate sets of activities designed to influence behavior — techniques and processes, change interventions, and discipline. All three dimensions of change management are essential for a successful transformation. The best change programs reinforce core messages through regular, timely advice that is both inspirational and actionable. Communication is both outbound and inbound. It should be targeted so as to provide employees the right information at the right time, to solicit their input and feedback and to check in on their emotional response to what they've heard. Change programs often require over-communication through multiple, redundant channels.

Keywords:- *Change Management*

OPCM-19

"AN ARTICULATION OF INDIAN ETHOS IN THE SELECTED NOVELS OF AMISH TRIPATHI"

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ABSTRACT

In Today's world, identifying a stand-alone at ethos of a country, is not easy at all given the impact that globalization has lead on the lives and culture of people. Now the time has come to teach and learn our Indian values with the help of such modern versions to the epics so it would be easy for this young generation to relate with it in the age of digitalization. These epics are the treasure of knowledge about humanity, morality, philosophy, culture and religion. There is lot of scope for studying the values and ideals of Indian tradition. There is ample scope to study the family values as this particular research offers us teachings of how an ideal king,ideal father, ideal mother, an ideal son, an ideal brother, an ideal husband and an ideal wife should behave in life.The study of these selected novels offer an opportunity to a researcher for an interesting, unique investigation of Indian ethos as representation of culture, communication, identity, religion and Philosophy. These selected novels of Amish Tripathi needs to be studied as it gives the researcher a great opportunity to revisit the epic Ramayana in the perspective of Ram, Sita and Raavan.

OPCM-20

GREEN BANKING FUTURE IN INDIA

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ABSTRACT

Green banking as a concept is a productive and smart way of thinking with a vision for future sustainability. Green Banking is a category of banking practices considering all the social and ecological factors with an aim to defend the environment and preserve natural resources. It is called sustainable banking,ethical banking or Green banking. Green banking avoids paper work. It is paperless; paper reduces banking and makes use of online transactions such as SMS banking, Internet banking and also ATM banks. Green banking means less paper works it means less cutting trees. It adopt environmental standard for lending which would benefit future generation.This paper talk the concept of green banking, history of Green banking, Green bank products,Green banking future in India.

SECTION-E
ORAL PRESENTATION, MICROBIOLOGY

OPMB-1

INORGANIC PHOSPHATE SOLUBILIZERS AND SIDEROPHORE PRODUCING RHIZOBACTERIA ISOLATED FROM *TRITICUM AESTIVUM* (WHEAT) FOR SUSTAINABLE AGRICULTURE

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ABSTRACT

The rhizosphere is the region of soil that is influenced by root secretions and associated soil microorganisms.Rhizobacteria are root associated bacteria that can have a detrimental, neutral or beneficial effect on plant growth. Here, an attempt has been made to screen and identify phosphate solubilizer and siderophore producing rhizobacteria from rhizospheric soil of wheat field. Samples were collected from rhizosphere of wheat field of different 6 region of Gujrat,India (Kutch, Jamnagar, Junagadh, Gir Somnath, Amreli and organic farming field).34 pure cultures were obtained in solid Nutient Agar Media.Isolates were screened on Pikovskaya's agar plates for phosphate solubilization and chrome azurol S agar medium for siderophore production. The 14% isolates were able for Phosphate solubilization and 17% were positive for siderophore production. This study will facilitate accurate identification of the bacterial types that rhizospheric traits essential in synthesis of plant hormones, soil nutrient solubilization and help in fiulfilment of the iron requirement of plants by causing its solubilization and chelation from organic or inorganic complexes present in soil and in sight an immunological response in the plants, thereby enhancing their capability to overcome diseases.

OPMB-2

"BIOPROSPECTING OF POLYHYDROXY BUTYRATE (PHB) FROM *BACILLUS THURINGIENSIS* KUMBNGBT-41BY USING AGRO INDUSTRIAL WASTES"

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ABSTRACT

The diverse group of chemicals used in making of plastic is known to be highly toxic and poses a serious threat to the biosphere. These substances besides hitting hard to ecosystem cause an array of problems like birth defects, cancer, damage of nervous and immune systems.Biodegradable plastics can be decomposed by the action of living organisms, usually microbes, into water, carbon dioxide and biomass. Biodegradable plastics are produced from a wide range of substrates using Microorganisms.The research work was aimed to isolate and characterize *Bacillus thuringiensis* from dump yard soil. The *Bacillus thuringiensis* KUMBNGBT- 41was isolated by serial dilution method and it was screened by Gram staining and Sudan B black staining methods and determined by solvent extraction method. *Bacillus thuringiensis* was confirmed by molecular characterization using partial genomic analysis of 16s r-RNA sequence by using Sangers method and deposited to GenBank, NCBI. Accession No. **MW040075**. *Bacillus thuringiensis* was optimized by using various parameters. The bacteria was mass cultivated byusing oil wastes and Agro-industrial wastes by submerged fermentation and Quantification of the PHB was analysed by using Bio-spectrophotometer at 200-600nm and residual biomass & dry cell weight was measured.

Keywords: *Polyhydroxy butyrate, Dump yard soil, Sudan black staining, Oil wastes, Agro industrial wastes and Spectrophotometer.*

OPMB-3

ANTAGONISUM OF MICROBIAL FLORA ISOLATED FROM GARDEN RHIZOSPHERIC SOIL

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ABSTRACT

The microbes can have capacity inhibit the growth of other microbes for their own survival. The strategy of the microbes which makes them fittest for extreme conditions is its capacity to secrete some of the metabolites responsible for inhibitions of growth of other microbes we can say antibiosis. The phenomenon of these microbes helps to survive them in extreme conditions. For this purpose we have taken garden soil for the investigations and from this soil samples microbial flora were isolated and purified.The isolated microbial cultures were tested against each other and we found very significant result. Initially we spreaded soil samples after dilutions on agar plates we observed around 10 fungal cultures on PDA plates. Further among 10 cultures we got three pure cultures showing positive antagonistic activity against each other. We further calculate activity of antibiosis and we found in multifold inhibitions.From microscopy under light microscope we found that the green spore mat appear similar to *Penicillium digitatum*, black fungal spore mat similar to *Aspergillus niger*, while brown fungal spore mat appears to be as blood fungi also known as *Tinea versicolor*.

Keywords: *Antagonism, Rhizosphere, fungal culture*

OPMB-4

STUDENTS' PERCEPTIONS OF ONLINE LEARNING DURING COVID-19

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ABSTRACT

The sudden breakdown of the COVID 19 pandemic affected the world in a crucial way and changed the way things worked. One of them was lockdowns, which were imposed all over the globe as the world switched to the online way of conducting things, from working to solving every issue. Covid-19, as a global pandemic, has called for social distancing. It has made people mandatory to sit indoor and sitting idle indoor may lead to mental stress. Hence to keep people engaged and free from mental stress, online learning can play important role. Online learning is the best solution during this pandemic situation. Teachers can use virtual classrooms to teach from home with all necessary tools which makes the online sessions as effective as traditional ones. During this period, one online survey was distributed to investigate Students' perception of the learning process that took place over that period of time with no face to face education. The study found that students agreed to online learning challenges lie in adapting to online education, especially for deaf and hard of hearing students, lack of interaction and motivation, technical and Internet issues, data privacy, and security. The benefits were mainly self-learning, low costs, convenience, and flexibility. Even though online learning works as a temporary alternative due to COVID-19, it could not substitute face-to-face learning. The study recommends that blended learning would help in providing a rigorous learning environment.

Keywords: *Covid-19, Self-learning, Online learning, Students' perception, Mental stress*

OPMB-5

ALGAL DOMINANCE IN CONTAMINATED WATER REGION OF GODAVARI RIVER

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ABSTRACT

The Godavari River is running all over the city of Nanded, and we found that some of the sites of river which is directly come in contact with anthropogenic activity are highly contaminated. To find out the actual pathogens, its identifications and characterizations, we took some of the water samples from different locations of Godavari River. Green mat of algal bloom on running and stagnant water can be easily observed by just a single look from the bridge. Godavari river is full of water and it is evergreen whole year. We observed that, the zone or sites where these green mats of algal blooms are highly contaminated regions, it can be easily can recognized by its really bad odor. The sample taken from contaminated river site are analysed through several microbiological identifications test. In the present investigations we found that the collected samples were contaminated with *Bacillus megaterium*, *Escherichia coli*, *Kleibsiella*and sometime presence of *Vibrio* also detected. Among all collected samples *B. megateriu*mis most dominant bacterium species.

Keywords:*Pathogens, water-borne diseases, Godavari River*

OPMB-6

PREDOMINANCE OF *SALMONELLA, SHIGELLA AND E.COLI* IN VEGETABLES OF VARIOUS MARKETS IN AURANGABAD CITY, MAHARASHTRA.

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ABSTRACT

The present study was carried out to evaluate some vegetables sold in the markets of Aurangabad city, Maharashtra (India) for human consumption by investigating whether they harbour bacteria. A total of 150 different fresh vegetable samples were analyzed for the enteric pathogens on EMB, XLD and MacConkey's Agars and found that 53(35.33%) harboured bacterial isolates. The food pathogens were identified by the conventional methods. Incidence of *E.coli* was maximum (33%) followed by *Salmonella sp*. (28.5%) where as the *Shigella* showed less incidence (18%). Among all the collected vegetables, tomato was the highest contaminated. Findings in the study indicated that poor handling practices and risks presented to consumers at point- of- sale. There is need to educate the vendors and consumers on good sanitary practices during processing, display and sale of vegetables.

Keywords*: Fresh vegetables, enteric pathogens, point-of-sale, sanitary practices.*

OPMB-7

ISOLATION AND IDENTIFICATION OF KERATINASE PRODUCERS

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ABSTRACT

Keratinases [EC 3.4.21/24] are a class of extracellular inducible proteolytic enzymes. Keratinases can specifically degrade keratins, which are insoluble proteins found in feathers, wool, human hair, hooves, beaks, and nails. In addition to its ability to degrade keratinaceous substrates, keratinase can also degrade soluble proteins such as casein, gelatin, and bovine serum albumin. Keratinase has a wide range of industrial applications such as in the making of animal feed supplements, as a detergent additive, in leather processing, in medicine for treating acne and callus removal, in preparation of fertilizers, etc.Samples of soil and rotting feather waste were used to isolate keratinase-producing isolates. Keratinase producers were enriched using Feather Basal Medium (FBM). Primary screening was carried out on milk agar plates. The secondary screening was performed by determining the percentage of feather degradation using the gravimetric method and by assaying the keratinase activity in cell-free supernatants using chromogenic keratin azure substrate. Electron microscopic studies were carried out to observe structural changes on the surface of feather keratin. Identification of the isolate was carried out using 16s rDNA sequencing

Keywords: *Keratinase, Feather degradation*

OPMB-8

OFF-SITE BIOREMEDIATION OF WASTEWATER EFFLUENT WITH ISOLATED ARTHROBACTER AND THEIR CONSORTIUM AND EFFECT OF BIOREMEDIATED EFFLUENT ON GERMINATION OF LEGUME SEEDS AND ON PLANT GROWTH-PROMOTING MICROORGANISMS (PGPM)

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ABSTRACT

Off-site bioremediation techniques involve excavating pollutants from polluted sites and subsequently transporting them to another site for treatment. The all-pervasive nature of *Arthrobacter* coupled with their ability to degrade a wide range of organic and inorganic pollutants, polyaromatic hydrocarbons, herbicides, and pesticides, makes them useful in wastewater remediation. The most widespread reuse of waste waters has been for agricultural purposes, i.e., discharges after varying degrees of treatment for irrigation of crops. In this study, off-site bioremediation of the untreated industrial waste effluent (common pool) was carried out, using *Arthrobacte*r isolate A11and, A40, identified by 16SrRNA sequencing and their consortium. The effect of bioremediated effluent on the germination of seeds and on the growth of some selected plant growth-promoting microorganisms (PGPM) was also studied.The wastewater sample was collected from the Badlapur sewage treatment plant in Thane District, from a pre-treatment location. Around 20 litres of effluent were taken in the four bioreactors. The identified *Arthrobacter* isolates A11and A40, and their consortium was inoculated with 2% culture as inoculum in Bioreactors numbered 1,2,3,4, and Control- water effluent sample without any culture. Different physicochemical parameters checked were color, odour, temperature, COD, BOD, total solids (TS), total suspended solids (TSS), dye decolorization, Chromium, and Acetonitrile estimation, before and after incubation for up to 48 hrs. The results showed a significant reduction/decrease of chromium and acetonitrile, TS, TDS, COD, BOD, and dye decolorization from 90 to 95%, after bioremediation. TSS increased up to 70%. The seeds of *Vigna radiata* (green moong) absorbed bioremediated water and swelled, the first step of seed germination, when incubated for 48 hours.

OPMB-9

LACTOBACILLI PROTEINS (PARTIALLY PURIFIED) TO SERVE AS A POTENT POST-HARVEST BIOPRESERVATIVE FOR TOMATOES

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ABSTRACT

The tomato (SolanumLycopersicum) is one of the world's most popular fruits. Despite its nutritional, economic, and health importance, tomato production is hampered by post-harvest losses, limiting consumer access to high-quality produce. Spoilage-causing organisms (particularly *Aspergillus sp*. and *Staphylococcus aureus*) result in significant waste and economic loss. This laboratory-level study aimed to investigate the potential of a partially purified protein (PPP) solution based on a combination of lactobacilli to increase the shelf-life of the tomato at room temperature Following the validation of the PPP's antimicrobial potential on *Aspergillusniger* and *S.aurues* by agar well diffusion assay, tomato fruits were divided into sets of control (room temperature), control (refrigerated), coated with Staphylococcus aureus, coated with PPP solution, and infected with *S.aureus* and coated with PPP solution. Except for the refrigerated control, all the fruits were kept at room temperature from May to June 2022. After 20 days, the uncoated tomato fruits' diminishing weight at room temperature was 38.88% greater than the PPP-coated set of fruits. Similarly, decay and bacterial load on uncoated fruits were 88.31% and 40.91% higher, respectively, than on PPP-coated fruits. This study suggested the scope for further studies on the potential of partially purified proteins to be used as bio preservatives for post-harvest storage of tomatoes.

OPMB-10

IDENTIFICATION OF QTL CONTROLLING SEED YIELD AND ITS COMPONENTS IN BLACKGRAM (*VIGNA MUNGO* (L.) HEPPER)

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ABSTRACT

The study was undertaken to identify the quantitative trait loci (QTLs) governing yield and its related traits using 180$F_{2:3}$ populations derived from the cross TAU-1 (High seed weight) × LBG-17 (low seed weight). The population was grown under field conditions using augmented design in two locations during *Kharif* 2019. A total of 63 polymorphic markers were assigned to eleven chromosomes of blackgram with threshold LOD of 3 covering 2726.02cM with an average density of 43.27 cM. QTL analysis using phenotyping and genotyping information identified a total of 9 QTLs. Of these, a major QTL for seed yield and number of pods per cluster was detected on LG 4 at 180.00cM and 178.00cM respectively, flanked by the markers, VrCSSSR2 and CEDG282 with an interval of 22.00cM and 41.00cM, and explained 15.71 and 14.28% of total phenotypic variation. The mapped QTLs for yield and yield components in present experiment can be used for marker-assisted selection (MAS) and genomic selection (GS) breeding programs.

Keywords :*Blackgram, Yield, Yield components, QTL, SSR.*

OPMB-11

ISOLATION OF ALKALINE PROTEASE PRODUCER FROM ALKALINE SOIL

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ABSTRACT

Isolation and Characterization of efficient Alkaline protease producer.Soil sample were collected fromTuppa VillageNanded on 25th June 2021.Abiotic characters of sample were studied such as nutrient content, pH and EC. Sample were used for isolation of efficient Alkaline protease producer. ActiomycetesIsolation Agar, Starch Casein Agar media were used for isolation. Actinomycete Isolation Agar media were supported highest growth of alkaline protease producer.Most efficient alkaline protease producer was given name code as GK1. It was Gram positive long road actively motile in nature. It was Catalase, Amylase, Protease, lipase positive and further used for fermentation of Sugars.

Keywords: *Tuppa, Alkaline protease producer, Actinomycetes*

OPMB-12

ISOLATION, CHARACTERIZATION AND BIO-CONTROL OF PHYTOPATHOGENS CAUSING CITRUS CANKER.

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ABSTRACT

Citrus canker is a major devastating disease of citrus which mostly infects the citrus species and is caused by the causal agent *Xanthomonasaxonopodispvcitri*. This disease causes a huge economic loss to the farmers and also to the citrus industries relying on citrus products. The management of the disease needs expensive and eco-hazardous agrochemicals and hence there is strong need to identify an ecofriendly, economic procedures to overcome the problem of citrus canker in citrus. In view of this, the samples from infected citrus plant parts like fruits and leaves were collected from Pune district of Maharashtra. Isolation of phytopathogenswas carried out from infected leaves and fruit samples. Two isolates were obtained from infected citrus leaves (CL1and CL2)while one was isolated from infected citrus fruit (CF1). The isolates were characterized morphologically and biochemically.The results suggested that the isolates probably belong to the genus *Xanthomonas.* Thepathogenicity of the isolates was confirmed by infecting the heathy plant parts.Further, effect of various cow products was investigated for their antagonistic effect on selected phytopathogens.In vitro assays were performed using indigenous cow (Khillar) products like milk, whey(CW) separated from curd, urine and dung. Comparative studies were carried out using buffalo milk, whey (BW)and goat milk and whey (GW). Our observations indicated antagonistic activity of different whey samples in the order CW>BW>GW. These resultsare very encouraging and would lead to undertake more studies on safe and effective control measures on citrus canker.

OPMB-13

EXPLORATION OF *MICROCOCCUS LUTEUS* BIOCHROME FOR HEALTH CARE APPLICATIONS.

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ABSTRACT

Biological pigments procured from plants, animals, and microbes are cumulatively referred to as Biochromes. They have been receiving considerable accolades for the beauty we perceive in nature to eye pleasing color glossary. Besides their diverse color glossary, biochromes are also receiving substantial recommendations as they possess functional attributes. *Micrococcus luteus,* an aerobic bacterium, expressing yellow pigmentation was isolated from garden soil ecosystem. Several chemical, spectroscopic, and chromatographicanalyses confirmed its carotenoid nature. Antioxidant activity, which hasimmense positive health care implications against stress and degenerative diseases, was expressed by the procured carotenoid. The carotenoid under investigation expressed antioxidant activity comparable to ascorbic acid against DPPH, ABTS, and H2O2.Moreover,*Micrococcus luteus*carotenoid also expressed UV light defensive feature as determined by the cling film assay and *Escherichia coli* as an indicator organism. Several formulations in form of gel, lotion, and cream were prepared using different concentrations of *Micrococcus luteus*carotenoid. All the formulations were defensive against UV light. Sun Protection Factor(SPF) as calculated mathematically and spectrophotometrically was found to be in the range of 3.1 to 8.0.

Keywords: *Biochrome, Carotenoid, Antioxidant Activity, UV light Defensive, SPF*

SECTION-F
ORAL PRESENTATION, OTHER SCIENCES

OPSC-1

PRODUCTION OF PECTINASE FROM BACTERIA ISOLATED FROM UNAPDEV HOT SPRING

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An efficient thermostable pectinase producer was isolated from the hot water spring of Unapdev and identified. Microbial pectinases are very helpful in various applications. These are used especially in food industry for clarification of juice and also in degumming of fibres. Pectinases extracted from thermophiles are more beneficial than their mesophilic counterpart. In present investigation hot spring named as Unapdev was explored and water samples were collected. Using these samples, efficient pectinase producers were isolated and characterized using microscopic and culture dependent techniques. Two efficient pectinase producers were isolated and identified as *Bacillus licheniformis* and *Bacillus halodurans*. Pectinase production was carried out using inexpensive substrates. Fruit peels were observed as useful and economic substrate. Pectinase was partially purified by centrifugation and characterized. Crude enzyme was catalytically active at 65^{o}C.

Keywords: *Thermostable pectinase, Unapdev, pectinolytic*

OPSC-2

ULTRASONIC INVESTIGATION OF BINARY LIQUID MIXTURES AT DIFFERENT TEMPERATURES USING DMSO

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Abstract:

Acoustic and thermodynamic investigations have been carried out over wide range of temperatures ranging from 295.15 K to 315.15 K and varied concentrations based on density, viscosity and ultrasonic velocity. The present investigation has been done for binary liquid mixtures of primary alcohols with DMSO as a common solvent. The parameters like intermolecular free length, isentropic compressibility, intermolecular free length, molar volume have been calculated. Joyban-Acree model is used to correlate insights of non-ideal behavior of intermolecular interactions and liquid mixtures. The deviation in viscosity, excess molar volume and excess isentropic compressibility have been correlated by means of Redlich-Kister polynomial equation.

Keywords: Acoustic, volumetric, deviation, validation, intermolecular interaction

OPSC-3

STUDY OF GROWTH PERFORMANCE AND IMMUNOMODULATORY ACTIVITY OF PEPPERMINT (*MENTHA PIPERITA*) ON MAJOR CARP FINGERLINGS

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ABSTRACT

This study was aimed to assess the potential effects of *Menthapiperita* on immunomodulatory activity in major carp fingerlings. *Menthapiperita* (also known as peppermint) is one of the world's oldest medicinal herbs and a native genus of the Mediterranean region.andthe most well-regarded plants in India. In Ayurveda, it is used. The results indicate that Menthapiperitahas some ability to activate the immune system of *labeorohita* by increasing serum total protein. Menthapiperitasupplementation to fish feeds appears to have beneficial effects. More research is necessary to evaluate Peppermint supplementation in *labeorohita* fingerling diet according to its digestibility, amino acid profile and content of anti-nutritional factors.

Keywords: *feed supplement, nutrient retention,Menthapiperita*

OPSC-4

INFLUENCE OF PERSONAL VALUES AMONG UNDERGRADUATE COLLEGE ADOLESCENCE FROM MEERUT CITY, UTTAR PRADESH, INDIA

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ABSTRACT

Present study is an attempt, to check the Influence of personal values among undergraduate college adolescence. Study was assessed by personal values inventory constructed by (Dr. G.P. Sherry and Prof. R.P. Verma). Random Sampling Technique was drawn on undergraduate adolescence (60 male and 60female) students from different colleges of Meerut city, Uttar Pradesh. Data was analyzed by Mean-Standard Deviation and 't' test method. After analysis the current investigation with regards to gender influence conclude that only power value shows significant difference between male and female undergraduate adolescence. Further study reveals that personal values dimensions such as Religious value, Social value, Democratic value, Aesthetic value, Economic value, hedonistic value, family value, health value has no significant difference between personal values of male and female undergraduate adolescence. Therefore there are many factors which influence the personal values of adolescence, nevertheless in this study gender shows the significant difference only in power value out of ten dimensions of personal values among undergraduate male and female adolescence.

Keywords: *Personal Values, Influence, Adolescence, Undergraduate, College Students*

OPSC-5

INFLUENCE OF Ni^{2+} IONS ON THE STRUCTURAL, OPTICAL AND WETTABILITY PROPERTIES OF $Co_{1-x}Ni_xFe_2O_4$SPINEL FERRITE THIN FILMS DEPOSITED BY SPRAY PYROLYSIS METHOD

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ABSTRACT:

In the current study, cobalt nickel ferrite (CO_{1-X} $Ni_XFe_2O_4$) is used. The structural, optical, and wettability features of the produced cobalt ferrite thin film were studied and optimized before being placed on glass substrate by spray pyrolysis, investigations with the aid of UV-VIS spectroscopy and X-ray diffraction (XRD). At room temperature, the XRD pattern was measured in the 2ɵ range of 20 to 80 degree.The cubic spinel structure is represented by all of the reflections in the XRD pattern. The structural characteristics that were computed from the XRD data, such as the lattice parameter and X-ray density, matched the conventional JCPDS data quite well. The generated cobalt ferrite thin film's nanocrystalline nature was confirmed by the crystallite size, which Scherer's formula determined to be 28 nm. The near edge band emission was visible in the PL spectra between 690 and 740 nm in wavelength. With increasing the Ni^{2+} content x, it was discovered that the optical band gap computed using the Tauc plot was in the range of 2.43 eV to 2.61 eV. It was discovered that the contact angle ranged from 55.99^0 to 87.50^0, indicating the hydrophilic nature of all the samples.

Keywords:*Cobalt Nickel Ferrite, Spectroscopy, Pyrolysis.*

OPSC-6

EFFECTS OF AIR POLLUTION ON HUMAN HEALTH: A GEOGRAPHICAL ANALYSIS

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Abstract:-

Pollution occurs when contaminants are introduced into the natural environment, causing negative changes. Anything introduced into the atmosphere by humans that has a negative impact on the environment is considered air pollution. When chemicals or biological matter that can harm humans or other living things are released into the atmosphere, it is known as air pollution. Carbon dioxide, carbon monoxide, sulphur dioxide, and small particles pollute the air as a result of the combustion of various materials, particularly coal. These pollutants harm people by causing illness, but they also harm the environment by contributing to global warming. The lungs are the most affected by the major air pollutants. The eyes, nose, and throat are irritated by sulphur dioxide. When breathed, it can lead to serious lung conditions such asthma, bronchitis, emphysema, and lung cancer. Nitrogen dioxide causes emphysema by damaging lung tissue and restricting airways. It also causes the development of ozone, which may eat holes in lung tissue, exacerbate asthma, and put patients at risk for respiratory illness. Carbon monoxide, which is odourless and undetectable, can cause heart and central nervous system damage, as well as headaches, dizziness, convulsions, and death.

Many contaminants are significant contributors to human illnesses. Air pollutants such as nitrogen oxide, sulphur dioxide, volatile organic compounds (VOCs), dioxins, and polycyclic aromatic hydrocarbons (PAHs) are all dangerous to people. When breathed in at high concentrations, carbon monoxide can cause immediate poisoning. Natural catastrophes and climate change caused by pollution have an impact on the geographic spread of many infectious illnesses. Only public awareness combined with a multidisciplinary approach by scientific specialists will be able to handle this problem; national and international organisations must address the threat's rise and suggest long-term remedies. The current article focuses on effects of air pollution on human heath in India.

Keywords : Air pollution, pollution, Pollutants, Human health, Carbon dioxide.

OPSC-7

BIOCHEMICAL STUDIES ON THE COMBINED EFFECT OF VEGAN DIET PLAN AND INTERMITTENT FASTING ON BLOODURIC ACID LEVELS IN HUMAN BODY.

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Abstract:

Uric acid is the end product of purine catabolism, either due to endogenous degradation of nucleic acids orformed due to intake of foods withpurine content. Xanthine oxidase is an enzyme that converts xanthine to uric acid. The normal reference range of uric acid is 3.4–7.2 mg/dl (200–430 μmol/L) for men, and 2.4–6.1 mg/dl for women (140–360 μmol/L). Normal excretion of uric acid in urine is 270 to 360 mg per day. Excess consumption of purine rich foods, overactivity of xanthine oxidase and lesser excretion of uric acid by kidneys causes its accumulation that can in-turn cause increased levels of uric acid in blood, leading togouty arthritis.

In the present studies, volunteers in the age group of 40 to 60 years were chosen.A diet plan that included detoxjuiceperiod of 7 days and a specific vegandiet for a period of 90days were designed along with intermittent fasting (eating window of 8hours and fasting window of 16hours) that were followed by the volunteers.

Volunteers were segregated into three groups-Control, Diet without intermittent fasting and Diet with intermittent fasting.

Regular monitoring of blood uric acid levelswas undertaken byenzymatic method involving specific oxidation of uric acid by uricase to form allantoin. The differential absorbance of these substances at 293 nm were studiedfor all the groups and compared.

Marked decrease in pain symptoms were observed during the detox phase of 7 days.Levels of blood uric acid reached from values higher than 6mg/dl to normal range of 3 to 4mg/dl within90days with specified diet plan and intermittent fasting group only.

OPSC-8

"TEXTURIZATION METHODS OF MEAT ANALOGUE-A REVIEW"

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Abstract

Meat analogue is meat like substance made from various plant based sources to imitate meat or to replace meat in consumer's diet. Common terms given to meat analogue are meat substitute, meat alternative, vegan meat, fake meat. Common meat analogue available in market that is soy chunks which is made by texturization of defatted soybean meal, soy chunks has quality (texture and protein) similar to meat which can be easily chosen by vegetarian people in their diet. Meat analogue produced from different plant based protein sources will have good texture because plant contains more fibre and protein content. For example Mushroom used as meat replacer in human diet because of protein, fibre content and umami flavor where as physicochemical characteristics of chickpea found to replace meat due to high protein content but normally use as binder and extender in food product preparation. Jackfruit is also having good fibrous texture and protein content that can be used for meat analogue production. In this paper, the traditional and current available meat analogue processes are discussed.

Keywords: Meat, meat analogue, sources, texturization methods

OPSC-9

STUDY OF FUZZY MATHEMATICAL MODELS FOR STRESS RESPONSES IN ANXIOUS HUMANS

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ABSTRACT

The research paper is based on the analysis of the fuzzy mathematical models of cortisol secretion under the human stress condition. However, cortisol is the stress-related hormone in the human body also an effective steroid hormone that controls stress in humans. On the other hand, the signal of the cortisol released is condemned by the hypothalamus and this hormone is secreted through the adrenal glands located above the kidney. However, if the cortisol level is imbalanced then it can result in stress and depression in the human, this study also sheds light on the eating disorders which are also primary causes of the distance in the cortisol.

Keywords: *cortisol, stress, fuzzy mathematical models, adrenal glands*

OPSC-10

OPTIMIZATION OF CELLULASES AND XYLANASE PRODUCTION TO ETHANOL REPRESSION BY NEWLY ISOLATED BY THE FUNGUS *TRICHODERMA ATROVIRIDE*AD-130FOR BIOMASS OF *SACCHARUM MUNJA*

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Abstract

The objective of the present work was to evaluate the *Saccharummunja*as a substrate for the production of hydrolytic enzymes (cellulases and hemicellulases) of 100 strains of filamentous fungi under conditions of solid growth.Attempt has been made to optimize the cultural and nutritional conditions for cellulases and xylanase production by *Trichodermaatroviride*AD-130 under submerged fermentation. The lignocellulosic biomass of *Saccharummunja* was used as carbon source for cellulases and xylanase production. The results of present study revealed that maximum production of FPase, CMCase, β-glucosidase and xylanase by the fungus *Trichoderma atroviride*AD-130 grown under submerged cultivation at pH 6.0 has been found to be 1.01, 2.69, 0.82 respectivelyon5th day and xylanase82.99 U/mL on 4th day at 2%(w/v) substrate concentration, 30°C,170rpm and initial pH6.0 of the basal medium under SmF. Use of low costlignocellulosic biomass of *Saccharummunja*as substrate make the process of enzyme production more cost effective. Further investigations are required to enhance the cellulolytic enzyme activity by means of carbon and nitrogen sources from submerged fermentation.

Key words*: Trichodermaatroviride AD-130, Saccharummunja, Cellulase, Xylanase, Ethanol.*

OPSC-11

SYNTHESIS, CHARACTERIZATION OF Fe_3O_4@ SIO_2 ANDIT'S APPLICATION FOR REMOVAL OF METHYLENE BLUE DYE

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Abstract-

In this study, we successfully synthesized core shell structured Fe_3O_4@SiO_2 nanocomposites by microwave assisted solvothermal method using sodium silicate (Na_2SiO_3), which is more suitable than the conventional silane precursor TEOS (tetraethyl orthosilicate). In the process of surface coating of particle to form a core–shell structure with Fe_3O_4, the Na_2SiO_3 was neutralized with aq. HCl to form silane groups, and the resulting silane groups combined with hydroxyl groups (OH^-) present on the surfaces of the Fe_3O_4 nanoparticles. Then, the Fe_3O_4 nanoparticles and Fe_3O_4@SiO_2 composite nanoparticles were characterized by using X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR), scanning electron microscope (SEM). The SEM and PXRD results show that the synthesized nanocomposite has a semispherical structure with an average particle size of 16-20 nm and excellent magnetization properties (27.9 emu/g). The synthesised Fe_3O_4@SiO_2 nanocomposites also aiming to remove methylene blue (MB) from aqueous solution. This adsorbent combined the magnetic property of magnetic Fe3O4 with the strong adsorption performance on methylene blue. The adsorbent exhibited a typical superparamagnetic, which could be rapidly separated from aqueous solution under external magnetic field. When the initial concentration of MB was 24 mg/L, the maximum adsorption capacity of methylene blue at room temperature was 30.14 mg/g within 30 s at pH 11.

Keywords: Fe_3O_4, Fe_3O_4@SiO_2, structure, nanocomposite, Microwave, methylene blue.

OPSC-12

ONLINE SHOPPING- A STUDY WITH REFERENCE TO MOTIVATING FACTORS PERCEPTION AWARENESS AND SATISFACTION OF CUSTOMERS IN JAMMU CITY.

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Abstract

Online shopping is the biggest part of customer attraction as well as customer perception, awareness and satisfaction. In this technological world, most of the companies use online shopping for satisfying the customer and for attracting more customers as well. This research paper is based on the topic of the impact of online shopping on improvising the customer perception, awareness satisfaction in the online shopping. The focus of this research paper has been to identify the impact of online shopping on the customers. Apart from this aim, the research paper also has some other aims such as to determine the customers perception, awareness satisfaction towards the products as well as services of the customers. The research study also aimed at identifying the impact of online shopping on the improvement of customer perception, awareness satisfaction in the eyes of customers. The researcher has used positivism philosophy, descriptive design, deductive research approach and primary data collection method for conducting the research. From the findings of the study, it could be evident that online shopping helps the organizations to enhance their business opportunity as well as it will help the organizations to enable more customer satisfaction in the organizational context. It has also been evident from the study that online shopping has numerous effects on business of the organization and as per the analysis, it can be referred that online shopping helps the organization to grow their business which will enable more financial benefit in the organizational context.

Keywords: Online Shopping, Customer Satisfaction , business opportunity.

C-13

NTHESIS OF NANO-DISPERSIBLE AZO PIGMENTS FROM LIGNIN: T NEW APPROACH OF EPOXY-POLYAMINE COMPOSITE COATING

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Abstract:

diazo coupling reaction was imparted on chemically inert lignin isolated from natural reso
ı was activated and coupled with the diazotized aniline, *m*-nitroaniline, *p*-nitroaniline- a
ine gives organic pigments. The synthesized organic pigments were characterized by FT-I
and UV-Vis spectroscopy. The continuous increase in particle size of pigments confirms ac
ızotized salt by coupling reaction with lignin. Further the dispersing ability of these co
ents were exploited in polymer matrix. Epoxy-polyamine cross linking system was doped
ence percentage of pigments and coated on mild steel metal surface. The morphology of com
nderstood by SEM, particle size, DSC, TGA analysis. It was found that hiding power of anili
oaniline based azo pigments were more than *p*-nitroaniline and *p*-anisidine based azo pig
ıal properties as well as water contact angles of coatings were improved with pi
ntration. The chemical resistivity of coating was improved with the increasing % of lignin bas
ent. Lignin based azo pigment has great potential to replace other metal oxide pigment an
le strategy for utilization of lingo-cellulosicbio-waste material.

OPSC-14

SYNTHESIS, CHARACTERIZATION AND ANTIOXIDANT ACTIVITYOF NICKEL OXIDE NANOPARTICLES

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Abstract:

Nickel Oxide nanoparticles were synthesized by the reduction of Nickel Sulphate using Sodium borohydride. The synthesis of Nickel Oxide NPs was confirmed by UV-Visible spectrophotometry and the average particle size was determined by X-ray diffractionspectroscopy(XRD). Morphology of the synthesized Nickel Oxide NPs was identified using Scanning Electron Microscopy (SEM). Further characterization of Nickel Oxide NPs was done to study its nature by Fourier Transform Infrared (FTIR) spectroscopy. Antioxidant activity of Nickel Oxide NPs were evaluated Spectrophotometrically using modified DPPH radical scavenging assay.

Keywords: Nickel Oxide nanoparticles, XRD, SEM, Antioxidant

OPSC-15

GREEN SYNTHESIS CHARACTERIZATION AND BIOLOGICAL APPLICATIONS OF TIO_2 NANOPARTICLE

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ABSTRACT

Current study describes the green synthesis of Titanium Dioxide (TiO_2) nanoparticles using aqueous Tarenna asiatica fruit extract.X-ray diffractometer (XRD), Fourier-transform infrared spectroscopy (FTIR), Scanning electron microscope (SEM), and Energy dispersive X-ray spectroscopy (EDX) techniques were employed to characterize Tarenna asiatica Fruit Extract TiO_2 nanoparticles (TAFE TiO_2 NPs). The purity of TAFE TiO_2 NPs were confirmed using EDX. The TAFE TiO_2 NPs found to be irregular in shape as revealed by the scanning electron microscope image. TAFE TiO_2 NPs showed antioxidant property by scavenging DPPH free radicals in a dose dependent manner with an IC_{50} value of 80.21µg/µl. To ascertain the observed antioxidant potential of TAFE TiO_2 NPs RBC was used as an in-vitro model system. Interestingly, TAFE TiO_2 NPs significantly ameliorates allthe stress parameters such as, lipid peroxidation (LPO), protein carbonyl content (PCC), total thiol (TT), superoxide dismutase (SOD), and catalase (CAT) in sodium nitrite ($NaNO_2$)-induced oxidative stress in RBC. In conclusion, TAFE TiO_2 NPs showed in-vitro antioxidant activity by regulating the stress markers.

***Keywords**: Tarennaasiatica, TiO_2NPs, Oxidative stress, sodium nitrite*

OPSC-16

STRUCTURAL, MORPHOLOGICAL, OPTICAL AND ELECTRICAL PROPERTIES OF $NIFE_2O_4$THIN FILM BY SPRAY PYROLYSIS METHOD.

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Abstract

In the present work, $NiFe_2O_4$ thin film has been prepared by chemical spray pyrolysis method onto amorphous glass substrate at constant substrate temperature of 200^oC. The thin film was characterized for structural, morphological, elemental, optical and electrical properties by using X-ray diffraction, Field emission scanning electron microscopy, Energy dispersive X-ray spectroscopy, UV-Vis spectrophotometer and DC two point probe method. The thickness of thin film observed in the range of 417 nm. XRD study revealedof cubic structure symmetry of the Fd-3m (227) space groupwith crystallite size of 16nm. Scanning electron microscopy study showed the uniform, compact, mesoporous flakes like surface morphology. Energy dispersive X-Ray analysis study confirmed the presence of Ni, Fe and O in $NiFe_2O_4$ thin film which was stoichiometric. The band gap energy curve of thin film indicates direct allowed band gap transition with band gap energy (Eg) of 2.3 eV. The two probe DC conductivity confirmed $NiFe_2O_4$ thin film was semiconducting in behavior.

Keywords: *Spray Pyrolysis; Thin Film; XRD; FESEM; UV-Vis spectrophotometer.*

OPSC-17

Creative And Sustainable Utilization of Corn Husk for Economical Support in Rural Areas

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Abstract:

Corn is one of the major food crops of our country, in fact, it is cultivated inn all the states except Kerala. It also produces agro waste like wheat, rice, sugarcane etc. which is known as corn husk that is the outer covering layer of the corn cobs. Traditionally this waste is also used for fuels but still major part of it burned by people which adds up to air pollution. This paper focused on the need of awareness for the use of corn husk in rural areas so the objective of this study was to find out the creative and innovative solutions which may help in income generation in rural areas. Previous studies were used to find out the creative and successful solutions to utilize the corn husk for economical support. Corn husk fibres can be used to make yarn in textile industries in broader way. Farmers directly can make contacts to these industries to sell husk as raw material. Previous studies analysed that strong enough paper can be developed with this waste. Cornhusk fibres can be used to make different useful products like carry bag, dresses etc. corn husk can directly be used by the weaving process by which different artifacts, handicraft products can be developed.It has a wider scope in international markets.Completely biodegradable products can be developed by this corn husk. Corn husk can be coloured differently easily so that more attractive products can be made as per market demands. These solutions will help to rural people but for this proper knowledge and training is important for them. With this they can help themselves and this can be successful with the help of extension workers.

Keywords: Corn husk, Innovative handicraft products, Paper making, Yarn making

OPSC-18

EFFECT OF PHYSICAL, CHEMICAL AND ENZYMATIC TREATMENT ON FUNCTIONAL PROPERTIES OF GLUTEN – A REVIEW

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ABSTRACT

Gluten is a rubbery mass which is leftover after washing of dough under running tap water. On the basis of solubility in alcohol the gluten can be divided into two parts: the soluble is *gliadin* and insoluble *glutenin*. The gluten plays key role in the development of food products especially in bakery products. The functional properties of gluten was studied on the basis of *Elasticity, Emulsifying capacity, Foaming property, Rheology, Water and Oil holding capacity.* The wheat grain was found to be richest source of gluten among all. Depending upon the presence of puroindoline proteins. The wheat is divided into, *Hard wheat* and *Soft wheat* whereas, Hard wheat is used for the manufacturing of Bread, Noodles and Pasta and Soft wheat is used for making of Cake, Cookies and Biscuits. The functional properties of glutens are studied by Ultrasound *Treatment, Chemical treatment and Enzymatic treatment.* The frequency of 20 KHz for 10 min is generally given in ultrasound treatment to gluten. The use of chemicals like L- Ascorbic acid Folic acid was used to improved gluten quality. The effect of diastase enzyme, acid protease and proteolytic enzymes were studied on gluten by adding in concentration of 5ppm to 30ppm. Also the combination of physical, chemical and enzymatic treatment was studied on gluten improvement. Together these all single and combination treatments are found to be useful in improving the functional properties of gluten by acting on its disulphide bonds, cross- linking bonds, covalent and non- covalent bonds by developing a strong network within gluten molecules.

Keywords:*Gluten, Wheat, Functional properties of gluten, Ultrasound treatment, Enzymatic treatment and Chemical treatment*

OPSC-19

SELF- REPORTED DIETARY BEHAVIOR AND BLOOD PRESSURE CONTROL AMONG HYPERTENSIVE PATIENTS.

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Abstract-

Hypertension is a major contributor to cardiovascular and renal diseases not only in India but worldwide. Studies prove that patients need to focus on their health behaviors along with antihypertensive medication to efficiently manage their hypertension (Stage 1 and Stage 2).There is a strong correlation between changing lifestyle factors and increase in hypertension.This is descriptive-survey based study. 117 hypertensive patients were enrolled in the study and were asked to fill a self-structured questionnaire: demographic characteristics, food frequency questionnaire, medication details. An informed consent was signed by the participants before filling the questionnaire. Data was entered into excel and analysis was done.

Key words: Blood pressure, dietary control, medication, high salt foods

OPSC-20

"DEVELOPMENT OF SUPPLEMENTARY PROTEIN BASED CAKE FROM COMPOSITE FLOUR"

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Abstarct

Baking industry is considered as one of the major segments of food processing in India. Baked products are gaining popularity because of their availability, ready to eat convenience and reasonably good shelf life. Cake is one of the most common bakery products consumed by people in the world. Supplementation of foods is current because of increasing nutritional awareness. Consumers need to eat high quality and healthy foods known as functional foods, which contain ingredients that provide additional health benefits beyond the basic nutritional requirements is therefore the trend is to produce specially bakery products need from whole grain flour and other functional ingredients known as health foods.Walnut seed flour has a good potential for use as a functional ingredient agent in bakery products because of its high water absorption capacity, solubility, bulk density and rapid viscosity characteristics. Soya beans contain 30-40% protein with good source of all indispensable amino acids. Ragi has best quality protein along with the presents of essential amino acids, vitamin A, vitamin B and phosphorous. Green gram contains approximately 23.86-27% protein, 1.15%fat, 62.62%carbohydrates, 16.3% fiber, 6.60% total sugars, 9.05%water.This shows that the composite flour is rich in protein and fat and can serve as a protein supplement.The main objective of this research is to formulations of cakes prepared from four different proportions (T_0, T_1, T_2, T_3) of wheat, ragi,walnut,green gram flour are given in other ingredients like butter, milk, egg, baking powder, vanilla essence were added to each of these formulations of cake preparation.The developed product was analysis of chemical, microbial and for sensory evaluation by nine point hedonic scale. In T_2 sample wheat 60%, ragi 20%, walnut 10%, green gram 10%, and nutritious cake has high increase carbohydrate compared T_0 sample it has carbohydrate 28%, protein 8.17%, fat 1.8%, fiber 2.37%, ash 1.56%. The result revealed that the sample T_2 which contain more acceptable in terms of chemical and sensory evaluation of developed product.

Key Words: *Cake, walnut, green gram, wheat, ragi*

OPSC-21

"UTILIZATIONOFCOCONUTFIBERANDCOCONUTSHELLINPREPARATIONOFINDUSTRIALADSORBENTANDITSINDUSTRIALAPPLICATION"

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Abstract

Coconut shell and coconut fiber are refined from coconut waste, and their abundance makethem desirable for industrial wastewater. The aim of this study is to examine the adsorptioncapacity and filtration capacity of coconut shell and fiber of industrial clean up and filtrationcapacity of industrial waste water. In the 21st century water pollution is a grave concern. Usingagricultural waste seems to be a promising approach. Non edible part of coconut like coconutshell and coconut fiber can be used for wastewater treatment and industrial absorbent. Variousstudiesshownthatpollutantssuchasheavymetals,industrials,organiccontaminants,pharmaceuticals can be successfully operated on to coconut biomass. This research has focusedon all the important studies reported on various coconut palm waste such as shell, fiber etc. forremediation of contamination and pollutant from waste water. Coconut shell and fiber powderwas used as a filter of industrial wastewater. The chemical composition of wastewater wasexamined. Material characterization and physicochemical properties was carried out by differentanalytical method including spectrophotometer, calibration, pH and EC meter, Nephelometer,GC-MS, ICP-OES, flame photometer to ensure that coconut waste was successfully used asindustrialadsorbent.Themainobjectiveofthisresearchistohighlighttheimportanceofutilization of coconut shell and fiber in industrial wastewater, for remediation of wastewaterpollution.

Keywords: *Utilization, Coconut shells Powder, Coconut Fiber Powder, Adsorbent, IndustrialWastewater.*

OPSC-22

"DEVELOPMENTOFIDLIPREMIX FROMBROWNANDLITTLEMILLET"

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Abstract

InstantPremix idliPowder isbecame trend and popular now-a-days because itdoes not require more time for preparation and time saving. Instant mix is the word which iswidely splet by the modern man to indicate the completion of any work quickly and therebysaving time. Brown rice is rich source of various bio-active compounds such as dietary fibers,γ-oryzonal,tochopherol,aminoacidsandminerals.Thecurrentresearchattemptwasstudiedtodetermine thenutritionalenhancementoffunctionalityoftheidlipremixpowderbyincorporating black gram and little millet in brown rice. This research main objective is toformulate instant idli mix powder and assess the chemical and microbiology parameters andits sensory attributes of instant idli mix powder. Brown rice idli is nutritious for healthbecauseofitsmorenutritionalbenfitswithitseffectstoreducehealthproblemsliketypeI&II diabeticand prevents gallstones. The three proportion were formulated in the proportion ofT1(100:50:50), T2 (80:70:100) and T3 (75:75:50). Thedeveloped product was analysis ofchemical,microbialandforsensoryevaluationbyninepointhedonicscale.Theresultreveledthatthes ampleT2whichcontained80:70:50wasmoreacceptableintermsofsensory parameters.Theproximateanalysislikeproteincontentreportedhigh8.09,fatcontent2.40,fiberconten t2.81,Ashcontent6.12,moisturecontent7.89andcarbohydrate 72.69. The result conclude that brown rice idli formulation T2 attained a high acceptability ofsensory characteristics itcould besuitablefor diet persons and diabeticpatients and itsshelflife timeperiodisfourmonth.

Keywords:*Premix,Brownrice,idli,littlemillet,blackgram*

OPSC-23

DEVELOPMENT OF HEALTHY COMPOSITE HERBAL MIX

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ABSTRACT

Herbs are plants with savory or aromatic properties used for flavoring, garnishing foo nedicinal and for fragrances (Yadav *et al.*, 2020). Herbs are beneficial for human health because t contains significant amount of micronutrients, vitamins, antioxidants, phytochemicals and fib hat may help to protect against degenerative diseases and micronutrient malnutrition (Gupta *et a* 012).Considering these importance properties of herbs, present study was conducted to develo mmune boosting herbal drink mix. Based on the review of literature different antioxidant ric erbs such as Amruthaballi (*Tinospora cordifolia*), Clove (*Syzygium aromaticum*), Dried ging *Zingiber officinale*), Indian borage (*Coleus amboinicus*), Honagone leaves (*Alternanthe essilis)*and Turmeric (*Curcuma longa*)were selected for the study. Herbal mix was standardized b sing different treatments (T1, T2, T3, T4) by varying the concentration of Amrutha balli and clo whereas other ingredients as kept constant. Developed herbal mix was analyzed for col stimation, antioxidant activity by different methods. Further developed herbal drink was subjecte or sensory evaluation for its acceptability. Developed herbal mix (T3) had highest antioxida ctivity in methanol extract by DPPH method compared to ABTSand FRAP method. Standardize erbal mix treatment (T3) had better L* (56.89) a* (1.88) b* (28.47) values compared to oth reatments. Sensory profile of herbal drink mix was found highest in treatment (T3) in terms ppearance (7.42), color (8.00), flavor (8.00), taste (7.85), texture (7.71) and overall acceptabili 7.57).Thus, it can be conclude that treatment (T3)herbal mix had highest antioxidant activityar ther micronutrients so it is helpful to fight against the free radicals in the body. Present days the s a great need of immune boosting herbal mix due to the pandemic situation. Hence, this can b sed as an alternative solution to overcome from covid 19 symptoms and to maintain healt ifestyle. This mix can be used not only for the preparation of herbal drink but also can be enriche dding to composite flour which assures consumption on daily basis.

Key words: Antioxidant activity, DPPH, FRAP, ABTS, sensory evaluation

OPSC-24
DEVELOPMENT AND EVALUATION OF PREMIXED WEANING FOOD FROM MULTI GRAINS"

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Abstract:
The aim of this study was to develop instant weaning mixes from locally-available and low-cost ingredients using response surface methodology and to assess their nutritional qualityand storage stability. Weaning mixes were processed using germinated of Quinoa, Fingermillet,PearlmilletandAmaranth.Theproportionofflourblendspreparedforweaningfood.Experiments were designed using response surface methodology (RSM) with fourindependent variables (Quinoa, Finger millet, Pearl millet and Amaranth) and eightdependent variables (bulk density, water absorption capacity, water solubility index, fibre,protein, potassium, iron and calcium). Optimized were 35.443 % Quinoa flour, 7.438 %Finger millet, 20.188% Pearl millet and 36.931% Amaranth flour. Flour mixed with sesameflourandsugartopreparethefinalweaningmixeswhichwerestoredforsixmonthsatroomtemperature.Fouroptimisedweaningmixeswerepreparedbymixing Quinoa,Fingermillet,Pearl millet and Amaranth flour, skim milk powder and sugar at different levels. The qualityattributes (functional properties, nutritional quality and in vitro protein digestibility) wereevaluated. Storage stability parameters [microbial content, and sensory evaluation] wereinvestigated during storage. All weaning mixes were acceptable for a period of six months.Weaning mixes were similar to the commercially available products in terms of qualityattributes and had considerably less cost. Such mixes with low cost, high nutritional valueand high storage stability can be used to overcome the malnutrition among children indevelopingcountries.

Keywords:*Amaranthflour,Fingermilletflour,Germinationprocess,Pearlmilletflour,Quinoaflour,Weaningfood.*

OPSC-25
INTERACTION ENERGY BETWEEN CYANAMIDE OLIGOMERS:A QUANTUM CHEMICAL STUDY.

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Abstract

Cyclic and ladder type hydrogen bonded cyanamide oligomers are studied using density functional theory method. Many-body interaction between different molecule and their contribution to the binding energy of a respective hydrogen bonded oligomers. Cynamide monomer shows the lowest energy at B3LYP/aug-cc-pvdz level among different method used here with the same basis set. Cyclic structures are more stable than the ladder. The nature of interactions between different molecules is studied using the many-body analysis approach. In cyclic oligomers not only total two-body energies, but higher body energies also contribute significantly to the binding energy of a respective oligomers.

Keywords: *Cyanamide oligomers, Many-body energy, DFT.*

OPSC-26

DEVELOPMENT OF WINE FROM UTILIZATION OF PINEAPPLE WASTE

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Abstract

Pineapple is one of the largest produced fruit in the world.Pineapple contains the 65% inedible portion.Wine production from pineapple peel is very good alternative to utilize the surplus and value addition. Pineapple peel contains the nutritional value that is vitamin C and bromelain enzyme which can build the overall immunity of the body, fight bacteria, help with cough, etc. The peels of the pineapple are helpful for teeth and bone strengthener, since it is rich in the manganese. Peel is great for oral health because the vitamin C can keeps the gum healthy.The other extremely beneficial enzyme in the peel is bromelain that is known to cut down. The main objective of this research is to develop wine from pineapple waste and its chemical and microbial study. The sugar and pH decreased while the alcoholic strength increased with increasing length of fermentation. Peel juice must be inoculated with selected yeast to enhance the quality of wine. In that research work on two different concentration (300gm & 600gm) of sugar are used and to develop two different wine for comparative study saccharomycesceriviaceaes. Result revealed that alcohol percent of both sample 6.40%, 11.38%, pH3.5& 3.6. Vitamin C 32.1mg & 47.8mg, Ca 3.142mg& 4.634mg,Mg 2.115& 2.254mg. Result concluded that sample 2 was acceptable result as per chemical parameter & also sensory evaluation for nine point hedonic scale. Work on shelf life of Pineapple peel wine by microbial analysis by plate count for Coliform bacteria, SPC and E-Coli the growth of that harmful microorganism is not detected and suitable for consumption for human being.

Key Word: Pineapple, Peel, Wine, Bromelain

OPSC-27

PLANT BASED NUTRITION: A SUSTAINABLE APPROACH

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Abstract

With the rising interest in climate change over recent years, there is a need for the most sustainable diet for the planet. A sustainable diet can be defined as one that is nutritious and healthful and has the lowest impact on the environment and food supply. There is no hard and fast rule about what makes a diet sustainable. However, some food items have a larger environmental impact than others. Therefore, reducing some of these high-impact foods can help to minimize our own environmental footprint on the planet.With the global population explosion and increase in wealth, there is an increased demand for foods of animal origin. Environmental data is rapidly accumulating on the unsustainability of current worldwide food consumption practices that are high in meat and dairy products.On the basis of a higher concentration of essential nutrients in animal products, meat and dairy were considered essential in large proportions for adequate nutrition in the daily diet, and consumption of plant-based diets was considered inadequate. This nutritional paradigm has changed in the past few decades as data now support that most plant-based diets are healthier than meat-based diets and yield greater longevity and lower chronic diseases among those who consume vegetarian diets. Natural non-renewable resources are becoming scarce, and environmental degradation is rapidly increasing.Plant-based diets in comparison to meat-based diets are more sustainable because they use substantially less natural resources and are less taxing on the environment. The world's demographic explosion and the increase in the appetite for animal foods render the food system unsustainable. "Going back" to plant-based diets will be the best way forward for a sustainable future.

Key Words:-*Sustainable, Demographic explosion, Plant based Diet*

OPSC-28

BACTERIOLOGICAL ASSESSMENT OF DRINKING WATER SOURCES IN PRIVATE AND GOVERNMENT SCHOOLSIN KURUKSHETRA, INDIA

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Abstract:

Water is necessary for the functioning of all life forms that exist on earth but due to rapid growth of population, advanced agricultural practices, industrialization, man-made activity, the quality of drinking water is being highly polluted with different contaminants. Contaminated water can transmit various types of diseases like diarrhea, cholera, dysentery, typhoid and polio. Water pollution affects all of us but children are likely to have higher exposure to drinking water contaminants. Thus contaminated water cause many deaths each year.Groundwater can be contaminated especially in areas of dense population where sewerage is inadequate or absent. The most common pathogen found in drinking water is bacteria due to their small size. Bacterial contamination of drinking water sources is the most common health risk. Bacteriologicalcontamination of drinking water can be found out by total coliform bacteria and this bacteria used for indication of water pollution. In this study, an attempt has been made to assess the present scenario of bacteriological quality of drinking water, levels of contamination between the source and point-of-use and finally analysis of the effects of contaminated water on children in government and private schools in Kurukshetra.The drinking water samples was analyzed for bacteriological parameters i.e. Total Coliform counts (TCC/100ML) [Most Probable Number (MPN) technique] as per the methods described by the APHA (2005).

Keywords: *Bacteriological parameters, Water borne diseases, APHA.*

OPSC-29

SYNTHESIS OF NEW SERIES OF SCHIFF"S BASES CONTAINING INDAZOLE MOIETY

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ABSTRACT

A series of new Indazolyl derivatives have been prepared from commercially available N-substituted-3-indazole carboxylic acid and methanol with sulphuric acid. Synthesis of these compounds proceeds through the formation of methyl -1-methyl-1*H*-indazole -3-carboxylate, by acidic esterification, then conveted in to 1-methyl-1*H*-indazole -3-hydrazide using hyrdazine hydrate in ethanol at reflux temperature. Then 1-methyl-1*H*-indazole-3-hydrazide was condensed with different substituted benazadehyde using catalytic amount of conc. sulphuric acid in ethanol. Some of the synthesized derivatives were then evaluated for antibacterial activity against different bacterial strains which shows good Antibacterial activities .

KEYWORDS: Indazole derivative, anti-bacterial, Esterification, Hydrazine.

OPSC-30

STUDY OF PHYSICO-CHEMICAL PARAMETER OF GROUND WATER OF NEWASATEHSIL INAHMEDNAGAR DIST, MAHARASTRA

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Abstract:

The present work deals with the study of Physico-Chemical parameters of ground water of Newasa tehsil in Ahmednagar Dist. Maharashtra. The work was carried out during year 2021. This study was done for the sake of understanding interference of various natural and anthropogenic processes influencing the ground water and to develop effective management strategies for the future. The parameter like Temp., electric conductivity, pH, Dissolved Oxygen, Chlorides, Salinity and Total hardness was studied.

Keywords: Physico-chemical parameter, ground water

OPSC-31

STUDIES ON FORTIFICATION OF MULTIGRAIN NOODLES WITH GINGER POWDER

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ABSTRACT

Macaroni products like noodles, pasta, spaghetti, vermicelli and other similar products are highly consumed in India. Noodles are made generally up of refined wheat flour or wheat flour (high gluten content) which is harmful to health. Noodles may be round, flat which are made from unleavened dough which are rolled flat and cut, stretched or extruded with machine or with hand and cut into long strips or strings. They can be further refrigerated for short term or dried and stored for future use.Noodles are usually cooked in boiling water, sometimes with cooking oil or salt added. MultigrainNoodles were made from Wheat Flour, oats flour, sorghum flour and ginger powder through simple hand process. Cooking quality, nutritional values and sensory analysis were studied. Compared with Maida noodles, oats are a rich source of fibre (Beta-glucan), ginger contains gingerol which has various medicinal properties and sorghum is a rich source of protein, and is gluten free. Multigrain noodles formulation was developed to supplement growing children, adults, people fighting with diseases like obesity, diabetes, heart problems, etc.

Keywords*: Multigrain noodles, Beta-glucan, Gluten-free, nutrition, ginger powder*

OPSC-32

DEVELOPMENT OF RAGI BAR BY INCORPORATING AMARANTH (RAJGIRA) AND BANANA.

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ABSTRACT

Nutritious healthy ragi bar is ready to eat food product with high in energy value. these ragi bar is rich source of vitamins and minerals. Amaranth is rich nutrient cereal consumed since long time ago. Today, Amaranth keeps being included in human diet because of its nutraceutical value such as high-quality protein including several essential amino acids, unsaturated oils as omega-3 and omega-6, dietary fiber, calcium, phenolic compound, vitamins and minerals. Banana is also good source of iron, which is incorporated in the ragi bar. Honey and jaggery play the role of good sweetening agent which is good for children's and diabetic patients also. Sesame seeds also added in bar which have many potential health benefits. *Eleusine coracana*is commonly known as ragi which is rich in proteins, fibers, minerals, and antioxidants.It is commonly consumed in the form of food such as roti, paratha, muddle, kheer, etc. Ragi also helps to control the blood sugar level. Ragi, amaranth, banana, honey, jaggery mix together, dough is prepared and boiled at 60-70˚ C for 5-10 minutes. The incorporation of amaranth and banana in ragi bar shows a positive result in terms of nutrient content, taste, colour, appearance and shows considerable changes in physicochemical properties of the ragi bar.

Key Words: -Ragi, Amaranth, banana, formulation, nutrition.

OPSC-33

GLOBAL OBJECTIVES OF FOOD SAFETY & REGULATORY STRUCTURE

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ABSTRACT

Food is value added product of primary agricultural produce. Balanced diet is essential for healthy living. Unsafe and imbalanced diet can create health problems. Development and implementation of science-based food safety regulations and policies are essential for a country to assure safety and quality of foods and to act as deterrent to adulteration and frauds. These also help in regulating food trade both domestic as well as international. Although HACCP is applied the world over by the food industry for achieving food safety, yet application of Food Safety Management System is a better tool to achieve adequate food safety and quality, during all stages of food production, including primary production. Food safety regulations and policies should be in harmony with international regulations. In response to ever-increasing multinational food safety incidents, many countries have been revising their food safety law systems and laid down various new regulatory measures. This paper covers the limitations of regulation by national food laws by analysing the recent advances of the food safety regulatory framework of three major players in the global food trade: China, the United States, and the European Union. Contemporary food safety issues are of the same nature as the food production process: globalized. Consequently, the challenges that have to be faced are beyond the competencies of individual nations. A comprehensive food safety regulatory strategy at both national and international levels is needed.

Keywords*: Globalization, Food safety, legislation.*

SECTION-G ORAL PRESENTATION, ZOOLOGY

OPZS-1

EFFECT OF STORAGE AND TEMPERATURE CONDITIONS ON VITAMIN C CONTENT IN SELECTED FRESH FRUIT JUICES

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ABSTRACT

A positive association between the amount of ascorbic acid or vitamin C in plasma and lowered risk of several diseases has been established. As humans cannot synthesize vitamin C, the rich source which can provide us ample vitamin C is fruits. The study considered ten fruits from the local fruit market, and their vitamin C content was evaluated by the iodometric titration method. The vitamin C content was found to be in a given order; Orange > Lemon >Mango> Pineapple> Pomegranate >Grapes> Tomato> Sweet Lime> Muskmelon> Watermelon. The vitamin C content decreased in these fruit juices upon storage for two days and continued further till noted on the 5th day. This decline was further augmented when the fruits were stored at 30^{o}C compared to when stored at 4^{o}C. Hence the current study reveals the decline in the vitamin C content upon storage and suggests the consumption of fresh fruit juices or adapting better storage techniques.

OPZS-2

POPULATION DYNAMICS *OF MONIEZIA* SP. (BLANCHARD,1891) IN *CAPRA HIRCUS* (LINNAEUS, 1758)FROM SOLAPUR DISTRICT(M.S)

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ABSTRACT

The present communication deals with the population dynamics of*Moniezia* Sp. (Blanchard, 1891) in *Capra hircus* (Linnaeus, 1758) from various places of Solapur district (M.S)India. 51.57% of *Capra hircus*(L.) were infected with Cestode parasites i.e. *Moniezia* Sp. during the period of July-2021 to June-2022. A total 98*Moniezia* sp. were recorded from 190 hosts. The report summarizes the data of incidence, intensity, density and index of infection of *Moniezia* Sp. from*Capra hircus* with effect of environmental factors.

Keywords – *Capra hircus,Moniezia*, Population dynamics, Solapur.

OPZS-3

STUDY ON PHYSICO-CHEMICAL PARAMETERS OF SOIL SAMPLE FROM RAJUR REGION OF AKOLE TALUKA, DISTRICT AHMEDNAGAR (MS) 422604

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ABSTRACT

Soil is the most diverse, nutrient rich loose surface material which covers most of our land. Soil contains both the organic and inorganic matter. The presence of soil is necessary to prevent direct leaching of the inorganic pollutants in the groundwater. The physical properties of soil are colour, texture, structure, porosity, density, consistency, temperature and air. The physical properties of soil show the suitability of soil for agriculture purpose. There are different properties for different soil. Soil is the main source of the water and provide mechanical stability to the plants and trees. There are various types of soil in the environment like loamy soil, sandy soil, chalk, peat, silt and clay soil. Soil analysis refers to a set of various chemical processes which help us determine the available plant nutrients which are either in micronutrient or macronutrient form. In this study, various physio-chemical parameters, texture, colour, pH, salinity level, electrical conductivity, density and water holding capacity were studied. Along with chemical, microbial analysis was also carried out in order to understand the microbial diversity in the soil. During this study, we understood that the properties of soil keep on changing depending on various anthropological activities carried out nearby. The range in which values lie keeps on fluctuating, sometimes under range, sometimes totally beyond it. Through such studies, we endeavour to highlight the potential for hazardous impact that nature might face due to excessive anthropological activity.

Keywords: *Soil parameters, Rajur region, physio-chemical, anthropological*

OPZS-4

SURVIVABILITY AND REPRODUCTION PERFORMANCE OF *NESOLYNX THYMOUS* (GIRAULT) ON THE PUPARIA OF *EXORISTA BOMBYCIS* FOLLOWING ITS RELEASE IN THE SILKWORM REARING HOUSE

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ABSTRACT

Nesolynx thymus(Hymenoptera: Eulophidae) is recommended as a biocontrol agent of the uzi fly, *E. Bombycis*, in silkworm (*Bombyx mori*) rearing house. The parasitoid is reported to minimize the loss of silkworm crops due to *E. Bombycis*by 22.5%when used individually and by 77% in combination with exclusion and chemical methods. Release of the parasitoid is recommended in each silkworm rearing keeping in view its shorter longevity under field conditions. In the current study, efforts have been made to understand the survivability and reproductive performance of parasitoid following its release by placing the diet both inside and outside the rearing house.For this, 2 day-old mated femalesof *N. thymus*were allowed to parasitize 2 day-old *E. Bombycis*pupariaat a host-parasitoid ratio of 5:1.The pupae of *E. bombycis* were implanted in the rearing house on alternate days after parasitoid release upto 15 days. Aqueous honey at 50% smeared on strips of paraffin paper was served as parasitoid adult diet in and outside the rearing house. The pupae were collected back from rearing house on alternate days and were kept in laboratory for parasitoid emergence at 25-28°C and 65±10% relative humidity. The parameters such as per cent parasitism, developmental duration, progeny production, sex ratio and progeny adult longevity were recorded. The Results indicated that rate of parasitism was significantly higher outside the rearing house when compared with that inside the rearing house, thus suggesting that the flowering plants in the vicinity of the rearing house might have provided additional nutritional support for enhanced parasitoid longevity and parasitoid progeny production.

Keywords: *Eulophidae, Parasitoid, Parasitoid adult diet, Reproductive performance, Survivability, Flowering plants.*

OPZS-5

CLIMATE CHANGE- THREATS TO ANIMAL SPECIESSURVIVAL

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ABSTRACT:

Climate change is the most significant and far –reaching environmental threat facing humanity today. Scientists, policy makers and governments from around the world are seeking to understand the nature of the changes that are likely to occur in the 21st Century and beyond, and the effects these could have on human populations and the socio-economic systems that underpin them.There are many evidences to show that wildlife from the poles to the tropics is being affected by climate change. The ~1ºC rise in mean global temperature is causing serious and often unexpected impacts on species, affecting their abundance, migration, genetic composition, seasonal and reproductive behaviour and survival. In addition to increasing global temperatures, the impacts of climate change include extreme weather events such as drought, hurricanes and rising sea levels. Long term shifts in temperature and weather patterns and human society, through its emission of greenhouse gases into the atmosphere, is deeply implicated in the causes of this change. Environmental policies aimed at reducing CO2 emissions are essential for reducing the impact of climate change on species. The aim of this article is to summarize the current state of knowledge regarding the influence of climate and climate change on the various animal species.

OPZS-6

BIRD DIVERSITY AT THREE SUB-URBAN LAKES AROUND PUNE CITY

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ABSTRACT

Urbanization has strong irreversible effects on biodiversity. Since bird diversity is a good ecological indicator, it can be used to study the impact of urbanization on biological diversity. Additionally, bird diversity studies with respect to urbanization are important to understand whether it may support bird fauna and adaptation potential of bird species under urbanization pressure. In the present study, we examined bird diversity at three sub-urban lakes, Manas Lake, Kasarsai Dam/Lake, and Mastani Lake. We observed bird species and their numbers along with water parameters throughout the year from June 2021 to May 2022. Manas Lake harbour highest number of bird species followed by Kasarsailake and Mastani lake. The highest number of birds recorded at Kasarsai dam followed by Manas Lake and Mastani Lake suggesting that the size of the wetland can be co-related with the number of birds rather than the species. Values for different diversity indices (Simpson, Shannon, Evenness, and Margalef) varied in different seasons. At all three lakes, the highest bird diversity was observed in winter, indicating their importance in supporting winter migratory birds. MastaniLake has more alkaline pH throughout the year as compared to other wetlands, while Kasarsai dam has lowest salt concentration. The present study signifies the importance of urban wetlands in supporting the bird diversity. Irrespective of the location, all there lakes support incredible diversity of similar bird species, suggesting that these wetlands passed through similar history of urbanization. Further long term bird monitoring studies are necessary for understanding the long term impact of urbanization on bird diversity, effective planning and management of conservation efforts.

OPZS-7

A FAUNISTIC STUDY OF COREIDAE (HEMIPTERA: HETEROPTERA) FROM NASHIK, MAHARASHTRA, INDIA

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ABSTRACT

The family coreidae has a place with the superfamily coreoidea, suborder Heteroptera and the or Hemiptera. The specimens were gathered in the long stretch of June 2018 to December 2019 fr Nashik area during the study time frame. The nine species of Coreidae have recognizes a Acanthocorisscabrator, Anoplocnemisphasiana, Brachytes bicolor, Cletomorpha hastate, Cletus Daladarplaniventris, Homoeocerus sp., Physomerusgrossipes, Physomeruscentralis.

Keywords: Coreidae, Heteroptera, Hemiptera, Diversity,Nashik.

OPZS-8

GROWTH AND YIELD PARAMETERS OF IDENTIFIED CASTOR ECOTYPES IN SELECTED REGIONS OF WESTERN GHATS OF KARNATAKA UNDER CULTIVATED CONDITION

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ABSTRACT

Castor (*Ricinus communis* L.) an oil seed crop grown both under wild and cultivated conditions for seed and leaf production. In this context, an attempt has been made to explore and identify the castor ecotypes available in wild form in selected regions of the Western Ghats of Karnataka.Accordingly, 10 castor ecotypes were identified in five locations (Heggada Devana Kote, Madikeri, Sakaleshpur, Shimoga and Sirsi) of Western Ghats of Karnataka and two from Mysore location (for comparison) were characterized through DNA sequencing and later authenticated from the National Centre for Biotechnology Information (NCBI) by obtaining accession numbers. The castor ecotypes seed were collected from identified region and raised under cultivated condition for growth and yield parameters. The results of the current investigation revealed that, the growth and yield parameters *viz*., growth characters like plant height, number of leaves/plant, leaf area, leaf area index and leaf area duration in castor ecotypes raised under cultivated conditions were recorded at 60, 75, 90, 105 and 120 days of sowing and leaf and seed yield. The castor ecotypes showed significant variation for growth attributes, notably these characters were better with KJ000406 accession over other castor ecotypes and it was lower in KJ130048 accession (C-2).

Keywords*: Castor, Growth, Yield, Ricinus communis, Western Ghats.*

OPZS-9

A SURVEY OF SPIDERS DIVERSITY IN THREE AGRICULTURAL FIELD AREAS: THE FIRST REPORT OF TAMIL NADU IN INDIA

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ABSTRACT

The present article deals with the fauna diversity of the spiders in Agricultural areas. A total of 19 species under 9 genera were recorded in Anichampalayam site-I (S-I), NanjaiEdayarsite-II (S-II), and Pandamangalam site-III (S-III), Namakkal District, Tamil Nadu in India. Maximum 32% of spider species were recorded in Araneidae, followed by Tetragnathidae,Salticidae, Sparassidae,Oxyopidae,Clubionidae, Gnaphosidae, Hersiliidae and Lycosidae. A very high number of spider species was found in site III (504), followed by site II (404), and site I (376).An extensive survey for these spiders is required in almost 3 sites particularly in those where these jumping spiders are either not recorded. Despite the spiders are the most diverse group of predators and is crucial to the health of terrestrial ecosystems, none of the species recorded in India is listed in IUCN Red List.

Keywords: *spider; diversity; agriculture field; species abundance; species richness*

OPZS-10

JAWAR STEM BORER

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ABSTRACT

The present work deals with studied on jowar stem borer and their control measure. This work was done form 1st June 2021 to 31thdec 2021 in Newasa Tehsil District- Ahemadnagar. thejowar stem borer.jowar is the most important staple food crop of maharastrastate.it is cultivated in kharif,rabi and also in hot wheather.jowar stem borer is one of the major pest .this pest is active throught outthe year but in the infestation is more noticed in rabi and hot weather crops.the hybrid varieties are more susceptible to this pest .its occurs throughtoutindia.thejowar stem borer is commonly called as spotted stalk borer or pink borer. Scientific name of jowar stem borer is *chillopartellus (C. Swinhoe,1885).* This is the major pest of jowar and maize but also recorded on bajra, ragi and other grasses. The developmental stages consist of 1 egg, 5 larval instars, pupa last for about 7 to 10 days. The adult lives for 2 to 4 days. The pest is generally active form June to November and four generations are completed in a year. The times growing point is cut which results in drying of the central shoot and subsequentely formation of dead-heart. Hand picking is also control measure and other changing the sowing and harvesting timings reduce infestation.

Keywords:*Apantelesflavipes and braconbrevicornis.*

OPZS-11

"STUDIES ON ZOOPLANKTON DIVERSITY IN BENNETURA DAM, MURUM DIST-OSMANABAD (M.S.)"

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ABSTRACT

Zooplankton study was carried out I Bennetura dam, Murum dist-Osmanabad(M.S.) from February, 2021 to January, 2022. The Bannetura Dam water body is situated in the heart of Murum City. During the studies the total numbers of zooplankton in water body belongs to four main taxonomic groups such as rotifers, copepod, ostracoda and cladocera, out of which rotifer was dominated. About 21 zooplankton species were recorded out of which 12 rotifera species, 3 copepoda species, 2 ostracoda species and 4 cladocera species were found the rotifer branchionar was dominated amoung zoo plankton in the Bennetura dam.

Keywords: *Zooplanktons diversity, seasonal population density, Bennetura Da, Murum.*

OPZS-12

SEASONAL FLUCTUATIONS IN BIOCHEMICAL CONSTITUENTS IN DIFFERENT BODY PARTS OF BIVALVE MOLLUSC, *LAMELLIDENS MARGINALIS* FROM GODAVARI RIVER, NEAR AURANGABAD

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ABSTRACT

In the present study variations in organic constituents in different body parts of *Lamellidensmarginalis* from Godavari river, near Aurangabad was observed during different seasons. As environmental condition changes, it shows an effect on biochemical constituents in the soft body tissues like mantle, foot and gonad. Protein is found to be maximum in gonads throughout all the three seasons, whereas mantle shows minimum values of protein. There is great fluctuation in the values of glycogen present in all the three body tissues during different seasons. During summer season, maximum glycogen is found in gonad, whereas during monsoon, maximum glycogen is found in foot. During winter season, maximum glycogen is observed in mantle and foot. Similarly, mantle and foot shows maximum amount of lipid during summer season and gonad shows maximum values of lipid during monsoon and winter seasons.

***Keywords*:** *Lamellidensmarginalis*, protein, glycogen, lipid and Godavari River.

OPZS-13

REPORT ON HEALTH ISSUES OBSERVED IN PRESCHOOL CHILDREN OF PURANDAR TEHSIL, M/S, INDIA.

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ABSTRACT

This article reported the effect of environmental changes on high prevalence of vitamin A deficiency (VAD) diseases such as Bitot's spot, conjunctival xerosis, night blindness, and xerophthalmia. A pre-school survey was carried out in rural areas of Purandar Tehsil. The aim of study was to assess the impact of the environment on health related problems among the rural preschool children. Clinical examinations were carried out on 582 preschool children for various health issues. The survey revealed 10.3% prevalence of VAD with 1.9% Night blindness, 2.7% xerophthalmia, 2.8% Bitot's spots and 2.9% conjunctival xerosis. Bitot's spots were noted in the conjunctiva of eyes located in the temporal portion of cornea. These Bitot's spots were typically triangular keratinized spots. The lesions of Bitot's spots were dry patches not wetted by tears. The other health issues observed were 5.8% of preschool children were affected by skin infections and 3.7% scleral melanocytosis with blackish blue-gray colored pigmentation in the white portion of the eyes with normal vision was recorded in the present study.

Keywords*: Environment, Preschool children, vitamin D deficiency, Bitot's spots, Scleral melanocytosis, skin diseases.*

OPZS-14

ASSESSMENT OF THE METHANOL MACERATIVES OF PRE-PUPAL STAGES OF B.S.F. *HERMETIAILLUCENS* (L.)FOR TREATING THE CELLS OF CANCER OF THE COLON IN NORWEGIAN RAT, *RATTUS NORVEGICUS* (L).

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ABSTRACT

The death-dealing cancer and the most frequent cancer in human population is the cancer of colon. Drug resistance capabilities and scarcity of effective drug are supposed to be the obstacles in the method of treatment for cancer of colon. The methanol maceratives of pre-pupal stages of B.S.F. *Hermetiaillucens* (L.) and zingiberene (Terpene of "Monocyclic-Sesquiterpene" class), significant constituent of *Zingiber officinale* (L.) were assessed for treating the cells of cancer of the colon belong to Norwegian rat, *Rattus norvegicus* (L). The cell counting assay was utilized for assessment of rate of proliferation of the cells of colon cancer. Through the use of transmission electron microscopy, the detection of autophagy was carried out. The varied concentrations of monocyclic-sesquiterpene, zingiberene and the methanol maceratives of pre-pupal stages of B.S.F. *Hermetiaillucens* (L.)used for treating the "Transfected cells" derived from rat colon include: 000.00 microliters; 100.00 microliters, 150.00 microliters and 200.00 microliters. The fluorescent microscopy was utilized for monitoring. The method of flow cytometry was used for analysis of cell cycle. Expression of the protein was carried out through the immunoblotting. The zingiberene (Terpene of "Monocyclic-Sesquiterpene" class), significant constituent of *Zingiber officinale* (L.) and the methanol maceratives of pre-pupal stages of B.S.F. *Hermetiaillucens* (L.) were found considerably inhibiting the proliferation of cancer cells of colon from Norwegian rat, *Rattus norvegicus* (L). Induction of autophagy through the zingiberene and the methanol maceratives of pre-pupal stages of B.S.F. *Hermetiaillucens* (L.) is the possibilities for inhibition of growth of cancer cells in the colon of Norwegian rat, *Rattus norvegicus* (L). the methanol maceresof pre-pupal stages of B.S.F. *Hermetiaillucens* (L.) may be utilized for establishment of therapy to control the cancer of colon.

Keywords: *colon-cancer, zingiberene, methanol maceratives, BSF, autophagy.*

OPZS-15
"FISH BIODIVERSITY OF PRAVARA RIVER AT PRAVARA SANGAM DISTRICT AHMEDNAGAR, (M.S.) INDIA"

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ABSTRACT

resent study deals with fish biodiversity undertaken during period November 2021 to April 20
s and commercially important fishes in the Pravara River. The present paper deals with the va
oundance of fresh water fishes in Pravara River at Pravara Sangam Dist. Ahmednagar (M.S) I
esults of present investigation reveal the occurrence of 41 fish species belonging to 7 order
es and 26 genera. Among the collected species, order
niforms was most dominant constituting 50% followed by order Siluriformes constituting
Perciformes constituting 14.28%, orders steoglossiformes and Synbranchiformes constit
and orders Mugiliformes and Beloniformes constituting 2.38% of the total fish species.

ord: *Pravara, River, Mugiliformes, Beloniformes*

OPZS-16

SEASONAL GONADAL STATUS IN *INDONAIA CAERULEUS*

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ABSTRACT

The maturation of gonad in bivalve mollusks is mostly depending upon the richness of food supply which in turn dependent on climate. The seasonal changes in temperature and illumination as well as increase in food supply and in general metabolism in spring and the period of early summer will execute a limited peak in breeding activity. In these processes there may be two contrasting features. Firstly, a period of increasing metabolic activity with growth and maturation of gonads and secondly, there may be some trigger mechanism, which is some time a threshold temperature, which initiates the act of spawning. The present work illustrates the relation of temperature, hardness of water & gonadal status in the experimental bivalve *Indonaia caeruleus* collected during early summer season from the upstream water of Nath Sagar dam at Paithan near Aurangabad, Maharashtra. The collected data is summarized and utilized for result and discussion.

Keywords*: Breeding activity, maturation of gonads, spawning, annual variations, gonadal status*

OPZS-17

PHYSICO-CHEMICAL ANALYSIS OF DRINKING WATER SAMPLES OF DIFFERENT PLACES FROM KARJAT TAHSIL, MAHARASHTRA (INDIA)

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ABSTRACT

Water plays an important role in human life. Drinking water has great effects on human health. This research focuses on the physico – chemical analysis of water from karjat tehsil Maharashtra India. The healthy water ecosystem is depending on physicochemical and biological characteristics. Water is most abundant substance found in nature. Due to increase in industrialization, urbanization, agriculture activity and various human activities has increased the pollution of surface water and ground water. in human life ground water plays an important role, for agricultural purposes ground water is used in rural areas specially in those area where other sources of water like river, dam or a canal is not available. In present study two scenarios were compared: well water and borewell water. The parameters such as water temperature, total dissolved solid, hardness, pH, alkalinity, dissolved oxygen, chemical oxygen demand, biological oxygen demand, conductivity and chloride, were analysed from period of 1 June 2022 to 10 June 2022. Our results demonstrated that drinking water collected from different places of karjat Tahsil was not found to be suitable for human health.

OPZS-18

SPECIES DIVERSITY OF ZOOPLANKTON FROM WAKI RESERVOIR IN AKOLE TALUKA OF AHMEDNAGAR DISTRICT, MAHARASHTRA, INDIA 422604

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ABSTRACT

The present study of diversity of zooplankton and physio-chemical characteristics were studied during 2019-2020. A total number of 23 species of zooplankton belonging to different taxonomic groups were identified. Among these 7 species belonging to protozoa, 9 species to rotifer, 2 species of copepoda, 4 species of cladocera and 1 species from decapoda. In the present investigation frequency accurance, relative density, relative frequency, relative abundance and important values are evaluated. Analysis of numerical superiority of zooplankton reveals that rotifer is a dominant species. Dominant species are reported to be the most important ecological indicators as they received the full impact of the habitat for the over longer period and manifest different level of sensitivity. Ecological indicators are the effective tools in environmental monitoring which is required to assess the changes cause by anthropogenic activities. In present study zooplankton species, the relative density values varied from 2.75 to 4.36 during the study period. The minimum value of relative density was revealed from cladocera and protozoa species and maximum from rotifer species. The maximum value of relative abundance (6.97) was recorded in *Rotaria* and *Asplanchuna* species (Rotifer). These are pollution indicator species used for monitoring the fresh water aquatic body.

Keywords: *Diversity, Zooplankton, Waki reservoir, Akole*

OPZS-19

STUDY OF ANT BIODIVERSITY IN A COLLEGE CAMPUS OF KARJATCITY, DISTRICT AHMEDNAGAR, M.S., INDIA.

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ABSTRACT

Ants are considered as one of the most diverse and abundant and ecologically significant organisms on earth. The ants are belongs to Class Insecta has Order Hymenoptera and family Formicidae.Ants are founds in everywhere of earth planet. The present study of the ants biodiversity has been conducted of college Campus of Karjat City from January 2017 to February 2017. The ants were collected by hand using forceps and honey bait trap and preserved in 70% ethyl alcohol. The ants photograph are taken and identified by using stereoscopic microscope and with the help of identification keys. Nine species were recorded belonging to three subfamily. Out of identified species six belong to subfamily Myrmicinae, two species of subfamily Formicinaeand one of subfamily Dolichoderinae.

Key Words: *ant, biodiversity, karjat, Insecta.*

OPZS-20

"ESTIMATION OF CASEIN PROTEIN IN THE MILK OF DOMESTICATED COW AND BUFFALO BREEDS FROM SEMI-ARIDREGIONS OF KARJAT TEHSIL, AHMEDNAGAR DISTRICT, M.S., INDIA"

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ABSTRACT

The milk is a highly nutritious liquid food synthesized by mammals in their mammary glands. The milk is a mixture of mostly water, fat, proteins, minerals, vitamins and other biomolecules in trace. The casein and whey proteins are two major types of proteins present in milk; Both are essential in growth and metabolism of healthy person. Casein protein comprise large share of total protein of milk. Casein contains all the essential amino acids in high ratio. The present study was about the assessment of the available amounts of casein in the milk samples of breeds of domesticated cow and buffalo. It was carried out from March 2022 to April 2022 to compare various milk samples for their casein content. The selected sampling sites for milk collection were Karjat (S1), Kuldharan (S2), Rashin (S3) and Khed (S4). The breeds selected for the collection of milk samples was buffalo (*Murrah and Pandharpuri*) and cow (*HfX and Khillar*). The average value of casein content during entire study period was observed as 5.8275 ± 1.37583 for milk of buffalo breeds and 4.265 ± 0.886131 for that of cow breeds. The calculated amounts of casein protein was in gram per 100ml of milk.

Keywords: *Isoelectric Point, Hydrochloric Acid, Casein Protein, Khillar, Murrah.*

OPZS-21

COMPARATIVE ACCOUNT OF AERO-ALGAL FORMS FROM FERGUSSON COLLEGE CAMPUS, PUNE.

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ABSTRACT

There have been relatively few studies on airborne algae although they are known to cause health implications. The aim of this study was to compare traditional rotorod air sampling with novel air sampling method like fan dust sampling. For this purpose air sampling was carried out at Fergusson College (Autonomous) with various sampling sites around the campus like Library, Main building, Gymkhana and Botany department. Both sampling procedures were carried out simultaneously on the same day to understand the variance in sampling methods.

Rotarod sampling carried out in campus recorded total (26) aero algae all of which were identified up to class level, (11) up to generic level while (9) up to species level. Out of (26) aero-algae recorded (25) were Cyanophyta forms while (1) was Chlorophyta form. By fan dust sampling (45) aero-algae were recorded from six sampling site across the campus all of which were identified up to class level, (11) up to generic level while (9) up to species level. Out of (45) aero-algae recorded (44) were Cyanophyta and (1) was Chlorophyta.

From both the sampling methods Cyanophyta supremacy was highlighted in Fergusson College campus. Though Cyanophyta dominance was recorded by both the sampling procedures but there was slight difference in cyanophyta coccoid and cyanophyta filamentous forms recorded by both the sampling technique. In rotarod sampling method (13) cyanophyta filamentous forms were recorded followed by (12) cyanophyta coccoid forms. On the contrary in fan dust sampling (26) cyanophyta coccoid forms were recorded outnumbering cyanophyta filamentous (18) forms.

Forms like *Chroococcus, Merismopedia, Lyngbya , Chroococcusminutus*and *Merismopedia glauca* were recorded in both the sampling procedures but forms like *Microcoleus, Scytonema, Protococcus , Merismopedia punctata , Merismopediatenuissima, Gloeocapsa aeruginosa, Phormidiumjadinianum, Lyngbyalimnetica, Nostoc muscorum, Westiellopsisprolifica*were recorded only in rotorod sampling technique while forms like *Anabaena, Stigonema, Scenedesmus Chroococcus minor, Aphanocapsakoordersi, Merismopedia glauca, Lyngbyalagerheimii, Lyngbyamesotricha, Nostoc carneum, Nostoc punctiforme*were recorded by fan dust sampling.

Keywords: *Aero-algae, Aero sampling, Rotarod sampling, Fan dust sampling, Cyanophyta.*

OPZS-22

SEASONAL VARIATION IN ABUNDANCE OF FISH DIVERSITY AT JAYAKWADI (NATHSAGAR) DAMRESERVOIR, AURANGABAD

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ABSTRACT

The monitoring of seasonal fluctuation in species abundance of fish diversity from the Jayakwadi (Nathsagar) Dam reservoir was assessed monthly from May 2021 to April 2022. The main objective of the present study was to compare and describe the species assemblage and seasonal variation in the Ichthyofaunal diversity of the JayakwadiDam reservoir.

During this monthly fixed station sampling, the Ichthyofaunal diversity of Jayakwadireservoir represent the collection of16 species. The study showed the identification of total 292 fish specimens in 2021-22 (36 on May, 24 on August, 21 on November, and 27 on February). The present study shows the strong seasonal variation in fish species assemblage over the four seasons throughout the year.The findings of this work will be helpful in Ichthyofaunal conservation and proper management of fisheries resources ofJayakwadi(Nathsagar) Dam Reservoir.

Keywords: *Seasonal fluctuation, Abundance, JayakwadiDam, Fish assemblage.*

OPZS-23

SPECIES COMPOSITION AND RICHNESS OFLYGAEOIDEA (HEMIPTERA : HETEROPTERA) FROM NASHIK, MAHARASHTRA

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ABSTRACT

The specimens were collected between the time period of June 2018 to December 2019 from Nashik region. Total 8 species belonging to seven genera were recorded including: *Lygaeushospes*(Fabricius, 1794), *Graptostethusservus*(Fabricius, 1787), *Lygaeusmilitaris* (Fabricius, 1775), *Melanotelusbipunctatus*(Dallas, 1852),*Metochusuniguttatus*(Thunberg, 1822), *Dieuchesfemoralis* (Dohrn, 1860), *Geocoris tricolor* (Fabricius, 1798) and *Blissus*sp.Nashik scores 1.972 shanon weaver diversity index and 0.119 simpson index. *Lygaeushospes*shows higher species composition i.e. 20% among the Lygaeoidea, *Melanotelusbipunctatus,Metochusuniguttatus,* and *Geocoris tricolor*eachcomposed 17%, *Dieuchesfemoralis*and *Lygaeusmilitaris*each composed 10% , least composition shows by *Blissus*sp.6% and *Graptostethusservus*3%.

Keywords: Lygaeidae, Hemiptera, Lygaeid bug,Nashik.

OPZS-24

EVALUATION OF MICRONUTRIENT CONTENT OF VERMICOMPOST MADE FROM PONGAMIA PINNATA AND AZADIRACHTA INDICA LEAVES BY USING, EARTHWORM EISENIA FETIDA

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ABSTRACT

The study was conducted at department of Zoology on small scale compost production using cow dung and leaf waste of*Pongame pinnata and Azadirachta indica*through the vermiculture biotechnology evaluate micronutrient content of vermicompost made from different substrates. Leaf waste of *Pongame pinnata and Azadirachta indica*was crushed and mixed with cow dung in a different ratio includes cow dung (S_1), Cow dung and 10 earthworms (S_2), Cow dung and leaves powder of *Pongamia Pinnata*(1:1) + 10 earthworms (S_3), Cow dung and leaves powder of *Pongamia Pinnata*(2:1) + 10 earthworms (S_4) and Cow dung and leaves powder of *Pongamia Pinnata* (3:1) + 10 earthworms (S_5), Cow dung and leaves powder of *Azadirachta Indica* (1:1) + 10 earthworms (S_6), Cow dung and leaves powder of *Azadirachta Indica* (2:1) + 10 earthworms (S_7) and Cow dung and leaves powder of *Azadirachta Indica* (3:1) + 10 earthworms (S_8), At the end of decomposition, vermicompost obtained in fine granular form which was harvested through fine sieve to get homogenous compost. The present study of 45 days was carried out to evaluate the micronutrient status of vermicompost using Eisenia fetida. The laboratory result showed that, Copper (Cu), Iron (Fe), Zinc (Zn) and Manganese (Mn) micro nutrients (ppm) were different, the vermicompost obtained from all substrates were rich in micro nutrients. The micronutrient content (ppm)of vermicompost (S_1 to S_8) was in the order Mn>Cu>Fe>Zn, vermicompost (S_2) Mn>Cu> Zn > Fe, vermicompost (S_3) Cu>Fe>Mn>Zn, vermicompost (S_4 and S_5) Mn>Zn>Fe>Cu, vermicompost (S_6) Mn>Fe>Cu>Zn, vermicompost (S_7) Fe>Mn>Zn>Cu, and vermicompost (S_8) Fe>Cu>Mn>Zn,

Keywords:*vermicomposting; leaf waste; earthworm; vermicompost, cow dung*

OPZS-25

"STUDY OF WATER QUALITY PARAMETERS OF NATH SAGAR DA (JAYAKAWADI), DIST. SAMBHAJINAGAR MS (INDIA)"

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ABSTRACT

ter is one of the most important compounds in the world. The contamination and pollution of great concern in the world for the developing countries like India. The question of water po acquired a critical stage. Human activities, industries, hospitals, sewage water, agricultural di ution are some of the sources of water pollution. Drinking water quality is one of the imp ronmental health detriments. Use of safe drinking water is a foundation for the contr ention of water borne diseases. In this work we have analyzed Nath Sagar Dam water qual king purpose. An attempt was carried out to study Physico-chemical investigation of Nath a, Paithan, Dist.-Sambhajinagar. The study was carried out during the year 2020-2021. Duri y period Hydro biological parameters such as temperature, pH, Alkalinity, DO, Free CO2, lness, as well as Chloride of water was studied. Various river water parameters were analyz compared to established standards given by WHO. The river water analysis showed that th r is not suitable for potable use in city area.

words: *Physico-chemical analysis, Water pollution, Nath Sagar Dam*

OPZS-26

"STUDY OF SNAKE SPECIES DIVERSITY IN RURAL AREA OF AHMEDNAGAR DISTRICT OF MAHARASHTRA, INDIA"

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ABSTRACT

Snakes are well adapted to their habitat's. Depending on their habitat they may be aquatic snakes, burrowing and arboreal snakes, Snakes found in different size, shape and colour due to their mode of life. Snakes occupy a wide range of habitats which includes fields, forests, wetland, ponds, lakes, streams, rocky hillsides, farmland, vacant plots and residential areas also. Snakes plays important ecological role in food chain. Depletion of these animals throughout the globe and their extinction is causing a conscientious and diligent task to the people of all spheres of the society to conserve them. A total number of 12 species of snakes belonging to 6 families, 22 genera were recorded during the study period of six month. Of which 08 species belonging to non-venomous, and 4 species were venomous. The present study is an attempt to evaluate the information, occurrence, abundance &species richness and further assist in the knowledge, awareness and conservation of snake fauna in this region. So, this study may play helpful role in conversation of the biodiversity.

Keywords: *Snake of India, Maharashtra Snakes, Snakes.*

OPZS-27

"FISH BIODIVERSITY OF MULA DAM DISTRICT AHMEDNAGAR, (M.S.) INDIA"

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ABSTRACT

The present study deals with fish biodiversity undertaken during period November 2021 to April 2022 to census and commercially important fishes in the freshwater fish fauna of the Mula River, a southern tributary of the Mula River system in the Western Ghats of India was studied at Mula Dam Reservoir, Rahuri. The present paper deals with the variety and abundance of fresh water fishes in Mula Dam. work was conducted between Personal observations and interviews were also employed to assess fishery practices in the area. Findings from the studies showed that 19 fish species, belonging to 6 orders and 10 families, were present in the reservoir. The order Cypriniforms was dominant followed by order Perciformes; order Beloniformes and order Siluriform; order Synbrachi forms and order Osteoglossiformes. This reservoir is rich in fish diversity; inhabited by economically important and cultivable fishes as well as the ornamental fishes.

Keywords: *Freshwater fish fauna, Fish diversity, Western Ghats, Mula River,*

OPZS-28

"DIVERSITY OF BIRDS IN LOCAL ECOSYSTEM NEWASA TAHSIL, MAHARASHTRA, INDIA"

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ABSTRACT

Birds are among the key components of the earth's biodiversity. The main objective of this study was to assess the diversity and abundance of birds from three study sites. Newasa is having very good biodiversity having a different type of flora and fauna. Birds are abundant in nature and play a varied role in shaping our environment. To establish a baseline data bird diversity in and around. It surrounded by hilly area having two small water bodies and different type of flowering and fruit plants on its surrounding campus which provides grounds for feeding, breeding and nesting for avian fauna. The field survey was made to assess the campus for the avian fauna by conducting daily observationso. different habitats present at college campus, out of watershed catchments, from flowering tree shelters, and from marshy areas. Out of these, some are common birds which are observed perennially. These are more frequently observed in winter. Grey hornbill, Tree pie are seen in starting of Rainy season. However, the study area particularly bushland and riverine forests are highly distributed due to human activities. There are 41 species of birds found in Newasa Tehsil Lake and 33 species were identified from Newasa college and its adjoining areas belonging to 15 different families The family Columbidae, Ardeidae, Pycnonotidae, Sturnidae, Passeridae and Cuculidae were found to be dominant in both the lakes. More studies are required to make a complete list of available bird species in the study area.

Keywords: *Diversity, winter, Cuculidae, birds.*

OPZS-29

STUDY ON ZOOPLANKTON DIVERSITY IN PRAVARA RIVER, MAHARASHTRA, INDIA

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ABSTRACT

Present study deals with collection and identification of Zooplankton diversity of Pravara River, a tributary of Godavari, Akole and Sangamner with six tehsils, District Ahmednagar, Maharashtra State. The duration of work was January 2021 to December 2021 i.e. one year period. The present study reports the zooplankton diversity composition from the Pravara River In total, 10 species of zooplanktons belonging to 4 classes viz. Rotifera, Cladocera, Copepoda and Ostracoda were recorded from the Pravara River near Bhandardara village. Zooplankton play an important role as pollution indicator. The dominance of Rotifera was observed among all zooplankton groups in all seasons. The study of seasonal variation of zooplankton analysis shows an average abundance of species in winter season.

OPZS-30

TRADITIONAL USEOF *ECLIPTA ALBA* LINN. BY TRIBAL COMMUNITY OF AHMEDNAGAR DISTRICT.

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ABSTRACT

Eclipta alba Linn. is an herbaceous plant under the Asteraceaefamily, commonly known as Bhringraj as well as false daisy.Itis grown in tropical and sub-tropical regions all over the world and is most widely seen in India, Thailand, China, and Brazil. The plant *Eclipta alba*Linn. has been traditionally used in folk medicine. It has anticancer, anti-venom, antioxidant, antimicrobial, and analgesic properties.It is mainly used in hair dyes because it is a rich source of vitamin E. It is also responsible for nourishing the hair and making them shinier and healthier. Generally, the whole plant is antiseptic in nature which makes it highly effective at preventing and treating infection also the fresh juice can be extracted from the leaves of *Eclipta alba* Linn. It is given for the treatment of edema, fevers, and liver disorders. The juice also helps to improve and stimulate digestion. Along with if this juice is given with honey to children it treatsrespiratory congestion in them.

Keywords: *Ecliptaalba*, False daisy, Folk medicine, edema, liver disorders.

OPZS-31

EFFECT OF HEAVY METALS ON FISHES DEFORMITIES: A REVIEW

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ABSTRACT

Heavy metals have been related to many fish deformities in normal inhabitants and laboratory-formed specimens as well. Deformities in common have overwhelming special effects on fish populations ever since they disturb the survival, growth rates, welfare, and their exterior image. Though the embryonic stage in detail to heavy metal contact has been lengthily studied, there is not much evidence obtainable as to what ensues in fish larvae and adults. Heavy metal pollution is a thoughtful problem for the atmosphere due to its toxicity, persistency, bioaccumulation, and bio exaggerations things. Heavy metal pollution in the environment can arise from diverse natural and anthropogenic causes. The normal causes of heavy metals are mostly volcanic eruption and weathering of metal-bearing rocks, however, the anthropogenic sources of heavy metals include agricultural and industrializedactions, incineration of fossil fuel and gasoline, waste incinerators, mining, etc. The deployment of these heavy metals to the aquatic ecosystem changes the physicochemical property of water which is harmful to water organisms. Heavy metals mostlypass in the fish body through gills, body surface, and digestive tract through ingestion of metal collected food materials. Cadmium, chromium, nickel, arsenic, copper, mercury, lead, and zinc are the utmostcommunal heavy metal contaminants that are the reasonfor severe toxicity in fish. The development of oxidative stress is the essential molecular mechanism of metal toxicity. The straindeclines the immune system, causes tissue and organ damage, grows defects, and diminishes reproductive capacity. The rich cause of high-quality protein working with vitamins and omega-3 fatty acids boosts the human being to uptake fish as a major food source. So, gathered heavy metals in the fish tissues are directly transferal to the human body and the basisof toxic possessions to acceleratenumerous diseases. Thus, it is essential to converse the causes of heavy metals and their toxic consequence on fish health to implement the law and legislation regarding their defense in the aquatic environment and also to protect human life. We also speak about the need for extra research on the special effects of metals on the consequent life steps to consider the long-term concerns of heavy metal poisoning on fish organisms and probablyconnect these significances with environmental pollution.

Keywords: *Heavy metals; Bioaccumulation; Toxicity; Oxidative stress; Deformities; Environment.*

OPZS-32

DIVERSITY OF SUGARCANE NEMATODE IN DIFFERENT LOCALITIES AROUND OSMANABAD DISTRICT (M.S.)INDIA

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ABSTRACT

The present study is based on the survey accompanied and assessment made by the frequencies of occurance of economically important plant Nematodes in different region of Osmanabad district. Samples were collected from roots and soil from six places of Osmanabad district.The frequency of occurance and populations varied from place to place which is simply indicative of the fact that the studied area is highly infested with different varieties,ofnematode.genus.
i.e.Eudorylaimus,Helicotylenchus,Hoplolaimus,Dorylaimus,Mylonchulus,Neoactinolaimus,Xiphinima and monhystera.

OPZS-33

EPIDEMIOLOGICAL, HISTOLOGICAL AND HAEMATOLOGICAL STUDY OF COCCIDIOSIS IN SMALL RUMINANTS AND RISK OF ZOONOSES FROM NORTHERN SITES OF AURANGABAD DISTRICT MARATHWADA REGION, INDIA

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ABSTRACT

Aurangabad district is the most leading state in Agriculture sector. Rearing of small ruminants such as sheep and goats are more abundant than large animals. Generally, 42 registered breeds of Sheep and 20 Breeds of Goats were reared in country. Coccidiosis is one of the important protozoan diseases commonly found in sheep and goat. Infection causes great economic impact on small ruminant's sector. Higher infection rate cause morbidity and mortality. The cross-sectional Study of Coccidiosis in small ruminants and their risk of zoonoses carried from November 2019 to October 2020. During these study periods total 720 fecal and 200 Blood samples were collected domestic sheep and goats from Northern sites of Aurangabad District of selected three tahsil Kannad,Sillod and Soygaon. There was 15 sampling station. Samples were FOC and Microscopic examination to diagnosedCoccidian Eimeria Speciesas well hematological study also done. Apart from this histopathological study also done. During these study period prevalence rate of infection found in sheep's 59% and Goats 64% and mixed 72 % found. While higher rate of infection fond in kids and female sheep and goats. There are 7 species of *Eimeri*a found abundantly, out of them *E. ninakohlyakimovae and E. arloingi*are more contagious agent.While higher rate found *E. crandalis and E.parva species.* During study period of fecal oocyst count there is no major changes in both the sexes.Seasonal rate of infection found in,Winter Summer and Rainy were 69 &,61% and 65% respectively.The hematological study of infected animals carried out packed cell volume (PCV) results shows moderately Fluctuations among blood factors. While histopathological section of intestinal study finds out infected by coccidiosis and necrosis.

Keywords:*Sheep,Goats, Coccidiosis,Sillod,Kannad,SoyagaonZoonoses,PCV,Histopathology*

OPZS-34

FISHES BIODIVERSITY OF PRAVARA RIVER NEAR PRAVARASANGAM, NEWASA TEHSIL, DISTRICT AHMEDNAGAR (M.S.) INDIA.

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ABSTRACT

The fishes are important group of vertebrateand its life various ways. The fishes are important of a food purpose it is a rich of nutrition. Hence the present study concern with the biodiversity of fishes of Pravara river near PravaraSangam (Newasa). Fishes were collected total one year period, January 2013 to December 2014. The fishes were collected from the different fishing stations with the help of local fisherman. They are cleaned with clean and warm water to remove dirt and microorganisms. Then fish preserved in 5-10% formaldehyde solution. Standard identification keys are used for identification of species. The total number of 18 species belonging to 12 genera, 5 orders and 9 families of fishes. The result shows that Pravara river shows rich biodiversity of fish.

Keywords: *Fishes, Diversity, Pravara river, PravaraSangam.*

OPZS-35

IMPACT OF ENDOCRINE DISRUPTORS ON THE REPRODUCTIVE TOXICITY OF THE CATFISH *HETEROPNEUSTES FOSSILIS*

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It has been well documented that anthropogenic activities has manipulated wellbeing of environment among, which aquatic ecosystem is at high risk. It is an ultimate sink for large number of pollutants, which are responsible for impairment of endocrine system homeostasis. These pollutants (pesticides, xenoestrogens, alkylphenols, organochlorines, heavy metals etc.) are termed as Endocrine Disruptors (EDs). These compounds frequently occurring in environment have the potential to exert adverse effects on Brain-pituitary gonadal (BPG) axis leading to neurological, developmental and reproductive impairment. Further studies have shown that EDs can have positive or negative adverse reproductive effects on human and fish health. Among various species fishes are well known bioindicators to understand toxicity of EDs as they are exposed to endocrine disruption. Catfish *Heteropneustesfossilis* is an economically important aquaculture species due to its protein rich and low fat content quality. In the present study, impact of EDs on the reproductive toxicity of *Heteropneustesfossilis* at the level of BPG axis has been investigated.

OPZS-36

"STUDIES ON DIVERSITY AND DISTRIBUTION PATTERNS OF CESTODE PARASITES OF FRESHWATER FISHES"

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ABSTRACT

Study was carried out to determine diversity and distribution pattern of cestodes of the genus *Lytocestus* Cohn, 1908, *Senga*Dollfus, 1934, *Polyoncobothrium*Diesing, 1854, *Ptychobothrium*Loennberg, 1889 and *Gangesia* Woodland, 1924, from certain freshwater fishes from Marathwada Region (M.S.) India during June, 2017 to May, 2019. Diversity of Piscean tapeworms includes 09 species of five genera. Two species of genus *Lytocestus*, four species of Senga, one species of *Polyoncobothrium*, one species of genus *Ptychobothrium* and one species of *Gangesia* were reported from freshwater fishes from different localities of Marathwada Region. This survey provides baseline data for the future monitoring of these potentially important parasitic infections in this region.

Keywords- *Diversity and Distribution pattern of Cestodes, Freshwater fishes, Marathwada Region.*

OPZS-37

HEAVY METAL ACCUMULATION IN THE COMMERCIALLY IMPORTANT MOLLUSCS (BIVALVE) FROM THE COAST OF MAHARASHTRA, INDIA

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ABSTRACT

Molluscs are a second most diverse, large group of aquatic filter feeder animal found in freshwater as well as in marine water. These are soft bodied animals widely used as a supplementary food worldwide. These animals are nutraceutically rich and content high proteins, several of them are potential sources of biomedical compounds. The concentration of heavy metal (Cd, Cu, Zn, Fe, and Hg) were analyzed in water, sediments and tissues of molluscs from sampling sites of estuary of Banganga River and Vaitarna River of Palghar coast of Maharashtra. The concentrations of heavy metal analyzed shows variations in water, sediments and tissues of molluscs at each sampling site. Heavy metal pollutants are continuously released due to anthropogenic activities and industrial effluents. The study on these aspects is gaining importance and is an urgent need to pay attention and assess the accumulation of metals in commercial important molluscs from the coast.

Keyword: *Heavy Metal, Molluscs, Bivalve, Sediment, Palghar.*

OPZS-38
DISEASEANDINSECTPESTOFONIONCROPINNEWASATAHSILDISTRICTAHMEDNAGAR(M.S.)INDIA.

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ABSTRACT:

Survey on major onion diseases and insect pests was conducted in Newasatahsil from Ahmednagar district in2020-2021cropping season. The aim of the study was to determine phenomenon and assess impacts of major diseases and insect pests of onion. Periodicfieldvisitduringeverygrowingperiodsofthecropwasdonetogeneratecomprehensive information for every 1 to 2 km interval. Field data were collected at every 5m interval in each sample and quadrate (1mx1m) diagonally across the field. The number of diseases and insect pests in the surveyed are was recorded and identified. Some major and some minor pests were observed during the survey. Purple blotch, downy mildew, damping off and iris yellow spot virus were the most important diseases of onion. Insect pests such as trips, cut worm and caterpillar were the major pests. Overall, the result show that diseases and insect pest recorded as a major pest requires research and development in intervention at the moment. Most of the farmers did not have access to information on pest management, pesticide use and safety, or insect and diseases identification. Besides, regular observation strategies have to be designed in between, once a minor pest has became a major pest.

Keywords: *Onion, Insect pests, Diseases, Iris yellow spot*

OPZS-39

STUDIES ON PHYSICOCHEMICAL PARAMETERS ASSESSMENT OF RIVER GODAVARI AT KOPARGAON DIST.AHMEDNAGAR MS

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ABSTRACT

In the present investigation, water sample were collected from Godavari river near Kopargaonfrom 1st January 2021 to 31st December 2021.This study concern the analysis of various physiochemical parameters such as PH, Total turbidly Basic ,Basic Chlorides etc were analysis .Water samples were collected monthly from three sampling sites. The water samples from polluted water of Sangivani Sugar factory shows high acidic contents where as Sewage water samples were slightly alkaline. During summer and winter water get highly polluted where as during rainy season water shows less pollutants.

Keywords: *Pollutants, Acidity ,Alkality*

OPZS-40

PAPAYA-MEALYBUG AND ITS MANAGEMENT

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ABSTRACT

The papaya mealy bug, Paracoccus marginatus Williams and Granara de willink (Hemiptera : Pseudococcidae), is recorded from the oriental region for the first time, where it was found in Indonesia (java) and India (Tamil Nadu) in 2008. Papaya mealybug is a polyphagous pest that damages many tropical crops. A native of central America, it spread to the Caribbean region and South America in the 1990s ; since then it has been accidentally introduced to some islands in the Pacific region. The distribution, host range and characteristics of the mealybug are summarized. It's host range includes more than 60 species of plants including Papaya, Hibiscus, range in vegetables, fruits, flowers, ornamental crops and weeds. It includes agricultural and horticultural crops, trees in Tamil Nadu state of India during 2009-2010. In present investigation was conducted during the spring season. The plant was dignosed the mealybug. During June-July period it was observed in Papaya plant. In Baragaon Nandur, Maharashtra 413705, India it was observed that white colour mealybug are spread all over the plant.

Keywords : *Mealy bug, Paracoccus marginatus, Papaya, Polyphagus, Baragaon Nandur.*

OPZS-41

MEDICINAL USES AND HEALTH BENEFITS OF CARISSA CARANDAS

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ABSTRACT

This paper represents the discussion about Carissa carandas or Karonda / Karvand fruit. This paper gives us health benefits regarding to these fruit. In Marathi popularly it called as a Kali mainaor Karvand. Alleviates abdominal pain, rich in fiber, the fruit is extremely beneficial for treating abdominal problems. It increases blood level and reduces fat level in blood vessels. Also helpful to treat the disorders related to the stomach. Reduces the dermatological disorders, increases immunity power. Maintain proper digestion and also helpful to improve your health. Anemia patients can take Karonda fruit for better iron source like jamun fruit. Carissa carandas is also helpful for the diabetes patients for maintaining blood sugar level. In Maharashtra state it is very famous, a species of following shrub in the family Apocynaceae.

Keywords: *Carissa carandas, Apocynaceae, dermatological disorders, Alleviates abdominal pain*

'ZS-42

IMPACT OF HEAVY METAL CADMIUM ON LAND SNAILS

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ABSTRACT

Terrestrial snails are highly tolerant to the cadmium exposure due to their capacity to accumulate soil cadmium independently of food ingestion. Cadmium retention in land snails exposed to an increase in soil Cd content. I m of this work was to study the effects of cadmium on shell growth. I examined cadmium accumulation in the hepatopancreas and the shell of Juvenile Helix asrersa . The toxicity of Cd to snails was assessed using a range of conchological end points including shell heights width, volume, allumetry and integrity. Test snails aged three months were reared under laboratory condition, Fed an uncontaminated diet and exposed first for a period of 30 days and then a second period of 30 days cadmium showed a dose dependent accumulation in both the hepatopancreas and shell under the present experimental conditions, only high cadmium exposure significantly affected either the shell growth or snail survival. There was no consistent effect on shell allumetry, but the shell integrity, especially in rapidly growing parts, appeared to be affected by high Cd exposure. The results attest to the value of hepatopancreas for describing cadmium retention in land snails and it's effects.

Keywords: *Heavy Metal, Cadmium, Land, snail*

OPZS-43
DIVERSITY, DISTRIBUTION, ABUNDANCE AND ECOLOGY OF SPIDER FAUNA IN WARI FOREST REGION, MAHARASHTRA, INDIA.

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ABSTRACT
The Arachnids are the second largest contributor (8.3%) of total arthropod diversity after insects. They are the largest order and rank seventh in total species diversity among all other orders of organisms. Spiders belong to the order Araneae of class Arachnida and are one of the diverse and functionally important predators. All spiders are carnivores and hunters. Currently in World Spider Catalog version 23.0, total 131 families, 4249 genus and 50069 species are recorded. Spider has often been confused with insects but in truth spiders are air-breathing Arthropods that have eight legs and chelicerae with fangs able to inject venom. The present study in diversity, distribution,abundance and ecology of spider in Wari forest region. The present study of spider diversity was conducted between October 2020 to June 2022. The region was situated near Vaan River on common boundaries of state Maharashtra (Akola, Amravati and Buldhana) and Madhya Pradesh (East Nimar). Its GPS coordinates are 21°10'34"N 76°46'9"E. The Wari forest is about 130 km from Amravati about 85 km from Buldhana, about 80km from Akola and about 70 km from Madhya Pradesh. Wari forests provide sufficient vegetation diversity and rich environment conditions for the spider fauna. The web pattern of spider also studied.
***Keywords**: Wari Forest, Spider, Environment, Ecology*

SECTION-A POSTER PRESENTATION, AGRICULTURE

PPAG-1

EFFECT OF DIETARY SUBSTITUTION OF SUN-DRIED *MORINGA OLEIFERA* LEAVES ON THE WELL–BEING PARAMETERS OF BADRI CATTLE

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ABSTRACT

Animal husbandry forms an important part of Indian agriculture. The total number of registered cattle breeds in India are 50. The nutritional needs of cattle are fulfilledusing green fodder, roughages and concentrates as a part of their diet. Unconventional feed sources like Azolla are also used. The indigenous cattle breed of Uttarakhand, Badri, is used as for milk and draught purposes. This experiment was conducted to study the effect of feeding sun-dried *Moringa oleifera* leaves on well-being parameters(Body condition score, Activity score, color of conjunctival mucus membrane, Antibody titer in blood and tail-fold thickness)of Badri cattle. A total of 45 experimental Badri cattle of age groups 6-12 months, 12-18 months and in lactation were selected and the treatment group animals were fed with sun-dried leaves of *Moringa oleifera* substituted in their concentrate feed twice a day @10% (T_1) and 20% (T_2) substitution rate for a period of 1 year.There was a significant improvement in body condition of animals of age-group 12-18 months of T_2 group in the experimental span of 1 year compared to control group (4.5667±.03333*vs* 6.3667±.08819). There was a significant increase in the percentages of animals of age 6-12 months forming T_2 group against control group for having an activity score of 5 and conjunctival mucus membrane of pink color after 1 year (80% *vs* 100% and 80% *vs*100%, respectively). Antibody titer showed significant increase in 6-12 month old animals of T_2 group against control group (1.1900±.06110 *vs* 1.6267±.14678 g/dL) while tail fold thickness showed no significant difference in any group. Hence, it can be concluded that dietary substitution of dried Moringa oleifera leaves can be beneficial for the health and well-being of Badri cattle.

PPAG-2

INSECT PEST MANAGEMENT: A WAY THROUGH NATURAL APPROACH

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ABSTRACT

In the present scenario, Natural farming has become a pivot point of discussion among agricultural scientists, farmers and several other groups engaged in agriculture. Insect pest management through natural farming sustains a natural balance in the ecosystem asthe management targets the specific insect pest and conserves natural enemies. Among six million species of insects existing on Earth, only 20 – 30% of the insects are considered as important pests of major crops. These pests cause significant damage to the agricultural produce that is intended for human health and animal feed. Even though, the management of insect pests is rapid using insecticides, widespread usage has resulted in insecticide resistance, resurgence and environmental pollution. To mitigate the problems associated with the insecticides, ecologically, economically and socially sound natural measures are recommended to combat insect pests. Panchgavyapossessing good quality natural manure and bio-pesticides has many beneficial implications in agriculture and natural farming.The mixture of Panchagavya and Neem seed kernel extract was found effective in the management of shoot borers and defoliators of the cereal crops. Cow dung mixed with cow urine provides excellent manure and a natural pesticide. Cow dung containing undigested fibre, organic matter, various nutrients, and microorganisms has a valuable impact on plant protection in managing insect pests and diseases. Neemastra containing a mixture of crushed neem leaves, cow dung and urine is effective in controlling sucking insects *viz.*,aphids, whiteflies and mealybugs. Agneyastra made up of *Ipomea* leaves, hot chilli, garlic, neem leaves and cow urine is helpful in reducing the incidence of leaf roller, stem/fruit/pod borers. Brahmastra containing a mixture of neem, papaya, pomegranate, custard apple and guava leaves is efficient in managing the sucking insects and pod borers. These bio-formulations are relatively safer to natural enemies. The fermented buttermilk is very essential in the management of the insect vectors that transmit viral diseases in the crop plants.

Keywords*:* *Natural farming, Neemastra, Agneyastra, Brahmastra, Panchagavya, insect pests*

PPAG-3

INFLUENCE OF ORGANIC FOLIAR NUTRITION ON DRY MATTER PRODUCTION AND QUALITY ATTRIBUTES IN CHICKPEA (*CICER ARIETINUM* L.) UNDER RAINFED CONDITION

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ABSTRACT

A study was conducted to observe the response of organic foliar nutrition on dry matter production and partitioning and quality parameters of chickpea (*Cicer arietinum* L.) under rainfed condition in mediumblack soils at Regional Agricultural Research Station, Vijayapur, Karnataka during *Rabi*, 2020-21. The experiment laid out in split plot design andreplicated thrice. Fifteen treatment combinations, consisting of five organic sources (vermiwash @10%, cowurine @10%, jeevamrutha @25%, bio digester filtrate @25% and urea @2%) in main plots and three stage of application (pre flowering, pod initiation and pre-flowering + pod initiation) in sub plots.Foliar application of jeevamrutha @25% both at pre-flowering and at pod initiation stage recorded significantly greater dry matter production and partitioning in leaf, stem and reproductive parts of the plant (3.29, 5.17 and 10.13 g plant^{-1}, respectively)as compared to other liquid organic manures applied at both stages and alone. The protein content in seed and protein yield per hectare are the indication of nutritive quality. Application of jeevamrutha @25% both at pre-flowering and at pod initiation stage recorded numerically higher protein yield (490 kg ha^{-1}) with protein content (21.51 %) due to higher seed yield inspite of the variation in protein content.Jeevamrutha foliar spray @25% both at pre-flowering and at pod initiation stage recorded relatively higher dehydrogenase activity (6.17 µg TPF g^{-1} of soil day^{-1}) compared to other treatment combinations indicates improved soil biological property helps better mineralization and solublization of nutrients.

Keywords: *Chickpea, Dry matter, Foliar Nutrition, Jeevamrutha, Organics*

PPAG-4

COMPARATIVE STUDIES OF CULTURAL VARIABILITY AMONG DIFFERENT ISOLATES COLLECTED FROM MAIZE GROWING REGIONS OF KARNATAKA (MANDYA, HASSAN, MYSURU AND CHAMRAJNAGAR DISTRICTS).

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ABSTRACT

Maydis leaf blight (MLB) caused by *Bipolaris maydis* is the most important and widespread maize leaf disease worldwide including India. Disease appears as young small and diamond shaped lesions and elongateas they mature causing a yield loss of about6.9-62.4%.An experiment was conducted to study cultural variability in 20 isolates of *Bipolaris maydis* from different maize cropping zones of Karnataka (Mandya, Hassan, Mysuru and Chamrajnagar districts) with a view to find out the best medium for the growth and conidial formation of fungus where nine different media viz Potato dextrose agar (PDA), Richard's agar, Oat meal agar, Peptone sucrose agar, Czapek's- Dox agar, V - 8 juice agar, Malt extract agar, Leaf decoction, Leaf decoction + PDA were used. Results revealed significant effect of different media on growth and sporulation of the fungi. Among nine solid media used significantly the highest average mycelial growth was recorded in Leaf decoction + PDA(78.6mm) followed by Oat meal agar (66.76mm) and the least average mycelial growth was recorded in V - 8 juice agar(35.56mm).The time taken for sporulation was earliest in Leaf decoction + PDA (36hrs) followed by Oat meal agar (48hrs) and was last in V - 8 juice agar (144hrs).Among different isolates BmZARS(81.22mm) recorded highest mycelial growth followed by BmMNG (79.66mm) and least was recorded in BmGLG (46.35mm) whereas in time taken for sporulation BmZARS (24hrs)sporulated earlier followed by BmRCH (36hrs) and was last in BmSNG (60hrs) in Leaf decoction + PDA. The excellent mycelial growth and earlier sporulation was observed in Leaf decoction + PDA, maize leaf being host for the organism contains essential nutrients required for its growth andalso PDA, a semi-synthetic media being supplemented. This study provides us information regarding the best media suitable for further studies of the *Bipolaris maydis.*

PPAG-5

IMPORTANT FUNGAL PATHOGENS OF HORTICULTURE CROP TOMATO FROM DHULE DISTRICT, MAHARASHTRA.

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ABSTRACT

Maharashtra stands 9th rank in total tomato production in India. Tomato is one of the main constituents in our kitchen. A survey for crop-related diseases was started in the last four years and during this Tomato plant is also considered as this one is the most economical value. There arefour fungal diseases which contribute much more to deterioration and loss in quality of tomatoes, specifically fruit they are *Alternaria, Colletotrichum, Fusarium,Sclerotinia*. Other diseases are visible on the tomato plant or plant parts, except fruit they are *Phytophthora, Stemphyllium, Leveillula*, and *Verticillium*.

Keywords:- *Disease, Pathogen, Horticulture, etc.*

PPAG-6

SELECTION OF HIGH-YIELDING RICE VARIETIES FOR IMPROVEMENT OF PHOSPHORUS USE EFFICIENCY

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ABSTRACT

In Asia, approximately 60% of rice (*Oryza sativa* L.) cultivating on soil in rainfed areas is affected by many abiotic factors. Among them, Phosphorus (P) nutrient deficiency is one of them. It is second most essential element after nitrogen (N) in plant on arable land for its productivity. Therefore, to reduce the application of costly synthetic P fertilizers as well as to enhance crop productivity, it is very important to identify desirable rice crops for adaptation to low-P-input environments. In the present study, two parameters (shoot and root length) were taken into account to compare among five rice varieties (ADT36, ADT43, ADT45, ADT51, IR20). These varieties were grown under control and phosphorus condition with high, medium and low concentration. Growth of shoot and root of these varieties was higher in all treatment when compare to control. Here, the root development is played a significant role in differentiating rice varieties from each other rather than shoot development.In ADT51, there was less difference between control and treatment in both shoot and root growthsand only shoot length in ADT43 compared to other varieties. In ADT36 and ADT43, there was less significant difference in root length among three different concentration of P fertilizer and this result indicates that these two varieties could grow well in low concentration of Phosphate also. Here, some rice varieties such as ADT36, ADT45 and IR20 have showed more and less growth in shoot and root development to high and low concentration, respectively. The aim of this study is to identify rice varieties and to improve for phosphorus use efficiency at low concentration for more rice production.

Keywords*: P-deficiency, P- use efficiency, ADT36, ADT43, shoot length and root length.*

SECTION-B POSTER PRESENTATION, ARTS AND SOCIAL SCIENCE

PPAS-1

EXAMINING UNDERGRADUATE STUDENTS' ATTITUDES AND MOTIVATION IN LEARNING ENGLISH AS A FOREIGN LANGUAGE (EFL) AT SOCOTRA COLLEGE: A CASE STUDY

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ABSTRACT

The present research paper aims to investigate undergraduate students' attitudes and motivation toward learning English as a Foreign Language while studying at Hadrmout University's English Department College of Education Socotra.The objective of the current paper is to find out the undergraduate students' attitudes and motivation toward learning English as a F.L. studying in the English Department College of Education Socotra, Hadrmout University. To achieve the objective, the quantitative descriptive-analytical approach can be used to analyse the questionnaire that was answered by students of four levels. The researcher distributed 72 questionnaires, while 60 respondents were retrieved with a percentage of 83.3%, and 12 questionnaires not respond to. Moreover, SPSS 23 used descriptive statistics and simple regression to analyse the research data and questions. The study found out the undergraduate students' attitudes toward learning English, as a F.L. studying in the English Department College of Education Socotra is high. As well as the results indicate that there is students' motivation toward learning English as a foreign language, with a high rate. There is a clear focus on the undergraduate students' motivation toward learning English as a foreign language lies in family. Thereby the research final outcome recommends that there should provide feedback, workshops, and training courses in English as a F.L. to raise awareness and the capabilities of the students' and teachers' attitudes and motivation in Socotra Island because of its direct impact on the students' attitudes and motivation.

PPAS-2

INVESTIGATING THE PSYCHO-FEMENIST DOMAIN IN E.M. FORSTER'S A PASSAGE TO INDIA: FREUDIAN PSYCHOANALYSIS

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ABSTRACT

In this research paper, great efforts were given to analyze the two major female English characters of A Passage to India from a psychological perspective based upon the Freudian notions of his theory of psychoanalysis. It highlights the psycho-feminist domain and provides a detailed exploration of the psychoanalytic interpretation of this passage of literary articulation. It is observed that two basic critical theories are considered as two main perspectives related to the central topic of this article namely the psychoanalytic approach and the feminist theory. The mixture of both methods can be counted as a cornerstone of the new school of thought that is the feminist-psychology. . Hence, Freud is the founder of the psychoanalytic school of thought, and Mitchell is a great feminist who investigated Freudian arguments from a feminist perspective. It can be represented in both main female characters of the novel Miss Adela Quested and Mrs. Moore. Thus, the goal of this paper is to analyze the central female characters of Forester's A Passage to India according to Freudian psychoanalysis. Therefore, the Freudian pattern of Id, Ego, and Superego that surround the character's psyche will be discussed critically according to the Freudian arguments.

PPAS-3

"ANALYSIS OF HEAVY METALS IN GROUND WATER OF BHUGAON INDUSTRIAL AREA"

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ABSTRACT

In the present day the main environmental problems arising from industrialization and developmental activities is the contamination of ground water. Due to presence of heavy metals and hazardous waste in the ground water affects the nature and human population in general. Given in attention, improper discharge of industrial effluents in water bodies that contains many heavy metals causes dangerous effects on the human life. Ground water is the main source of drinking water in and around the Bhugaon village. Its quality is getting lower day by day due to discharge of industrial effluents in the water without proper treatment. The urban population in that village relies only on wells, bore wells and hand pumps for their water requirements. The uncontrolled usage of pesticides and fertilizers are the primary causes of ground water contamination. In this study, ground water near industrial area of Bhugaon village was sampled and collected to analyse the contamination in the ground water due to trace metals. Since, the industrial waste is dumped directly on ground without treatment we were able to observe presence of heavy metals such as cadmium, chromium, lead, iron and nickel. The analysis report also detected the presence of Nitrate in the sample. The observedvalues of Cd, Cr, Ni, Fe and Pb in the study ofground water in Bhugaonvillage wereat minimum levels according to WHO standards and several other International standards. The results show that the bore well water sample contains concentration of chromium in water sample was <0.01 mg/L, concentration of cadmium in water sample was not detected, concentration of nickel in sample was <0.01 mg/L, concentration of lead in sample was <0.008 mg/L, concentration of iron in sample was 0.232 mg/L. and concentration of nitrate in water sample was 15.32 mg/L. In the ground water sample

PPAS-4

CHANGING PERSPECTIVE IN ENVIRONMENT, MANAGEMENT, HUMANITIES, SCIENCE AND TECHNOLOGY.

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ABSTRACT

Environment belongs to all and is thus important for all.Human population is growing rapidly and over population is associated with negative environmental outcomes-ranging from the impact of over-farming,deforestation,forestfire,climate change and globle warming and moreover corona pandemic havoc facing by a whole world.

No doubt in the past four-five decades with the power of science and technology man has exploit environment and it resources unhesitatingly and used them with very unauthorized manner without much concern.There is, thus a need to develop a sustainable world with proper management of the environment and its resources and all this is only possible by changing human perspective towords the environment.The public has to be educated about the fact that if we are degrading our environment we are actully harming ,our ownselves.One has to get feeling that rivers,oceans,forests and entire environment is their own and for them and can be preserved by them only because most of environmental issue or problem`s originated due to anthropogenic activity.

Forest fire is one of the example of environmental problem that the whole world facing and the cause behind this is human population which is growing on alarming rate .According to the Indian Forest Report (2021-22) 35.46% area of forest is prone to forest fire and most of the fire incident are caused by human activity. While studing on some of the part of forest in ut of j&k, I also observed that main cause of fire is deliberate and Negligent human behaviour and by this abstract I only want to highlight the issue and in future research want to explore more reason behind the hazard.

Keywords:*Environment,Humanpopulation,Forest,Hazard etc.*

PPAS-5

CARBON SEQUESTRATION: A WAY TO MITIGATE CLIMATE CHANGE IN AGRO-FORESTRY SYSTEM

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The value of forests in sequestering carbon and reducing carbon dioxide emission to the atmosphere is being recognized increasingly the worldwide. Forest plantations and agroforestry systems are thus recognized to have the potential to regain some of the carbon lost to the atmosphere in the clearing of forests.The increase in atmospheric concentration of CO2 by 31% since 1750 from fossil fuel combustion and land use change necessitates identification of strategies for mitigating the threat of the attendant global warming. Since the industrial revolution, global emissions of carbon (C) are estimated at 270F30 Pg (Pg = petagram = 1015 g = 1 billion ton) due to fossil fuel combustion and 136F55 Pg due to land use change and soil cultivation. Emissions due to land use change include those by deforestation, biomass burning, conversion of natural to agricultural ecosystems, drainage of wetlands and soil cultivation. Depletion of soil organic C (SOC) pool has contributed 78F12 Pg of C to the atmosphere. Some cultivated soils have lostone-half to two-thirds of the original SOC pool with a cumulative loss of 30–40 Mg C/ha (Mg = megagram = 106 g = 1 ton).The emission of CO2 concentration from industries, burning of fossil fuels and deforestation causes GHGs. Hence, forests in terms of agro-forestry, plantation, reforestation has been suggested as one of the most appropriate land management systems for mitigating atmospheric CO2 through photosynthesis process. Forest ecosystems also contribute to store more than 80% of all terrestrial aboveground C and more than 70% of allSOC. Forest soils are one of the major carbon sinks on earth, because of their higher organic matter content. Furthermore, soil carbonsequestration is a bridge across three global issues climate change, desertification, and biodiversity. The global potential of SOC sequestration through these practices is 0.9F0.3 Pg C/year, which may offset one-fourth to one-third of the annual increase in atmospheric CO2 estimated at 3.3 Pg C/year. The cumulative potential of soil C sequestration over 25–50 years is 30–60 Pg. It restores degraded soils, enhances biomass

PPAS-6

EFFECT ON PHYSICO-CHEMICAL CHARACTERISTICS OF GROUNDWATER: A CASE STUDY OF MULA SUGAR FACTORY, SONAI, DISTRICT AHMEDNAGAR, MAHARASHTRA, INDIA.

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Abstract

The present study was aimed to determine the impacts of sugar industry on ground water quality of area around the sugar industry. Most of the population in villages, towns and cities directory or in directory depends on the ground water for drinking purposes, domestic as well as for agriculture purpose. Ground water sample is compared with the prescribed standard of drinking water given by BIS. Ground water sampling is done in 12 different locations around sugar mill. While the temporal changes have been attributed to dilution and concentration phenomena governed by climatic factors, the spatial variations in the geochemical characteristics of groundwater appeared to be related to pollution due to effluents from the Mula Sugar Factory. The cause of groundwater pollution is the effluent carried by a stream flowing through the area. Pollutants have entered into the shallow aquifer by downward percolation through the zone of aeration to form a recharge mound at the water table and, further, lateral movement below the water table. Various geochemical parameters is determined using standard method like temperature, pH, total alkalinity, EC, TDS, TS, DO, BOD and COD.

Keywords:*Groundwater, Sugar mill effluent, Pollution, standard of drinking water*

PPAS-7

HEALTH CARE SYSTEM IN HARYANA: A GEOGRAPHICAL ANALYSIS

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ABSTRACT

The Indian Health Care System is presently facing several challenges. For attaining thegoal of Health for All, India requires not only logical pulling of existing Strategies in education and training of medical services and health personal, but also a fundamental restructuring of health services infrastructure. Health of the people must be remains the primary concern. Government of Haryana is committed to provide quality health care to all its citizens. With the objective to make healthcare reasonable to all, several path-breaking initiatives have been taken and innovative schemes launched in Haryana. Health services are being provided through a network of many Hospitals including PGIMS Rohtak, Community Health Centres, Primary Health Centres, Sub-Centres, and Trauma Centres, District T.B. Centres/Clinics, Urban RCH Centres and Delivery huts etc. And for health education MBBS seats have also been increased in medical colleges. This article has given an overview of status of Health infrastructure development & innovative health care schemes in Haryana. The study is based on the secondary data. The data has been collected from statistical abstracts and economic survey reports of the state of Haryana, newspapers, journals and various websites.

***Keywords**: Health, Haryana, Infrastructure, NRHM, RCH*

PPAS-8

MORPHOMETRIC ANALYSIS OF MULA RIVER BASIN IN AHMEDNAGAR DISTRICT OF MAHARASHTRA STATE, INDIA

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ABSTRACT

Morphometric analysis gives a quantitative description of drainage basin. The main aim of the present study is to identify the morphometric parameters of a watershed of Mula River basin, Ahmednagar district of Maharashtra state, India. Morphometric analysis is also importantin order to investigate the pedology, environmental assessment, groundwater management &groundwater potential. It also checks the relief, areal aspect, geometric and linear aspect gives hierarchical order of streams along with number and length of stream segment etc. The areal aspect gives the analysis of basin shape, basin parameter both geometrical and topological. The relief aspects include dissection index, absolute and relative relief and average slope. Morphometric parameter generally depends upon bed rock, lithology, pedology and geological structures.The problems associated with river morphological changes are ubiquitous, but show regional variabilities with changes in magnitudes as well as the driving mechanisms. Hence, widespread efforts have been undertaken in diverse environments across the world to understand the changes in channel morphology and the environmental changes responsible for the changes of the river channels.

Keywords: *Morphometric parameter, relief, regional variabilities, river channels*

PPAS-9

LEXICAL CHALLENGES IN TRANSLATING BUSINESS ENGLISH TEXTS FROM ENGLISH INTO ARABIC FACED BY STUDENTS OF BUSINESSENGLISH, FACULTY OF LANGUAGES/ UNIVERSITY OF ADEN

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Abstract

This paper aims to investigate two aspects of Business English translation into Arabic: lexical problems (polysemy) and their causes. So the purpose of this study is to explore the lexical problems (polysemy) that students of business English encounter in translating Business English texts into Arabic and the reasons of these problems. The lexical problems are examined in translating business English texts at sentence and paragraph levels. The study reveals that there are several reasons behind these lexical problems. The most important reasons are: - Insufficient English and Arabic vocabularies. - Less awareness of the connotative meaning of lexical items in Arabic. - Lack of practicing translating in the classroom. - Lack of qualified teachers in the field of translation.

SECTION-C POSTER PRESENTATION, BOTANY

PPBS-1

COMPARATIVE EFFECT OF BIOFERTILIZERS AND CHEMICAL FERTILIZER ON GROWTH OF GERANIUM(*PELARGONIUM GRAVEOLENS* L.)

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ABSTRACT

The present study deals with the effect of Biofertilizers and Chemical Fertilizer on growth of *Pelargonium graveolens* L. (Geranium). This experiment conducted for farmers because now a day there is vast use of chemical fertilizers. Using chemical fertilizers soil becomes infertile within few years, excess use of chemical fertilizer also harmful to human beings. The parameters like height, branches and number of leaves are counted after two months. The result shows that plants grow faster and taller in Azotobacter Biofertilizers applied plants as compared to chemical fertilizer. The Biofertilizers shows positive impact in height, number of leaves and number of branches in *Pelargonium graveolens* L. (Geranium).

Keywords: *Biofertilizers, Chemical Fertilizer, Geranium and Pelargonium graveolens*

PPBS-2

IN VITRO EVALUATION OF VIDHARA (ARGYREIA NERVOSA) LEAF EXTRACT AGAINST ROOT-KNOT NEMATODE (MELOIDOGYNE JAVANICA) IN POMEGRANATE FROM MAHARASHTRA STATE

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ABSTRACT

Pomegranate (*Punica granatum* L.) is an economical and commercial crop of tropical and subtropical India. Among the plant-parasitic nematodes, root-knot nematode (*Meloidogyne* spp.) is considered to be an economically important pest of pomegranate cultivation in Maharashtra. Almost all pome orchards are noticed to be infested with this nematode and incur a huge monetary loss to the growers. Furthermore, nematode parasitism has observed to increase the tree's susceptibility to soil-borne pathogens and induce wilt, subsequently tree succumb to death. Nematicides have been recommended so far but have limited use as these nematicides are costlier to the growers, toxic to the environment and polluting bio flora and fauna. In the present study, the root samples of nematode infested pome plants were collected washed and females were isolated from galls. From the perineal pattern, the nematode species is identified as *M. javanica*. An aqueous leaf extract of Vidhara plant has assessed for its anti-nematode property against root-knot nematode. The leaves of Vidhara were harvested and dried into the oven at 70℃ for 3 days and powder prepared. A sample (5g) of powder was crushed into distilled water and filtered, centrifuged and the clear aqueous suspension was taken for study. The bio efficacy study showed that 46.65%, 58.3%, 69.33%, 83.45% and 90% mortality of juveniles (J2s) were noticed at 10%, 20%, 30%, 40% and 50% concentration of Vidhara leaf extract at room temperature for 48 hours of exposure. Utilization of locally available plants for nematode management would be the best strategy as eco-friendly, non-contaminating and cheap to the farmer. Therefore, an aqueous leaf extract of Vidhara plant holds a potential botanical for root-knot nematode management in pomegranate.

Keywords: *Root-knot Nematode, Pomegranate, Bio-efficacy, Vidhara.*

PPBS-3

IMPACT OF FARM POND ALGAE AS A LIQUID BIO-FERTILIZER ON SPINACH GROWTH (*Spinacia oleracea* L.)

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ABSTRACT

By taking into consideration seed germination, seedling growth, and seedling vigour index, the effectiveness of farm pond algal extracts as a liquid bio-fertilizer on the growth of spinach was investigated (SVI). The experiment involved soaking the seed overnight in a variety of algal extract concentrations, including 1 per cent, 5 per cent, 10 per cent, 15 per cent, 20 per cent, 25 per cent, and control. The results showed that, when compared to other concentrations and the control, algal extracts at a 20 per cent concentration displayed the greatest activity in terms of increasing seed germination, root length, shoot length, and seedling vigour index.

Keywords: *Algal, Bio-fertilizer, seed germination, seedling growth, seedling vigour index, spinach*

PPBS-4

SCREENING OF PHYTOCHEMICALS FROM SOME ORNAMENTAL FLOWERS

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ABSTRACT

Phytochemicals are defined as bioactive compounds in all parts of the plants which responsible for the nutritional and medicinal values of plants. Phytochemical screening is to isolate various constituents of the plants for assessing their biological activity or medicinal uses. Among the phytochemicals mentioned as potentially providing health benefits are polyphenols, flavonoids, iso flavonoids, anthocyanidins, phytoestrogens, terpenoids, carotenoids, limonoids, phytosterols and fibers. The Qualitative analysis is very essential to identify the phytochemical constituents present in medicinal plants. The medicinal value of plants is due to the presence of particular bioactive constituents. Hence, the present study was focused to analyze the presence of phytochemicals in some selected ornamental flowers like *Jasminum sambac,Rosa indica, Rosa grandiflora, Rosa foetida. Jasminium angustifolium, Jasminum auriculatum, Chrysanthemum indicum, Bellis perennis, Crossandrainfundibuliformis, Millingtonia hortensis.* Totally 15 phytochemical screening tests were conducted. Among the 10 selected ornamental flowers more phytochemicals were observed in*Rosa indica* and *Rosa grandiflora.*

Keywords: *Qualitative analysis, Medicinal values, Rosa indica and Rosa grandiflora.*

PPBS-5

HEALTH BENEFITS OF MANGIFERA INDICA

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ABSTRACT

The botanical name of mango is mangifera indica.it belongs to the family Anacardiaceae.its form is oval, round,heart shape or long and slender.colour is yellow and orange.fruit is drupe.india ranks first among world's mango producing contries accounting for about 50 % of the world's mango production.other Major mango producing contriesinclude china, Thailand,Mexico, Pakistan, Philippine, Indonesia,Brazil, Nigeria,andEgypt.it is good for health and benefits.packed with nutrients,low in calories, high in healthy plant compounds, contains immune –boosting nutrients, support heart health,may improve digestive health etc .mango are also rich in vitamin C , which is important for forming blood vessels and healthy collagen,aswell as helping you heal .mangos are rich in beta- carotene is an antioxidant,just one of many found in mangos.

Keywords: - *Mangifera Indica,mango,Anacardiaceae,beta carotene.*

PPBS-6

SELECTION OF PHYSIOLOGICALLY AND GENETICALLY SUPERIOR F_1 PROGENIES OF RICE FOR DROUGHT TOLERANCE UNDER FLOODING AND MOISTURE CONDITION

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ABSTRACT

In this study, a number of 143 F_1 rice seeds derived from a cross between ADT37 and CR Dhan 801 were used for evaluating their performance to drought stress at seedling stage under flooding and moisture condition. More number of F_1 seedlings grown under moisture condition were noted to be tolerant to drought stress when compare to seedlings of flooding. The value of drought tolerance degree was high in F_1 seedlings of moisture condition. Heterosis percentage alsowas recorded as high in many F_1 seedlings for mid and better parent value under moisture condition. In genetic analysis, percentage of genetic (Vg) and phenotypic variation(Vp) was found to be high in tolerant seedlings of moisture condition.In case of genotypic (GCV) and phenotypic coefficient of variance (PCV)high percentage was registered in susceptible and tolerant seedlings of flooding and moisture condition, respectively. Heredity percentage was high in susceptible and moderate tolerant seedlings of flooding and moisture condition, respectively. In this study, it is found that more number of F_1 seedlings is associated with drought tolerance at physiological and genetical level under moisture condition when compare to flooding. These superior rice lines could be used for further drought improvement programme.

Keywords: *ADT37, CR Dhan 801, Drought stress, Heterosis, Heredity, drought tolerance degree.*

PPBS-7

CREATING A USEFUL PRODUCT FROM WEED BIOMASS-*PARTHENIUM* FOR SOIL CONDITIONING

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ABSTRACT

Weeds are unsightly, non-productive plants that compete with crops for scarce natural resources like water, nutrients, and sunlight. For a multitude of factors, including quick growth, strong reproductive potential, adaptability, and most significantly, interference from resource depletion and allelopathy, a weed can become established in any ecosystem. One of the deadliest weeds on the planet, *Parthenium hysterophorus* is listed in the global database of invasive species. Even though India is home to enormous populations of this plant, its economic significance as a food source is constrained by its toxicity. Therefore, composting might be a practical choice for transforming weed biomass into a useful substance that can be used as a soil conditioner.In the present investigation an attempt was made to manufacture vermicompost using *Parthenium hysterophorus*, bagasse and press mud along with cow dung. The developed product was compared with the normal vermicompost for its nutrient properties. The formulated vermicompost showed pH 6.08, Electrical conductivity 14.20 mmhos/cm, Total organic carbon-31.68%, Total organic matter 54.50%, C:N ratio 8.70%, Nitrogen 3.64%, Phosphorus 2.85%, Potassium 1.27%, Sulphur 0.96%, Calcium 6.52%, Magnesium 1.03%, Ferrous 8921.19mg/kg, Manganese 334.47mg/Kg, Copper 83.08mg/Kg and Zinc 99.72 mg/Kg. As compared to control the highest nutrient value N[3.64]%, P[2.85]%, K[1.27]%, Sulphur [0.96%], Calcium [6.52%], Magnesium [1.03%], Ferrous [8921.19mg/kg], Manganese [334.47mg/kg], copper[83.08mg/kg], zinc [99.72mg/kg] was observed in the formulated vermicomposting. From the above results, it can be predicted that though *Parthenium* is an invasive weed, it can be used as a nutrient rich material for the growth of plants in form of vermicomposting.

Keywords*:* *Parthenium, Vermicompost, Soil conditioner*

PPBS-8

MEDICOBOTANICAL VALUES OF *ALOE VERA* USED BY TRIBAL COMMUNITIES

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ABSTRACT

The *Aloe Vera* is an *Aloe barbadensis* miller. It belongs to *Asphodelaceae* (Liliaceae) family and is a Shrubby or arborescent, perennial, xerophytic, succulent, Pea-green color plant. It is found mostly in arid parts of Africa, Asia, Europe, and America. It is found in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra, and Tamil Nadu in India.Aloe vera, a cactus-like plant, has been utilised for ancient times of traditional medical uses. Barbados or Curacao aloe is a herbal remedy that has a long history of use by a number of civilizations. It is a natural substance that is becoming popular in the field of Cosmetology. It is a succulent plant that thrives in arid and subtropical settings and is well recognised for its therapeutic characteristics, which are employed in Ayurvedic, Homoeopathic, and Allopathic medicine. This amazing medical plant's leaves are high in vitamins, minerals, natural sugars, enzymes, and amino acids, as well as a variety of bioactive chemicals. Scientific Studies Provide support for the application of Aloe vera in Cosmetic-moisturizer, kinds of toothpaste etc, food as products, and medicine for humans and also other animals.

Keywords - *Aloe vera, Medicinal Uses, Aloe barbadensis miller uses.*

PPBS-9

DETECTION OF AFLATOXIN PRODUCING STRAINS OF *ASPERGILLUS FLAVUS* FROM MAIZE GRAINS.

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ABSTRACT

Aspergillus flavus is the most important aflatoxin producing mould. This species in maize produces carcinogenic,mutagenic and teratogenic secondary metabolities.Estmation of aflatoxin is generally monitored by ELISA & HPTLC Based assay which are expensive alternative approach to identify toxigenic nontoxigenic strain. Twelve isolates of *Aspergillus flavus* isolated from three maize varieties were tested by cultural method for aflatoxin detection, which is inexpensive and rapid. Two isolates viz. AF1 and AF12 were found highly toxic which showed dark pink colour development ,while AF2 were found moderately toxigenic ,because these isolates turned into moderate pink colour, while eight isolates viz. AF3,AF4,AF5,AF7,AF8, AF9,AF10,AF11 exhibited light pink colour after treatment with ammonium vapor ,were lowtoxigenic. Among all the isolates tested only one viz.AF6 isolate were found to be nontoxigenic .The results of ammonia vapors test were up to 90% with the result of toxin detection by high pressure thin layer chromatography (HPTLC).

Keywords: *Aspergillus flauvs, aflatoxin, ammonia vapors test maize.*

PPBS-10

MANAGEMENT OF FOLIAR DISEASES OF ONION

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ABSTRACT

Onion is an economically important vegetable crop. Among the various constraints affecting onion cultivation, biotic stress due to pests and diseases causes huge economical loss besides reducing the yield and quality (Madhavi *et al.*, 2018). A purple blotch of onion caused by *Alternaria porri* is an important disease affecting onion which occurs at all stages of the growth and height of the crop, and yield loss of upto 65% has been recorded (Evert, *et al.*, 1990). Besides, there is also a possibility that the damage due to thripids may predispose the purple blotch disease of onion. Based on this, a field experiment was conducted with the variety Co4 for the management of purple blotch of onion. The results of the pooled analysis revealed that the first spray(30DAT) with Mancozeb0.25% + Methomyl 0.8g/l, second spray (45 DAT) with Tricyclazole 0.1% + Carbosulfan 2ml/l, and third spray (60 DAT) with Hexaconazole (0.1%) + Profenofos 1ml/l recorded lesser purple blotch incidence of 9.37 PDI at 40 DAP with a higher marketable yield of25.08 t/ha when compared to the control plot. It is concluded that spraying of Mancozeb (0.25%), Tricyclazole (0.1%), and Hexaconazole (0.1%) along with insecticide and pesticide willbeeffective for themanagement of purple blotch of onions

Keywords*:* *Onion, Vegetables, Alternaria, Agriculture.*

PPBS-11

PREVALENCE OF WILT COMPLEX INCIDENCE ON BLACK PEPPER IN KARNATAKA, INDIA

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ABSTRACT

An intensive roving survey was undertaken to know the occurrence of the burrowing nematode, of *Radopholussimili*s and fungus, *Phytophthoracapsici* associated with the wilt complex disease in black pepper in disease suspected pepper vine gardens of black pepper growing districts of malnad areas *viz*., Chickmagalur, Shimoga, Coorg, Uttara Kannada and Hassan districts of Karnataka during *Kharif* 2020-21.The wilt complex was noticed in all the locations surveyed with a range of 27.28 per cent to 35.23 per cent.

In Chickmagalur district, maximum wilt complex incidence in Mudigere taluk (16.66 % to 63.40 %) followed by Koppataluk (14.58 % to 51.50 %), N. R. Pura (16.05 % to 51.20 %) respectively, whereas lowest wilt complex incidence in Chickmagalurtaluk as recorded (17.33 % to 43.50 %) followed by Sringeri (22.13 % to 48.50 %) respectively.

In Shivamogga district, maximum wilt complex incidence was recorded in Shikaripura (18.36 % to 45.68 %) followed by Hosanagara (19.63 % to 41.10 %) and Soraba (22.35 % to 40.25 %) respectively, whereas the lowest incidence was recorded in Bhadravathy (18.50 % to 34.50 %) followed by Thirthahalli (18.25 % to 35.50 %).

The survey conducted in 270 locations from selected five districts *viz*., Chickmagalur, Coorg, Shivamogga, Hassan and Uttara Kannada during 2013-14. The wilt complex noticed in all locations surveyed, with a range of 16.05 % to 63.40 % in Chickmagalur district followed by Shivamogga (18.25 % to 45.68 %), Coorg (16.22 % to 44.50 %) and Uttara Kannada (20.68 % to 43.55 %), whereas least was noticed in Hassan district with a range of 16.18 per cent to 32.16 per cent.

Maximum complex incidence was recorded in Bilimalligesara (33.86 %) followed by Kalluvally (32.23 %), Paniyur-2 (31.84 %), Paniyur–3 (31.05 %), Paniyur-1 (30.12 %), whereas lowest wilt complex incidence was recorded in Karimunda (17.41 %) followed by Karimalligesara (24.10 %) and Paniyur – 5 (27.19 %).

Sandy loam soils influenced maximum wilt complex incidence (63.40 %) and lowest incidence was recorded in red sandy soils (16.18 %).

PPBS-12

TRADITIONAL USE OF AZADIRACHTA BY TRIBAL COMMUNITY OF AHMEDNAGAR DISTRICT

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ABSTRACT

AzadirachtaIndica commonly known as neem, neemtree or Indian lilac.Is a tree in the mahogany family Meliaceae. It is one of two species in the genus Azadirachta& is native to the Indian Subcontinent & most of the countries in Africa. It is typically grown in tropical & semi- tropical region.It fruit & seeds are the source of Neem oil, Neem leaves & seeds are used to make medicine, neem leaf is used for leprosy, eye disorders, bloody nose, skin ulcers, diabetes. The neem leaf is one of the most important used for birth control & to causes abortions. Neem contains chemicals that might help reduce blood sugar level. Neem has the antiseptic properties, so if you apply a paste of Neempeel, leaves & fruits on your face you can get rid of blisters & Acne, Neem leaf juice also help to improve & stimulate digestion.

Keywords :*AzadirachtaIndica, palm Leaf Manuscripts; Pechistory.*

PPBS-13

MANAGEMENT OF CORN LEAF BLIGHT

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ABSTRACT

Maize Or Cornis the world's third-leading cereal crop, After wheat and rice. It most probably originated in Central America; italso grows in other countries like India. The temperature of 18 to 23^{0}C fordeposition and 28^{0}C temperature is considered good for growth anddevelopment.DifferentinsectpestsattackCornfromthe time ofplanting tillitsharvesting.Northern corn leaf blight (NCLB) is a foliar disease of corn (maize) caused by *Exserohilumturcicum*. The characteristic symptom of northern corn leaf blight on a susceptible hybrid is1-6 inlong cigar-shaped gray to tan-colored lesions on the leaves. The fungus requires6 To 10 hours of water on the leaf surface to cause infection atoccurs during periods ofmoderate (64° to 81°F), wet and humid weather. Fungicides are available for in-seasonmanagement of NCLB. The Fungicide iprodione was the most potent, with IC50 < 0.01 mg/L,followed by Fludioxonil, IC50 0.31 mg/L, and thiram, 1.37 mg/L. Carbendazim, metalaxyl,andcaptan were classified as non-fungitoxic, showing IC50 > 50 mg/L for all Isolates. Althoughiprodione is the most potent fungicide it is not used for corn seed treatment. However, it isimportanttorememberthatFungicideapplicationsareanadditionalcosttocornProduction.

Keywords: *Corn leaf blight,Maize,Exserohilumturcicum,iprodione.*

PPBS-14

FLORISTIC BIODIVERSITY OF KHARIF WEED IN AHEMADNAGAR

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ABSTRACT:-

Present work deals with intensive, systematic collections made in the different parts of Ahmednagar during 2020-2021. During the present 39angiospermic plants were collected. The work done so far on the flora of Ahmednagar by Pradhan & Singh (1999), is not giving the correct and detailed account of weeds in the region.the several plants are growing as weeds in the waste places of town are used in different systems of medicines. Aim of the thiswork is to prepare a data on the weed plants of Ahmednagar and to highlight their utility aspect. Such a studies may give the correct idea about the usefulness of plants which grow in the vicinity. Altogether 39 weed plants have been enumerated and it includes botanical name, synonyms, family, local name, phonological data and locality. As far as weed flora is concerned the families like, Asteraceae with 9 species is on top, Fabaceae represents 8 weed species holds second position,Acanthaceae is on third position with 7 species while the families Convolulaceae and Euphorbiaceae are having 5 species each. Several families are representing single species. Total 39 species of the weeds collected are being used in the different systems of medicines for treating different ailments. The aim behind these studies is to prepare a detailed account of the weed flora of Ahmednagar with emphasis on the aspect of the weed plants.

Keyword:-*Biodiversity, Biological Indicator, Ahmednagar,, weeds*

PPBS-15

COTTON LEAF CURL VIRUS DISEASE

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ABSTRACT

Present work deals with Cotton leaf curl virus disease. Cotton is one of the most important crops of Indiaand plays a dominant role in the industrial and agricultural economy of the country. It is of the important Cash crop in India, It provides the basic raw material (cotton fibre) to cotton textile industry. The present epidemic of cotton leaf curl disease (CLCuD) originated in the Punjab region near the city of Multan and was first reported in 1985.The very characteristic symptoms include leaf curling, darkened veins, vein swelling and enations that frequently develop into cup-shaped, leaf-like structures on the undersides of leaves. Identification of the vector of cotton leaf curl disease as the whitefly *Bemisiatabaci*.There are no known methods for preventing or reducing cotton leaf curl virus. Chemical control in the form of insecticides can be used to control the whitefly population, such as imadacloprid or dinotefuran.

Keywords: *Cotton, Bemisiatabaci, imadacloprid, dinotefuran.*

PPBS-16

MEDICINAL AND NUTRITIONAL VALUES OF PAPAYA

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ABSTRACT

The Papaya(Carica papaya L.) is a tropical fruit that is native to the tropics of South Africa. It is single softwooded plant that can height upto 10 m. spiral leaves based at top of trunk (Rice et al.,1987). Frutingstarts within 1 and half year to 3 years. Fruit length can vary upto 20 inches to 2.5kg in weight, whosecolor is greenish yellow to orange . Papaya (Carica papaya L.) is mainly consumed as a food throughoutthe world as it having nutritive values. Papaya is low calorie nutrient dense fruit. Every part in papayaplant such as roots, leaves peels, latex, flower fruit and seeds have medicinal and nutritional significanceIt is used as anti-inflammatory ,anti-oxidant ,diuretic , anti-fungal activity etc. Also papaya is rich inAntioxidant , Vitamin-B ,Folate and Pantothenic acid, Pottasium, Magnesium and Fibre. Ripe papayahelps in prevention of cancer in organs overall papaya acts as a detoxifier and can activates themetabolism.(Amanatali et al.,) .Juice of Papaya fruit are recommend by doctors for increasing the whiteblood cell count. It is also rich in vitamin C. Fruit of papaya contain dietary fibre.

Keywords: *Carica papaya L, Nutritional values of papaya .medicinal and health benefits of Papaya.*

PPBS-17

MEDICINAL USES OF ACTINDIA DELIOSA

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ABSTRACT

The botanical name of kiwi is Actindiadelicioga. It belongs to Actinidicocese family. It a small fruit, which is green and yellow – fleshed in colours. It is derived from deciduous woody,fruiting vine. The production of Kivi is found in many countries like Italy, Chile, France, Greeceand Japan. But the production of Kiwi is mostly done in New Zealand. It is good for health, richsource of antioxidant, improvement of gastrointestinal laxation, lowering of blood lipid levelsand alleviation of skin disorders. It not only contain Vitamin C but also contain good source ofothers nutrients such as folate, potassium, and dietary fibers. Kiwi also contain Chlorophyllcalled as green pigment. It contain impressive nutrient profile.

Keywords: *Actinidicocese, dietary fibres, gastrointestinal laxation*

PPBS-18

TITLE – ISOLATION OF FUNGAL ENDOPHYTES OF STEM OF *SOLANUM XANTHOCARPUM* L.

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ABSTRACT

Endophytes are group of microorganisms (Fungi, Bacteria and Actinomycetes) that colonize in the intercellular or intracellular locations of plants. Life cycle of the endophytes either partially or fully occurs inside host plant. They occur in almost every plant and they show complex interaction with their host like mutualism, antagonism and rarely parasitism. In most of the cases symptoms of any disease are absent, these microbes complete most of their lifecycle without causing any visible damage to host. These endophytes could be readily isolated from any microbial or plant growth medium. These endophytes operate many functions in host ranging from nutrition to defense in plants.Endophytes are found colonized in stem, root, petiole, leaf segments, inflorescence, fruit, buds, seeds and also dead and hollow parts of the plants. Endophytes act as a bio factory of novel and important bioactive secondary metabolites for example alkaloids, phenolic acids, quinones, steroids, saponins, tannins, and terpenoids. These endophytes have insecticidal, antimicrobial, anticancer and many other activities.Endophytic fungi are considered as novel source of enzymes, also provide wide array of activities by bioactive compounds residing in it. Taxol is well known anti cancerous and anti-microbial compound isolated from endophytic fungi of *Taxus brevifolia*.*Solanum xanthocarpumL.* possess economic properties and it hosts endophytic mycofloraTherefore, in current study endophytic fungi are isolated fromstemof*Solanum xanthocarpumL.*by using fungal specific PDAmedia. Dominant endophytes isolated and primarily identified were*Aspergillus flavus, Penicillium rubens, Colleotrichumgloeosporoides, Penicillium aurantiogriseum, Aspergillus fumigatus*identified by colony morphology and spore morphology.

PPBS-19

WOOD FIBRE CHARACTERISTICS OF UNDERUTILIZED POPLAR SPECIES AND COMPARISION WITH *P. DELTOIDES* IN TERMS OF THEIR PULP AND PAPER QUALITY

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ABSTRACT

Pulp and Paper industries are growing at a tremendous rate. To satisfy the raw material supply and sustainability of their future industries needs an alternative resource from fast growing tree species. Poplar is one of the world's fastest-growing light woods trees with its use inseveral industries. The present work relies on the comparative fibre morphological dimensions of four species of poplar i.e.*Populusalba*L., *Populusciliata*Wall. ex Royle, *Populuseuphratica*Oliv. and*Populusnigra* L. The quality of pulp and paper was directly related to the fibre dimensions i.e., fibre length, fibre lumen diameter, fibre wall thickness. A number of wood properties related to paper quality were also derived from the fibre dimensions including runkel ratio, flexibility coefficient, solid factors, luce's-shape factors, slenderness ratio and wall coverage ratio. The mean value of fibre length, fibre diameter, fibre wall thickness and basic density of these four species were ranged from 919 – 1425 µm, 19.71 – 25.85 µm, 2.72 – 4.99 µm and 0.38 – 0.54 g cm^{-1} respectively. The prominent objective was to compare fibre quality of these four poplar species within among self and also with an exotic poplar species *Populusdeltoides* and other fast growing tree species.

Keywords:*Populus spp., fibres, pulp and paper quality, runkel ratio and wall coverage ratio.*

SECTION-E POSTER PRESENTATION, MICROBIOLOGY

PPMB-1

INVITRO STUDY OF ANTIBACTERIAL ACTIVITY OF SOME MEDICINAL PLANT OILS

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ABSTRACT

Oils are widely used in traditional Indian society for various health related problems.Even today, most of the infectious diseases are treated by using folklore medicines in a number of countries.In the present study antimicrobial activity of different oils extracted from different parts of some medicinal plants was evaluated. Readymade oils extracted from dry fruits of *Azadirachta indica* (Neem oil), bark and leaves of *Cinnamomum zeylanicum* (Dalchini oil), leaves of *Cymbopogon citratus* (Lemongrass oil), leaves of *Eucalyptus globulus* (Nilgiri oil), dry flowers of *Eugenia caryophyllata* (Clove oil), leaves of *Mentha spicata* (Mint oil) and leaves of *Ocimum sanctum* (Tulsi oil) were used. Antimicrobial activity of these oils was studied by well diffusion method against *Escherichia coli,Salmonella typhi, Shigella flexneri, Pseudomonas aeruginosa, Staphylococcus aureus, Bacillus subtilis, Aspergillus niger and Candida albicans.* The results showed that different medicinal plant oils showed varying degree of susceptibility and resistances to all test organisms except nilgiri oil which found to be moderately effective against only *klebsiella* spp. But the base oils such as sesame oil, coconut, soyabean, mustard and ground nut oil have not shown antimicrobial activity against any of the test organisms. This finding proves that medicinal plants oil contain antibacterial properties. Moreover, base oil can be used as diluents for medicinal plants oil. The existing studies pave the way for exploiting the use of these oils in treating certain ailments and their use as food preservatives.

Keywords*:* *medicines, antimicrobialactivity. Oils, susceptibility*

SECTION-F POSTER PRESENTATION, OTHER SCIENCES

PPSC-1

Impact of Jalyukt Shivar Abhiyan on watershed management in Maharashtra

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ABSTRACT

Water is the basic requirement to our existence as the breathing air. Man can survive without food but without water we would not survive for longer time. Various daily activities of everyday life depend upon an adequate supply of fresh water. E.g. increasing urbanization, standard of living, agricultural development and raising of huge industries growth of population etc. are the major factors which affect the paucity of water.Watershed is a basic hydrologic unit, which can be defined as a delineated area with well-defined topographic boundary and water outlet. It is a geographic region within which hydrological condition are such that water becomes concentrated within particular location e.g. a river or reservoir by which watershed is drained. In Maharashtra main source of water is rainfall from monsoon wind. The uncertainty of monsoon creates droughts in Maharashtra. The present study area is in drought prone area. In this scenario government and local people participation in integrated watershed development and management work in Maharashtra is important. The people movement against drought with the help of Jalyukt Shivar Abhiyan resulted in increasing the surface as well as ground water of study area.The success of Jalyukt Shivar is public partnership. In those villages were completed works there is found that decline in water tankers in drought hit villages. In 2018 total 12,000 villages which have become water reliant, only 152 tankers were needed during the four months of summer in this year as compare to in 2015 it was 6,140 tankers.

Keywords*: Watershed management, monsoon, Droughts, Jalyukt Shivar Abhiyan etc.*

PPSC-2

SILVER NANOPARTICLES: A REVIEW ON GREEN SYNTHESIS OF SILVER NANOPARTICLES BY USING PLANT EXTRACT, CHARACTERIZATION AND THEIR ANTIOXIDANT ACTIVITY BY DIFFERENT METHODS

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ABSTRACT

The idea of nanoparticles, which display singular and remarkably different properties from their bulk, was first introduced by nanotechnology. Particles with one or more dimensions and sizes between one and one hundred nanometers are known as nanoparticles. In the field of medical science and disease treatment, the environmentally friendly synthesis of silver nanoparticles has received considerable global attention. The green synthesis of silver nanoparticles using plant extracts is thought to be an alternative to the chemical method of synthesizing nanoparticles. The data obtained using the green method were analysed using a variety of methods, including UV-Vis, FT-IR, XRD, TEM, AFM, and DLS. This review focuses on the plant mediated silver nanoparticles,Characterization and their antioxidant activities using various methods.

Keywords*: Green synthesis, Silver nanoparticles, Plant extracts, Antioxidant activity.*

PPSC-3

TRAPPING OF SOLAR ENERGY FOR MITIGATING CLIMATE CRISIS

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ABSTRACT

Solar energy obtained from the sun is one of the largest contributors of renewable energies in India and also in all other countries. Other renewable energy resources are wind energy, hydropower energy, geothermal energy, tidal energy, biomass and biogas energy. Solar energy being cost effective, everlasting and reliable as compared to all other form of renewable energies is being harnessed on large scale to mitigate the long term energy crisis and climate crisis in India and other developing as well as developed nations. In fact solar energy has become a major tool for sustainable socio-economic development of the countries as it does not produce any waste gases or materials which are harmful to the environment. The government of India has established 42 solar parks across the country to achieve its ambitious installed capacity target of 300 Gigawatt (GW) by 2030 and India being the founder member of international solar alliance has put forward the concept of "world solar park" so as to harness the solar energy on commercial scale and become self sufficient in terms of energy demand.

Keywords*: Renewable energy resources, renewable energy, solar energy and climate crisis.*

PPSC-4

ASSESSING SOIL PHYSICO-CHEMICAL PROPERTIES VARIABILITY AND THEIR IMPACT ON VEGETATION

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ABSTRACT

The Sangamner town is located on the confluence streams of Pravara and the Mhalungi rivers which is at a distance of 150 km from Pune, on Pune-Nasik National Highway No. NH-50. The area is drained by the Pravara river, which originates in the hilly region of Western Ghats at Ratangarh. Geologically, basalts underlay the Pravara basin. Continuous use of chemical fertilizers slowly changed soil properties; ultimately the production in long run is reduced It has resulted in leaching of chemical into the surface and ground water. Due to increasing demand for cash crops the practice of monoculture cropping pattern have further helped to deteriorate water as well as soil quality The present study was conducted to characterize the morphological and physicochemical properties of soil . Soil samples were collected fromregion irrigated from Ahmednagar district were analysed . A total 30 soil samples were collected scientifically as well as on the basis of topography of the study area . The clay percentage ranges from 25.51 to 51.53% 0n the basis of particle size distribution three texture group i.e. clay, sandy clay and silty clay and analysis water holding capacity values ranges from 37.16 to 55.97% .The organic carbon content of the study area ranged from low to moderate (0.45 to 0.60%). Total nitrogen , available phosphorous and available potassium of the soils were in the range of 120.40 to289.54 kg/ha),(10.41to 38.6 kg/ha) and (312.2 to 770.4 kg/ha) respectively. .Accordingly,they were rated as low to medium, very low to low, high to very high.The concept of organic farming is getting more popular due to its eco-friendly qualities and able to sustain the soil and food quality .Therefore, it is essential to evolve and adopt a strategy of integrated nutrient supply by using a combination of chemical fertilizers, organic manures and biofertilizers.

Keywords: *Soil , Physical and chemical parameters,irrigated region.*

PPSC-5

PERFORMANCE EVALUATION ON PRODUCTION TRAITS IN SAHIWAL CATTLE

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ABSTRACT

The native breeds, which have evolved over time through natural selection, are renowned for special traits like disease resistance, climatic adaptation, and the capacity to survive on low-quality roughages. Among the 50 recognised indigenous cattle breeds, the Sahiwal is a well-known breed with its breeding grounds in Pakistan. The main goal of an animal breeder is to maximise genetic improvement in economically significant qualities, which can be accomplished through careful breeding system selection and application.

The present study was conducted on production traits of 184 calving records of first parity Sahiwal cattle spread over a period of 30 years (1986-2017), maintained at Instructional Dairy Farm, Nagla, GBPUAT, Pantnagar Uttarakhand. Mixed model analysis of data was carried out by Least-square maximum likelihood programme to study the overall mean and heritability of Age at first calving, Calving interval, Dry period, Lactation length, 305 days lactation milk yield, Total milk yield, days to attain peak yield, and peak yield. The least squares mean of Age at first calving, Calving interval, Dry period, Lactation length, 305 days lactation milk yield, Total milk yield, days to attain peak yield, and peak yield were(1055.27 ±25.90Days) , (540.11±15.85Days), (260.61±14.58Days), (278.89±6.12Days), (1911.51±42.69Kg), (1969.76±49.15 Kg), (51.49±1.88Days), (9.88±0.23 Kg) respectively.

The heritability estimates for the Age at first calving, Calving interval, Dry period, Lactation length, 305 days lactation milk yield, Total milk yield, days to attain peak yield, and peak yield.(0.31±0.23),(0.36±0.24),(0.23±0.21),(0.16±0.19),(0.43±0.25),(0.44±0.24),(0.36±0.24),(0.54±0.27). The results indicate that first parity production traits improve under systematic breeding plan.

Keywords*: Sahiwal Cattle, Breed, Pakistan, Factors*

PPSC-6

PRELIMINARY PHYTOCHEMICAL SCREENING AND ANTIOXIDANT PROPERTIES OF METHANOLIC ROOT EXTRACT OF PICRORHIZA KURROA

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ABSTRACT

PicrorhizakurroaRoyle ex Benth. (Scrophulariacae) is an herb in the Ayurvedic system of medicine for its hepatoprotective effect. Over exploitation for various medicinal purposes has made the rhizome as an endangered species. In spite of its geographical distribution, it is available in all the herbal drug stores. The rationale behind this study is to authenticate and standardize the kutki by different parameters to enable its identity, purity and efficacy. Present study analyzed the presence of phytochemicals qualitatively and evaluated the antioxidant properties in the methanolic extracts of *Picrorhizakurroa.*Preliminary analysis of phytoconstituents of root parts of this plant using the standard procedures and Antioxidant properties were determined by 1,1- diphenyl,2-picrylhydrazyl (DPPH) assay.The qualitative phytochemical analysis revealed the presence of secondary active constituent's such as glycosides, cardiacglycosides, Tannins, terpenoids, steroids and coumarins and also possesses high free radical scavenging property. Therefore this study explored the antioxidant properties which strongly supports that could prevent many free radical related disorders. Also paves the way for further quantitative and animal studies, planned to explore the molecular mechanisms for the study based on cardiovascular disorders.

Keywords*:* *Bioactive compounds, qualitative analysis, herbal medicine, antioxidant, DPPH, Picrosides, Phytochemical screening,Picrorhizakurroa.*

PPSC-7

ACID CATALYZED DEHYDRATION OF FRUCTOSE TO 5-HMF, ITS SEPARATION THROUGH SOLVENT EXTRACTION METHOD AND SYNTHESIS, CHARACTERIZATION OF HMF BASED AMINE.

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ABSTRACT

5-Hydroxymethyl furfural (5-HMF) is a most promising biogenic platform molecule with its proven potential for the production of spectrum of fuel and chemical products. Triple dehydration of fructose to 5-hydroxymethylfurfural (HMF) provide a new step toward achieving renewable biomass-based chemicals and fuels platform. In this study, the acid catalyst DICAT-1 showed conversion of fructose to 5-HMF by using low boiling point solvent such as iso-propyl alcohol (IPA). The separation of HMF from the reaction mixture remains challenging because of the stability of HMF and formation of side product such as humins and condensation product. Hence this study carried out separation and purification of 5-HMF through solvent extraction method. The purified component was characterized by FTIR, H^1 and C^{13} NMR. Second step showed simple protocol for synthesis of Amino Furan from 5-HMF. By using this straightforward method, a small unit of compound containing a hydroxymethyl and aminomethylene moiety on furan ring produced. 2 eq. of primary diamine and ~500 mg of HMF (4 mmol) were dissolved in 10 ml of MeOH in presence of dehydrating agent and the reaction mixture was stirred under a nitrogen flow at Reflux temperature. This reaction achieved in two step : formation of imine, the resulting imine then subject to amine.

Keywords :*Fructose, HMF, Solvent Extraction, Aminofuran.*

PPSC-8

" FORMATION CONSTANT OF TRANSITION METAL COMPLEXES WITH ADENOSINE BIOMOLECULE AND GLYCINE AND VALINE AMINO ACIDS "

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ABSTRACT

Formation constants of transition metal complexes with Adenosine Biomolecule, Glycine and Valine amino acids have been studied pH metrically in 20% v/v ethyl alcohol and water medium at 30°C temperature and 0.1 M ionic strength. The proton ligand stability constant (pKa) of ligands and metal ligand stability constant (logK) of binary metal complexes were determined. It is correlated with atomic numbers, basicity of ligands, and atomic radii of metal ions. The transition metal complexes of ligands follow the Irving William natural order of stability.

Keywords*: Formation Constants, Metal Complexes, Adenosine, Amino Acids.*

PPSC-9

PROTECTIVE EFFECT OF KENAF SEED COAT ETHANOL EXTRACT ON OXIDATIVE STRESS.

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ABSTRACT

ROS/RBC/platelet-ROS implicated in anemia, cancer, diabetes, vital organ damage and thrombosis. Thus, the current study investigates the protective efficacy of Kenaf Seed Coat Ethanol Extract (KSCEE) against oxidative stress induced RBC, platelets, liver, kidney and small intestine damage.KSCEE was evidenced the presence oftannin,glycosides, alkaloids and polyphenols. KSCEEdisplayed about 76% of DPPH scavenging activity with an IC_{50} value of 34.94µg/ml. KSCEE exhibited a protective effect on $NaNO_2$ induced oxidative stress in red blood cells and platelet by restoring the activity of stress markers such as lipid peroxidation (LPO), protein carbonyl content (PCC), endogenous antioxidant enzymes such as superoxide dismutase (SOD) and catalase (CAT). Most importantly, KSCEE found to protect the diclofenac induced tissue destruction of liver, kidney and small intestine.

Key words: *Kenaf SeedCoat Ethanol Extract, antioxidant, oxidative stress.*

PPSC-10

FOREST FIRE MANMADE HAZARD.

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ABSTRACT

Environment belongs to all and is thus important for all.Human population is growing rapidly and over population is associated with negative environmental outcomes-ranging from the impact of over-farming,deforestation,forestfire,climate change and globle warming and moreover corona pandemic havoc facing by a whole world.

No doubt in the past four-five decades with the power of science and technology man has exploit environment and it resources unhesitatingly and used them with very unauthorized manner without much concern.There is, thus a need to develop a sustainable world with proper management of the environment and its resources and all this is only possible by changing human perspective towords the environment.The public has to be educated about the fact that if we are degrading our environment we are actully harming ,our ownselves.One has to get feeling that rivers,oceans,forests and entire environment is their own and for them and can be preserved by them only because most of environmental issue or problem`s originated due to anthropogenic activity.

Forest fire is one of the example of environmental problem that the whole world facing and the cause behind this is human population which is growing on alarming rate .According to the Indian Forest Report (2021-22) 35.46% area of forest is prone to forest fire and most of the fire incident are caused by human activity. While studing on sum of the part of forest in ut of j&k, I also observed that main cause of fire is deliberate and Negligent human behaviour and by this abstract I only want to highlight the issue and in future research want to explore more reason behind the hazard.

Keywords: *Environment, Humanpopulation,Forest,Hazard etc.*

PPSC-11

LIGNO-AMINE -ISOCYANATE COMPOSITE GENERATION BY CLASSICAL CURING REACTION OFISOCYANATEAND SYNTHETICPOLYAMINEFROMLIGNIN

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ABSTRACT

Polymer composites materials are important in various technological and classicalapplications.Ligninisthenaturallyavailablematerialinbulk.Simplethreestepprocessingo flignin gives the isocyanate modified lignin from curing of isocyanate and processed lignin. Athree-stepprocessgivesLignin-Amine-Diisocyanatecomposite.Insteponeligninwasreactedwith tosyl-chloride introduced good leaving group to hydroxy of lignin (80 % yield). Furtherlignin was reacted with amine to replace tosyl functional by amine. Eventually Lignin aminereactedwithdi-isocyanatetoformcomposite.Thefunctionalgroupanalysiswascharacterizedby IR spectroscopy. IR absorption at 1171 and 1370 cm^{-1} confirms formation of tosylatedlignin. While IR absorption at 3120 and 3415 cm^{-1} confirms the formation aminated lignincompound.Thecuringparametersofproductweredeterminedbydifferentialscanningcolorimetry(DSC)andthermalgravimetricanalysis(TGA).Crystallographicstudyandphysicalpropertie s byX-raydiffraction analysis,FE-SEM with respect toEDS.

Keywords*: Lignin-Amine-Diisocyanate, thermal properties, crystallographic study, polymercomposite*

PPSC-12

SYNTHESISOFSILVERNANOPARTICLESANDPROTEIN INTERACTION FORBIOMEDICALAPPLICATIONS.

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ABSTRACT

This chapter aims to provide simple protocols, as well as notes on potential pitfalls, to helpresearcherstoperformbasicexperimentsinthisfieldasthebasisforamoremechanisticapproach to study and understand NP–protein corona complexes.Over the last decade theexistenceof"thecorona,"anaturalinterfacebetweennanomaterialsandlivingmatterinbiological milieu, evolved from a vague concept into broadly recognized fact. This robust shellarises (to some extent) on the surface of all nanoparticles (NPs), even the ones designed to avoiditsformationuponcontactwithbiologicalfluidsandconfersabiologicalidentitytothenanomateria ls such that they can engage with cellular machinery. The NP corona consists ofthose proteins (and other biomolecules such as lipids and sugars) residing on the NP surface for asufficient timescale to influence the NP's properties and interactions with living systems. Silvernanoparticles(AgNPs)withanaverageparticlesizeof20nmweresynthesizedbyusingaromatic amino acid fluorescence active, tryptophan as a reducing agent. This study aims toinvestigate the interaction between Bovine Serum Albumin (BSA) and AgNPs as a function ofparticle size and shape. UV-visible analysis implies the formation of the ground state complexbetween BSA and AgNPs through electrostatic interactions. There are numerous areas wherenanoparticles are of scientific and technological interest, specifically for medical community,where the synthetic and biologic worlds come together and lead to an important concern fordesign of safe nano-biomaterials. In this chapter, we review and discuss the major biomedicalapplicationsof nanoparticles.

Keywords*: Nanoparticles, corona, biomedical, BSA.*

PPSC-13

"TO STUDY THE EXPERIMENTAL EVALUATION OF TRIBOLOGICAL PROPERTIES OF VEGETABLE OIL AND IT'S USE AS LUBRICANT BY ADDING ADDETIVES"

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ABSTRACT:

Vegetable oils are being investigated as a potential source of environmentally favorable lubricants, due to a combination of biodegradability, renewability and excellent lubrication performance. Low oxidation and thermal stability, poor low-temperature properties and narrow range of available viscosities, however, limit their potential application as industrial lubricants. This review addresses oxidation as a limitation of vegetable oil-based lubricants. The basic mechanism of vegetable oil auto oxidation is presented, along with methods used to monitor and analyze the products of oxidation. Recently, due to environmental issues, there has been a growing concern regarding the use of mineral oils as lubricants. This concern has promoted research into biodegradable lubricants such as vegetable oils, since vegetable oils do not contaminate or pollute. Furthermore, vegetable oils possess many properties such as good lubrication in contact area, high flash point, high biodegradability, and low volatility. The high polarity of vegetable oils allows them to be useful boundary lubricants. Therefore, at higher loads, there is a performance drop in the lubricants. Additives have been used as friction modifiers due to their extremely small size, which allows them to slide into the two metals' contact area. This allows the particles to act as a rolling bearing in the interface. The addition of additives helps with the wear and friction properties.Vegetable oil-based lubricants are currently used in many countries Lubricant oil is very important component in modern technology that can be used as an intervening, friction and wear reducing films between two sliding surfaces. Mineral oils are the main lubricant fluid consumed worldwide. Yet, the depletion of world fossil fuel resources, stronger environment concern and strict environment regulations have boosted the demand on developing eco-friendly and cost-effective lubricants. Hence, replacing mineral oil-based lubricants with sustainable plant-derived resources is highly desired.

Keywords: *Tribology, Addetives, lubricants,biodegradability*

SECTION-G POSTER PRESENTATION, ZOOLOGY

PPZS-1

IMPORTANCE OF COMBINING ABILITY STUDIES IN THE SILKWORM *BOMBYX MORI* L. BREEDING PROGRAMME.

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ABSTRACT

Combining ability analysis is the most widely used biometrical tool in determiningpromising parents and hybrids and detecting relative magnitude of genetic variability bothby plant as well as breeders. It is not only useful for selecting favorable parents but also provides information concerning the nature of and importance of gene effects influencing quantitative traits. The quantitative traits play a very important role in silkworm *Bombyxmori*L., breeding programme in the selection of parents and in the hybrid production for commercial exploitation. In spite of hopefulness regarding sustained yield increase from conventional breeding, new approaches such as QTL mapping will be required to increase the likelihood of achievement.

Keywords*: Silkworm,Bombyxmori L, combining ability,breeding, hybrid.*

PPZS-2

IMPACT OF ANAEMIA AND ITS SOCIO-ECONOMIC DETERMINANTS AMONG ADOLESCENT GIRLS IN OMERGA TEHSIL (M.S.) INDIA.

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Abstract:

Iron is very important ingredient of human diet. It is essential for formation of haemoglobin. Low level of haemoglobin causes iron deficiency anaemia. The red cell contains haemoglobin. The red cells are important particles in blood. Haemoglobin in red cells carry oxygen all over the body. Iron deficiency anaemia is a most common form of anaemia. Normal haemoglobin levels: haemoglobin is measured in grams per decilitre of blood.Some previous studies showed a moderate to severe prevalence of anaemia for the adolescent girls in Maharashtra, also these studies have illustrated the action of Indian government about screening and supportive programmes for adolescent girls and pregnant women. The present study was conducted to determine prevalence of anaemia in adolescent girls in rural area of Omerga, Maharashtra. In addition to identify different potential factors like socio-culture, economic, demographic, nutritional, reproductive and other correlates of anaemia.

Key words- *Anaemia, Haemoglobin, Omerga*

PPZS-3

DIVERSITY OF FISH SPECIES FROM RATANAGIRI DIST,WEST COAST OF (MS). INDIA

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ABSTRACT

The present study deals with fish biodiversity undertaken during period January-2021 to Decemeber-2021 to census and commercially important fishes in the west coast in RatnagiriDist.. The present paper deals with the variety and abundance of marine water fishes in west coast in RatnagiriDist (M.S) India. The results of present investigation reveal the occurrence of 14 fish species belonging to 7 orders, 10 families and 10 genera. The prominent species/group wise landings include non-penaeid shrimp , penaeid shrimp , Bombay duck and croakers, Indian mackeral , threadfin breams , ribbon fishes , golden anchovy , Horse markerel, Cuttle fish , Silver Pomfret .

Keywords: *Fish species, Economic value, Nutritive Value, West coast in Ratnagiri Dist.*

PPZS-4

FAUNISTICS OF FRESHWATER GASTROPODS OF PAWANA RIVER, PUNE, MAHARASHTRA

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ABSTRACT

Mollusca is a highly diversed phylum found in various kinds of habitats such as marine, terrestraial and freshwater. The freshwater species are mainly represented by bivalvia and gastropoda. Gastropoda is a diverse class of mollusca. Presently a faunistic study of freshwater snails from Pawana river which flows through Pune, India was carried out forsix months of sampling. Six different sites from Pawana river were selected. A total of fourteen species belonging to two orders Hygrophila and Mesogastropoda and seven families were recorded. Representatives of Thiaridae, Planorbidae, were the most abundant. A maximum of ten species were found in the Thergaon (S4) and Ravet (S5) sites. The *Racesinaluteola (*Lamarck,1882) was the most commonly occurring species which is found in all collection sites. During this we observed three invasive species of freshwater snails from pawana are *Physa acuta* (Draparnaud, 1805),*Amerianacraniata*(Adams, 1975) and*Pomaceadiffusa*(Perry, 1810). The invasive species *Physa acuta* (Draparnaud, 1805) was most abundataly found species in all three invasive species. while*Amerianacraniata*(Adams, 1975) was rare, observed from only one locality. *Racesinaluteola (*Lamarck,1882) and*Physa acuta* (Draparnaud, 1805) were recorded in highly polluted water suggesting a tolerance to high organic enrichment.From our study we have been able to document almost 64% of the fauna reported by Subba Rao in 1979 from Pune. Indicating the dynamism in grastropod population over time.

Keywords: -*Hydrophila, Mesogastropoda, Invasive species, Racesina*

PPZS-5

EFFECT OF HEAVY METALS ON FISHES DEFORMITIES: A REVIEW

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ABSTRACT

Heavy metals have been related to many fish deformities in normal inhabitants and laboratory-formed specimens as well. Deformities in common have overwhelming special effects on fish populations ever since they disturb the survival, growth rates, welfare, and their exterior image. Though the embryonic stage in detail to heavy metal contact has been lengthily studied, there is not much evidence obtainable as to what ensues in fish larvae and adults. Heavy metal pollution is a thoughtfulproblem for the atmosphere due to its toxicity, persistency, bioaccumulation, and bio exaggerationsthings. Heavy metal pollution in the environment can arise from diverse natural and anthropogenic causes. The normalcauses of heavy metals are mostly volcanic eruption and weathering of metal-bearing rocks, however, the anthropogenic sources of heavy metals include agricultural and industrializedactions, incineration of fossil fuel and gasoline, waste incinerators, mining, etc. The deployment of these heavy metals to the aquatic ecosystem changes the physicochemical property of water which is harmful to water organisms. Heavy metals mostlypass in the fish body through gills, body surface, and digestive tract through ingestion of metal collected food materials. Cadmium, chromium, nickel, arsenic, copper, mercury, lead, and zinc are the utmostcommunal heavy metal contaminants that are the reasonfor severe toxicity in fish. The development of oxidative stress is the essential molecular mechanism of metal toxicity. The straindeclines the immune system, causes tissue and organ damage, grows defects, and diminishes reproductive capacity. The rich cause of high-quality protein working with vitamins and omega-3 fatty acids boosts the human being to uptake fish as a major food source. So, gathered heavy metals in the fish tissues are directly transferal to the human body and the basisof toxic possessions to acceleratenumerous diseases. Thus, it is essential to converse the causes of heavy metals and their toxic consequence on fish health to implement the law and legislation regarding their defense in the aquatic environment and also to protect human life.We also speak about the need for extra research on the special effects of metals on the consequent life steps to consider the long-term concerns of heavy metal poisoning on fish organisms and probablyconnect these significances with environmental pollution.

Keywords: *Heavy metals; Bioaccumulation; Toxicity; Oxidative stress; Deformities; Environment.*

PPZS-6

ENVIRONMENTALLY BENIGN NANOPARTICLES FROM UBIQUITOUS WEEDS FOR CONTROLLING JAPANESE ENCEPHALITIS VECTOR

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ABSTRACT

Wastes are the menace for the environment and weeds are one of the major categories of waste. They need to be managed properly for the well-being of environment. *Sida acuta*, also called as wireweed and *Artemisia absinthium* popularly known as wormwood, are the two major categories of weeds which are serious threat to the main vegetations and for animals as well, as they are toxic. *Culex tritaeniorhynchus* mosquito native to northern Asia is the vector of Japanese encephalitis, one of the concerned diseaseof WHO. Japanese encephalitis is endemic in 24 countries, causing 3 billion people at risk and has no fully developed cure. Therefore, the present investigation deals with integrated hand in hand management of weed waste and deadly disease vector with the utilization and blend of nanotechnology. In this study the larvicidal activity of the *S. acuta* and *A. absinthium* weeds silver nanoparticles were tested against the Japanese encephalitis vector. Green synthesis of silver nanoparticles was confirmed using UV-VIS Spectrophotometery, and peaks were observed at 439.2 nm with *S. acuta* and 477.6 nm with *A. absinthium*. The synthesized AgNPs were characterized using Scanning Electron Microscopy (SEM), which depicted their spherical shape. The LC_{50} values for III instar larvae was found to be 0.121 ppm with *S. acuta* AgNPs and 0.104 ppm with AgNPs synthesized from *A. absinthium*. AgNPs of *A. absinthium* were found to be more effective larvicide in comparison to another weed taken into study. The study depicts a good strategy for hand in hand weed and deadly disease vector management.

Keywords: *Green nanotechnology silver nanoparticles Sida acuta Artemisia absinthium Japanese encephalitis*

PPZS-7

STUDY OF MITES BIODIVERSITY OF INTERNAL HABITAT OF RAT HOUSE AT PUNE, M.S. INDIA.

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ABSTRACT

Mites are small microscopic organism. They are found in intramural as well as extramural habitat. They play important role in decomposition and also harmful for animals its allergenscausing severe allergy. The present review article concern with intramural or internal habitat of rat home mites in Pune, M.S., Indiaconducted from January 2015 to August 2015. Rat house dust are collected at a fortnight by simple pickup method (Jogdand 1988). Then separation of mites from house dust to the help of stereobinocular dissecting microscope. These collected mites have been transfer of 4% Lactic acid for Isolation and sclerotization. After sclerotizationto the help of melted GlycerinJelly formed a slides. The mites are identified according to using a different popular keys. During the total study time 356 specimens are collected and identified. And these specimens are classified into male and female in four genera named as Haemolaelapsglasgowi (Ewing, 1925),Echinolaelapsechidninus(belonging to family Laelaptidae and unidentified (UT1) and (UT2) as a very rare specimens recorded.Interesting finding and monthly and seasonal variation of species are seen. The ratio of female: male Echinolaelapsechidninus is 44.93% :33.39% and female : male Haemolaelapsglasgowihas been found to be 8.69% : 12.05%. The quantitative analysis revealed that Echinolaelapsechidninus(78.36%) is dominant species as compared to Haemolaelapsglasgowi (20.78%) and UI1(0.56%), UI2 (0.28%) are very rare species. The environmental factors like temperature relative humidity and rainfall are responsible for mite population. The maximum mites has been recorded during August 2015 (83/gm) and minimum load of mites has been recorded during February 2015 (19/gm).

Keywords: *Rat mites, Biodiversity, Intramural, Haemolaelapsglasgowi, Echinolaelapsechidninus, Unidentified.*

PPZS-8

ACTIVITY OF *CINNAMOMUM TAMALA* LEAF ESSENTIAL OIL AS A RELATIVE LARVICIDAL BIOPESTICIDE AGAINST MOSQUITO VECTORS

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ABSTRACT

The transmission of dengue, malaria, lymphatic filariasis, and chikungunya by mosquitoes causes millions of deaths every year. For the control of these annoyance causing vectors, plant derived pesticides might be a good alternative. *Aedes aegypti*, *Culex quinquefasciatus*, and *Anopheles stephensi* were the three mosquito species used in this work to determine the essential oil *C. tamala's* leaves' bioefficacy. Different oil concentrations were used against the target mosquito species' third instar larvae after the essential oil was extracted from the fresh leaves using the hydrodistillation process. According to the bioassay findings, each species responded differently. The essential oil was more effective to *Cx. quinquefasciatus* as a larvicidal agent. (LC50 = 52.9 and LC90 = 147.5 ppm after 24 hours; LC50 = 30.5 and LC90 = 81.7 ppm after 48 hours of exposure), *Ae. aegypti* (LC50 = 65.1 and LC90 = 239.3 ppm after 24 hours, LC50 = 34.2 and LC90 = 111.6 ppm after 48 hours of exposure) and *An. stephensi* (LC50 = 85.6, LC90 = 235.7 ppm after 24 h, LC50 = 53.6, LC90 = 145.6 ppm after 48 h of exposure). Thus, it can be concluded that the essential oil made from *C. tamala* leaves has larvicidal properties and may be utilized to control mosquito larvae in the future.

PPZS-9

EXAMINE OF POLLEN GRAIN IN DIFFERENT HONEY SAMPLES FROM THE REGION OF NEWASA TEHSIL IN MAHARASHTRA.

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The study of pollen contained in honey and particular, the pollen source is called Melissopalynology. Honey is an important food now todays. The honey bee collect the pollen and nectar from various flower and it convert into honey. The present study concern with the analysis of pollen grains in different honey samples. The sample of honey bee is collected different villages of Newasa tehsil period of October 2016 to January 2017. The collected sample is stored in plastic bottles. The determine of honey sample was done in with known Louveauxet. al. 1987 and Suryanarayanaet.al.,1981 work procedure. Five honey samples were collected. The present examination on the basis of pollen percentage shown multifloralpollen under to family Fabaceae, Asteraceae, Leguminosae, Amranthaceae, Convolvulace, Moringaceae, Cactaceae, Solanaceae.

Keywords: *Honey, Honey bee, Pollen grains, Newasa Tahsil.*

PPZS-10

BIODIVERSITY OF COMMON HOUSEHOLD INSECTS IN KARJAT CITY OF DISTRICT AHMEDNAGAR, M.S., INDIA.

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ABSTRACT

The all insects are belonging to class insecta and they are most diverse and found in everywhere of the earth. They also found us in our home and some are in the form of pest. Class insect a belonging to 29 orders constitute the part of balance ecosystem. The some insects are accidentally come and some permantly live in our home. The present study concern with to find common insects found in our home. For these study to visited different houses of different localities of Karjat city during day and night time. The insect have been collected with the help of insect net and pointed net forceps. Collected insects were preserved in 70% alcohol. With the help of identification key collected insects are identified and classified. About nineteen species are identified. Out of this six belongs to order coleoptera (Dominate Order), two to each diptera and shiphanoptera and one each to order isoptera, thysanura, dictyopteradermaptera, hemipetra, psocoptera, lepidoptera, hymenoptera andorthoptera are identified. All insect are not damaged some are damaged insect and some are annoying insect and hence controll measures are also discussed. Prefere to first simple and natural mode of control.

Keywords: *Household, Insect, Pest, Diversity, Coleoptera.*

PPZS-11

THE SIGNIFICANCE OF CAUDAL PROJECTION IN PHYLOGENETIC TAXONOMY OF RUMEN CILIATE PROTOZOA

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ABSTRACT

The rumen of various rumianants inhabit the ciliate protozoa belongs to the family Ophryoscolecidae in the suborder Entodiniomorphina. They possess specialized charecteristic features and complicated body structures which seem to evolved with the evolution of host. A comparative morphological study give rise to ciliates classified into 14 genera of this family. During comparative morphology it has been emphasised that differences occuring on the caudal projection are very important along with other features. This charecter shows continual variation seem to be most adequate when they are used in the classification. This paper deals with importance of caudal shape, appearance in taxonomic study of ciliate protozoa found in the rumen.

***Key words**: Rumen, Ciliate, Protozoa,Ophryoscolecidae, Entodiniomorphina*

PPZS-12

STUDY OF ANT DIVERSITY (HYMENOPTERA: FORMICIDAE) IN AFFORESTED MINED OUT HABITAT OF POST CHROMITE MINING ECOSYSTEM

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ABSTRACT

The present study deals with the diversity of ants in Afforested regions of Post Chromite Mining Ecosystem. Two years of survey was conducted on the biodiversity of ant species in Post Chromite Mining Ecosystem inThagaduru village situated inChannarayapattanataluk, Hassan district of Karnataka, India. Ants were collected from different habitats within varying disturbances level with the help of pitfall trap and hand collection methods from the afforested mined out sites in the Post Chromite Mining ecosystem. Total 22 speciesof ants were collected from afforested mined out area. Afforested mined out sites contributes 5 subfamilies they are Formicinae with 5 species, Myrmicinae with 11 species, Ponerinae, Dolichoderinae, and Psuedomyrmicinae with 2 species each. The most abundant ant species from afforested mined out sites are *Pheidolewatsoni, Pheidolexerophila, Tapinomamelanocephalum, Camponotuscompressus, Camponotusirritasns, Camponotussericeus, Paratrechinalongicornis, Solenopsis geminate,* and *Technomyrmexalbipes.* The diversity and occurrence of ant species were assessed by Shanon- wiener index (H), Simpson index (D) and Berger Parker index (d).

Keywords: *Ant, Diversity, Post Chromite Mining ecosystem, Afforestation, Shannon-wiener.*

PPZS-13

ESTIMATION OF CASEIN PROTEIN IN THE MILK OF DOMESTICATED COW AND BUFFALO BREEDS FROM SEMI-ARIDREGIONS OF KARJAT TEHSIL, AHMEDNAGAR DISTRICT, M.S., INDIA

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ABSTRACT

The milk is a highly nutritious liquid food synthesized by mammals in their mammary glands. The milk is a mixture of mostly water, fat, proteins, minerals, vitamins and other biomolecules in trace. The casein and whey proteins are two major types of proteins present in milk; Both are essential in growth and metabolism of healthy person. Casein protein comprise large share of total protein of milk. Casein contains all the essential amino acids in high ratio. The present study was about the assessment of the available amounts of casein in the milk samples of breeds of domesticated cow and buffalo. It was carried out from March 2022 to April 2022 to compare various milk samples for their casein content. The selected sampling sites for milk collection were Karjat (S1), Kuldharan (S2), Rashin (S3) and Khed (S4). The breeds selected for the collection of milk samples was buffalo (*Murrah and Pandharpuri*) and cow (*HfX and Khillar*). The average value of casein content during entire study period was observed as 5.8275 ± 1.37583 for milk of buffalo breeds and 4.265 ± 0.886131 for that of cow breeds. The calculated amounts of casein protein was in gram per 100ml of milk.

Keywords: *Isoelectric Point, Hydrochloric Acid, Casein Protein, Khillar, Murrah.*

PPZS-14

BIODIVERSITY OF FARM ANIMALS AND THEIR PARASITES FROM BHADGAON AND PACHORA TAHASIL FROM NORTH MAHARASHTRA.

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ABSTRACT

Vertebrate farm animals like cattle, buffalo ,sheep, goat and fowls are playing an important role in the economy of farming industry as well as the economy of the state and in turn the economy of country. Therefore to take care of health and hygiene of all farm animals and related stakeholders in this industry becomes important. By considering this, the present survey work was undertaken at small area level. The data obtained from this study is important to literate the farm owners, farmers and other stakeholders about health, hygiene and the impact of this on animals as well as on themselves. The data obtained can also help the stakeholders to take precautionary step to prevent the animals from getting infected with parasites as well as to provide medical help to animals with the help of farmers. For the present study 12 no of villages were selected from Bhadgaon and Pachora Tahasil from North Maharashtra. From these villages farm animals like buffaloes, cattles, goats, sheeps and fowls were studied for their different types of infections.

PPZS-15

BIODIVERSITY OF SPIDER IN AND AROUND AHMEDNAGAR CITY AND ITS MEDICAL IMPORTANCE.

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ABSTRACT

Spiders are found in everywhere and one of the most various groups of arthropods. Spiders are found in all over world except Antarctica. Spider play important role in terrestrial ecosystems. But spider study are less attended. The present research paper provides a preliminary data on spider biodiversity of Ahmednagar city, M.S. India. The study of spider was conducted from July 2015 to February 2016 and specimen were collected from different localities in and around Ahmednagar city by adopting standard sampling techniques such as active searching. Collected spiderswere photographed and preserved in 70% alcohol. Specimens were sent to be ZSI, Western Regional Centre Pune for identification. Result obtained by total 25 species representing 9 families and 19 genera were recorded. Out of the 25 spider species, 11 species represent family Araneidae, families Salticidae, Oxyopidae and Lycosidae each represented by 3 species. Families Hersilidae, Pholcidae, Tetragnathidae and Thomisidae are each represented by 1 species. Results shoes that the Araneidaebeing the most dominant family. Spider are widely feared animal, only a few of them are dangerous to people. The two genera Loxoscelesand Latrodectus are reported for most spider bites in the World.Recorded species of present study are not medically serious. The outcome of the present research paper refresh data on resources of maharastraand will be helpful for future researcher. The seachingwill also be helpful for taxonomic and phylogenetic studies on spiders.

PPZS-16

STUDY OF ANT BIODIVERSITY IN A COLLEGE CAMPUS OF KARJATCITY, DISTRICT AHMEDNAGAR, M.S., INDIA.

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ABSTRACT

Ants are considered as one of the most diverse and abundant and ecologically significant organisms on earth. The ants are belongs to Class Insecta has Order Hymenoptera and family Formicidae.Ants are founds in everywhere of earth planet. The present study of the ants biodiversity has been conducted of college Campus of Karjat City from January 2017 to February 2017. The ants were collected by hand using forceps and honey bait trap and preserved in 70% ethyl alcohol. The ants photograph are taken and identified by using stereoscopic microscope and with the help of identification keys. Nine species were recorded belonging to three subfamily. Out of identified species six belong to subfamily Myrmicinae, two species of subfamily Formicinaeand one of subfamily Dolichoderinae.

Keywords: *ant, biodiversity, karjat, Insecta*.

PPZS-17

ORNITHODIVERSITY,GUILDSTRUCTUREANDCONSERVATION STATUSOFAVIFAUNAINHETEROGENOUSHABITATSOFPUNE,MAHARASHTRA,INDIA.

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ABSTRACT

Aviancommunitiesareexcellenteco-systemindicators.Therearen'tmanystudiesonbirdbiodiversity in India's human-dominated landscapes, despite the worrisome effects of growingurbanisation. With rapid loss of habitats, cities are now viewed as challenging ecosystems forsustaining biotic communities. The avifauna hasdrastically affectedasmany speciesvanishwhen an area is urbanized. Such altered conditions have resulted in significant loss of localbiodiversity. In our study, we investigated the avian population in different habitats of PuneMetropolitan region.Land cover of Pune region comprises of hills,agriculturalland, waterbodies and urban settlements. Sampling and survey of birds was done by point count and linetransect method in early morning hours during late monsoon, winter and summer season. Wefound that there is significant difference in overall abundance and in species richness but nonotable differentiation in evenness. A total of 240 bird species were recorded from the study areain which species richness was highestfor the order Passeriformes.Mostbird species wereinsectivores, followed by omnivores, carnivores and the rest. The gardens, tekdi, and universityareallocatedinsidecity bordersandinanurbanizedsetting,makingthemvulnerabletopollutants,which,accordingtopriorstudy,hasanadverseeffectonbirdpopulations,diminishing bird diversity. Also in forest habitat, there is greater vegetation diversity and densitywhichcloselycorrelateswithincreasedaviandiversityunlikegardensandhillyregionscontaining mono-plantations. The findings of this study can be used as the basis for futureresearchon conservationand managementof existingbirds in citylandscapes.

Keywords:*birds,diversity, urbanization,feedingguild,conservation*

PPZS-18

"SPECIES DIVERSITY AND DISTRIBUTION OF SNAKES IN AND AROUND AHMEDNAGAR CITY (M.S.) INDIA"

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ABSTRACT

Snakes are reptiles and all reptiles are biological significant as they provide priceless services to the ecosystems, now they are endangered organisms in the world. Present work was done from 1st July 2021 to 15thJune 2022 from Ahmednagar city Tehsil District Ahmednagar, MS. Study sites were visited during dawn and dusk hours, one day in each month. Also, data on snakes was collected from local snake friend. The present studies are an attempt to evaluate the information, occurrence, abundance & species richness and further assist in the knowledge, awareness and conservation of snake fauna in this region. Need of snake conservation to balance the ecosystem and to protect the food chain is main challenge identified. Continuous monitoring on snake species diversity of the region is suggested. The captured snakes represent 14 types of species under 6 families. In these families 5 were venomous snakes, 9 non venomous snakes.

PPZS-19

COMPARATIVE STUDY OF GASTROINTESTINAL PARASITES OFBROILER AND BACKYARD CHICKENS FROM KOPARGAON AND RAHATA TEHSIL, MH, INDIA

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ABSTRACT

Poultry farming is seen as potential rural industry to meet the daily needs of eggs and meats of growing population. The gastro-intestinal parasites not only badly affect the yield of poultry but also responsible for spreading the parasitic diseases. Hence the presence investigation was conduct to identify the gastro-intestinal parasites from Broiler and Backyard Chickens from Kopargaon and Rahata Tehsil. The study period was from March to April 2021. Total of 20 parasitic species were observed after screening the 110 intestinal samples of Broiler and Backyard from chickens shops of Kopargaon and Rahata Tehsil; out of which 07 are Helminthes, 05 are Protozoan and 04 are Cystoid parasitic species was observed. A maximum infection was observed in poultry birds (Broiler) than that of the backyard birds. The cleaning practices and population density of birds may be responsible for such result. Consequently the proper poultry management will help to tackle the situation.

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Bio-Energy from Food Waste : A New Generation Bio-Fuel

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Abstract:

Food waste production worldwide is expected to increase by 33% within the next decade.Significant quantity of global food wastage throughout the value chain right from harvesting to storage, processing and consumption is overlooked due to rapid industrialization and population growth. To meet the escalating demand for fuel and at the same time slowing down the fast-depleting fossil fuel resources through conversion of food waste to bio-based liquid or gaseous fuels appears to be an attractive option. Biofuels are also called as agrofuels i.e., any fuel whose energy is obtained through a process of biological carbon fixation.There are several factors that decide the balance between biofuel and fossil fuel use around the world. Those factors are cost, availability, and food supply. Finding new uses for waste has renewed interests for the solution to the constraints of a resource system. Food waste is indeed an untapped resource with great potential for generating energy. Huge quantities of food waste is generated worldwide and currently its disposal is becoming a challenge. In future, this can contribute to resolve the waste disposal, energy scarcity and energy security problems which could contribute substantially to bio-based economy. Since food waste is considered zero cost material, conversion of food waste into biofuel will provide an innovative food valorisation strategy and it is possible to develop cost-effective commercial methods.By this, energy from food waste can emerge as the next-generation biofuels along with lignocellulose, non-food materials, algal biomass, and energy crops grown on marginal lands.

Keywords: Biofuels, food waste,fossil fuel, agrofuels, algal biomass, and energy crops.

Introduction:

Increasing demand for diesel fuel and growing concerns over global warming and crude oil shortage have advanced the development of renewable alternative fuels with low greenhouse gas emissions. Finding new uses for waste has renewed interests for the solution to the constraints of a resource system. Some one third of all food produced around the worldfor human consumption gets discarded uneaten, and environmentalists, energy analysts and entrepreneurs are beginning to take notice (Mathews, 2008; Dar *et al.,* 2019). The quantity of food loss and waste globally was put "at ~33% of food intended for consumption".This was further broken down per regions around the world and per capital food waste at consumer level as 98-115 kg/year in the North-America and Europe and "6–11 kg/year in sub-Sahara Africa and South/Southeast Asia" (FAO, 2011).The current annual food waste stands at around 1.6 billion tonnes, which is worth around $ 1.2 trillion loss. Out of this, nearly 50%–60% comes from post-consumption waste (leftover). Besides, food waste is causing serious environmental concerns as it contributes to the total global greenhouse gas emissions (Fatemeh and Yassir, 2021).

The ever-increasing food waste from households, retail establishments and food service industry totals 931 MMT annually globally (Mishra *et al.,* 2022).Most of these food wastes are lost along the food supply chain, which is almost all currently landfilled, incineratedordiscarded in most of the cities and places, which causes the public health hazards and diseases like malaria, cholera, typhoid. Inadequate management of wastes like uncontrolled dumping bears several adverse consequences: It not only leads to polluting surface and groundwater through leachate and further promotes the breeding of flies, mosquitoes, rats and other disease bearing vectors (Rajashekhara*et al.,* 2019). Also, it emits unpleasant odour& methane which is a major greenhouse gas contributing to global warming.Reducing waste and better utilization of waste and losses in the value chain is among the means for international climate policy and for transformation to renewable energy. The production of food loss and waste often lead large amount of wastewater and solid waste (Valta*et al.,* 2017).

As petroleum based fuels are finite reserves, demand for biofuels is rapidly growing worldwide.In this context, popular biofuels that are commercially available in various countries are biodiesel, bioethanol and bio-oil. Food waste is indeed an untapped resource with great potential for generating energy. Food wastes is a well-known nonedible source which contain significant amount of lipids, carbohydrates, amino acids, and phosphates, which can be utilized as resources in the production of biofuel.Diverting even just a portion of this waste to so-called waste-to-energy (WTE) systems could free up large amounts of landfill space while powering our vehicles and heating our homes, and thus putting a significant dent in our collective carbon footprint. Perhaps that's why WTE is one of the fastest growing segments of the world's quickly diversifying energy sector.There is also general agreement in the literature that the current status of food waste recycling technologies require fine-tuning to make them economically viable (Sindhu *et al.,* 2019).

Food waste:

Food waste can be raw, cooked, edible and inedible parts generated during production, storage distribution, and consumption of food stuffs. In other words, food waste is the outcome of different food processing practices that have not been reused and are disposed of as waste.Food wastes is a well-known zero-value and non-consumable resourcewhich contain significant amount of lipids, carbohydrates, amino acids, and phosphates, which can be utilized as resources in the production of biofuel (Pleissner*et al.,* 2013).Food wastes also contain wide variety of organic constituents including starches, proteins, oils, fats, nutrients, and natural acids.Carbohydrate, lipid and carbon containing materials present in food waste can be converted to bioethanol, biodiesel and biooil. Lipid extracted from food waste is converted to biodiesel in 95–97% yield. On the other hand, 92–96% bioethanol obtained by fermentation of food waste. Along this line, pyrolysis of food waste can be performed to obtain biooil and biochar.

Food and Agricultural Organization (FAO) defined food loss as, "food produced for human consumption but not eaten by human." It went further to define food loss as "the decrease in the amount or value of food," while food waste is considered as a component of food loss which is referred to as "the disposal or non-food use of food that was intended for consumption along the entire food production and distribution chain, that is, from production to consumer" (FAO, 2013).

Worldwide food loss statistics: Food loss can be attributed to the following main reasons (Dung *et al.,* 2014)

a. Lack of proper planning in food management, as various sectors (e.g. manufacturers, hospitality, lodging, travel and tourism, recreation and wholesalers) try to satisfy consumer's requirements of high quality and quantity supplies.
b. Inadequate production techniques, poor post-production management, lack of suitable infrastructure, processing and packaging.
c. Lack of awareness at the communities and household levels on the impact of food waste on the environment.

Occasionally, food can also be lost due to the interruption of the supply chain by bad weather or natural disasters, such as hurricanes or floods. However, this is not significant when compared to the continuous loss in the household and hospitability sectors, especially in highly populated cities. More specifically, buffets in hotels and restaurants are major contributors to food wastes because in many cases the extra food cannot legally be reused nor donated without following strict health regulations (FoodPrint, 2021;Pirani and Arafat, 2016).

Sources of food waste:

Sources	Example
Residential	Homes, town house, apartments, societies etc…
Commercial	Office cafeteria, shopping malls, hotels, airports, restaurants etc….
Institutional	Gurdwara/Mandir, School, hospitals, prisons, hostels, etc…
Industrial	Lunchroom, cafeteria, kitchen wastes etc… (but not industrial process wastes)

Overview:

Rapid increase in global population and their food ingestion habit plays a major role in generation of food waste (FW). FW includes some part of cooked and uncooked plant waste, animal waste, leftover food and spoiled food etc. Conventionally these wastes are managed by incineration or landfill (Kannah*et al.,* 2020). These techniques demand high cost and it has own demerits. Incineration of FW results in emission of flue gas and pollutes the environment by ash waste. In case of landfill, the improper design pollutes the water source. Hence, there is a need to manage the generated FW using eco-friendly and economically viable techniques. The composition of the FW may differ based on the source of generation. Biofuel or value added products recovery from FW mainly depends on its biochemical composition (*Anon.,* 2013).

Food waste has a significant potential to be employed as a raw material in the production of biofuel through various fermentation processes due to its organic- and nutrient-rich contents. The food waste characters and management have been extensively investigated, and valorization of food waste to biofuels is considered as the most promising strategy(Li and Yang, 2016). Apart from the management of food waste, this strategy can reduce dependency on crude oil, which has an opportunity to stabilize food prices as well as address society's behaviour toward food waste.

In this context, the valorization of food waste to different sorts of biofuels, for example, biodiesel, bioethanol, biohydrogen, bio-oil, biochar, and biomethane by employing well-structured and efficient valorization technologies can be an attractive and viable approach to counter the current global energy crisis and in establishing a sustainable bioeconomy (Dhiman

and Mukherjee, 2020). This type of food waste management not only resolves the serious pollution problem but also helps to reduce the dependency of the energy sector on fossil fuels (Luque and Clarke, 2013).

Also, by making use of a pair of simple chemical processes - hydrothermal liquefaction and anaerobic digestion - we could turn food waste into environmentally friendly biofuel.Hydrothermal liquefaction involves heating food waste under high pressure - essentially pressure-cooking it - to create an oil that can be refined into fuel (Karmee, 2016). Next, the watery food waste left over after the liquefaction undergoes anaerobic digestion, a process in which microbes break down the waste into biogas that is primarily composed of methane and carbon dioxide (*Anon.*, 2017). A simple process flowchart of food waste conversion to energy is given in fig. 1.

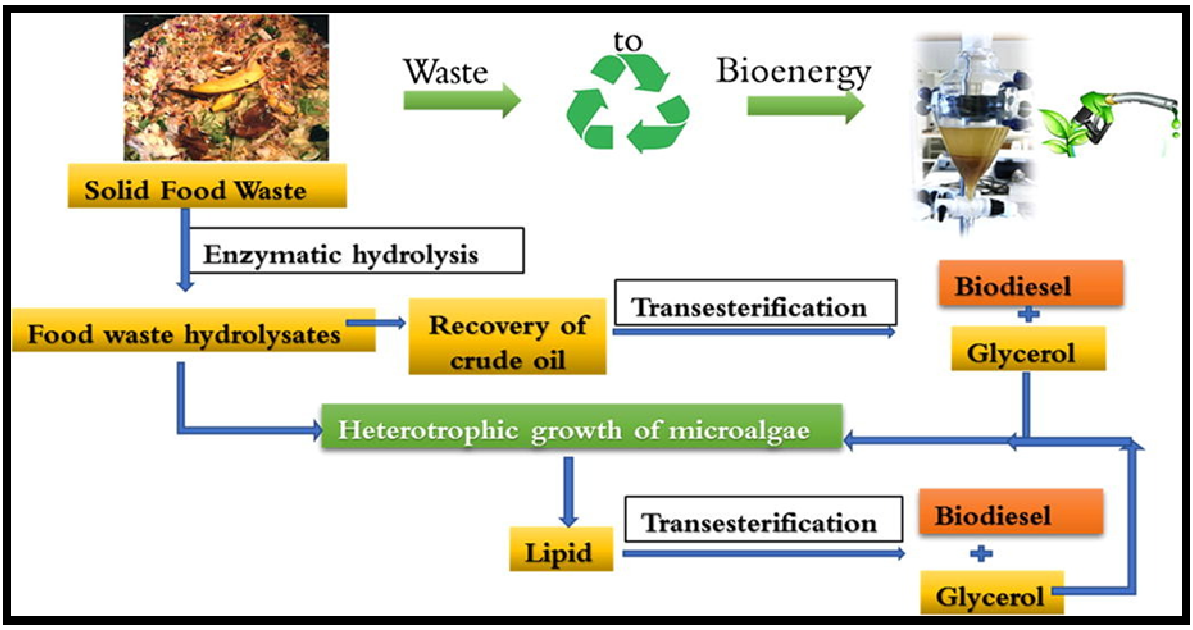


Fig.1: Process of conversion of food waste to energy **Source:**Patel *et al.*(2019)

Currently there are some 800 industrial-scale waste to energy plants in more than three dozen countries around the world, and likely thousands of smaller systems at individual sites. Most employ anaerobic digesters, which make use of microorganisms to break down and convert organic waste into a fuel such as biogas, biodiesel or ethanol. With some 70 percent of food waste around the world still going into landfills, there is a lot of potential feedstock to keep this environmentally friendly carbon neutral fuel source coming (Isah and Ozbay, 2020).However, the implementation of modern food waste management technologies is hindered by the lack of standard processing procedures due to the regional diversity of the food waste characteristics. Besides, there are social and technical challenges associated with the lack of proper post-consumption food waste segregation mechanism at the industrial and community levels, as well as the lack of sufficient research on sustainability and life cycle assessment (LCA) of the food waste management options.

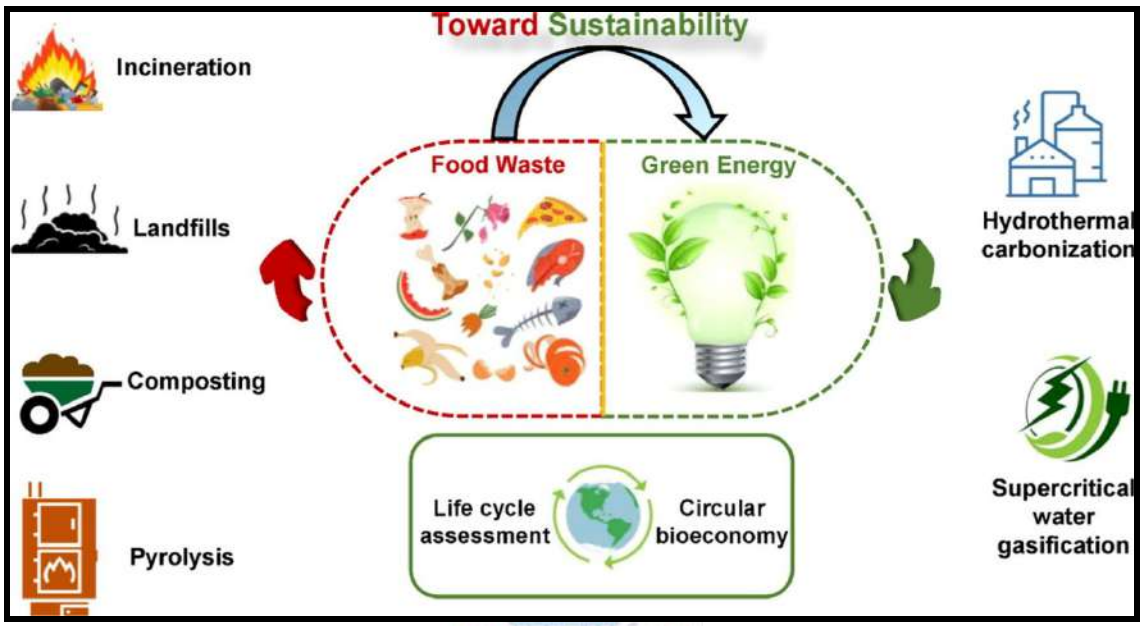
Environmental impact:

Waste to fuel energy recovery is virtually **carbon neutral**, since, by using the bio-oil obtained to power heat engines, the same amount of carbon dioxide is generated that was present in the initial biomass, in turn captured from the atmosphere by plants and fixed in organic matter during photosynthesis. There is thus no need to add additional carbon derived from fossil fuels to

this virtuous cycle. In other words, instead of being released into the atmosphere, the carbon is stored in the **bio-oil** and **biofuel.**

Food waste and spill can play a role as a solution for low carbon transport, assuming that the principles of waste hierarchy are followed. This means that energy use of food waste is the least preferable option after prevention, re-use and recycling. It is, however, more desirable solution than disposal without recovery. Also, waste-to-energy can be diversified and improved for better utilization.

Focusing on sustainability and life cycle assessment through conversion of food waste to energy: Pictorial representation



Source: Aditya *et al.* (2021)

Factors to be considered:

Factors involving in conversion of food wastes to energy involves, current situation of biofuel production, hypothetical barriers of the food waste feedstock, technology readiness and conversion, policies support, demand of the biofuels, community involvement and additional value creation in the economic sector (Hafid*et al.,* 2021).

Meanwhile, extensive research in laboratory and pilot scale for biofuel production from food waste in constructing smart facilities integrating food waste processing and biofuel plant technology, metabolic pathway involved and the policy uncertainty impeding the investment in the large scale is to be foreseen.

Summary:

In the past decade, we have seen technological advancements in motor vehicles that run on renewable energy sources. The increasing threat of fossil fuel depletion coupled with the need to maintain renewable sources continues to push for the demand for biofuel. We live in a world where the global market for biofuels and renewable sources continues to grow in order to maintain the growing population. Our reliance on energy is a global necessity as our government attempts to mitigate the growing issue of climate change as a direct result of increased demand for automobile fuel. The most obvious benefit of replacing fossil fuels is the environmental impact it will have on carbon emissions. Since biofuels burn faster and cleaner

than fossil fuels, it will release greenhouse gases at a lower and slower rate. Secondly, the use of biofuels will allow the economy to reap its benefits.

Conclusion:

"Over the next 25 years, global energy demand will grow by 50 percent, while global oil supply dwindles at a rapid pace. Waste-to-energy is an obvious solution to meet the world's burgeoning energy demand". Biofuel Production, only one step on the path. The real message is not about fuel. Let us build a community that is concerned about mother earth. The problems of today will not be fixed by few people doing big things…they will be fixed by you and us doing small things with a new vision.

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Screening of High Yield Contributing Charactersin Soybean (Glycinemax L.)

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Abstract:

In the present investigation, attempts were made to Screening of high Yield Contributing Characters in soybeaninduce in variety of soybean (Glycine. max. L) JS-335 and DS-228 by employing physical (Gamma rays) and chemical (Ethyl Methane Sulphonate) Mutagens in M2 Generation. Ethyl Methane Sulphonate Gamma ray induces mutagenesis in soybean crop. In both varieties increasing and decreasing high yielding mutation were observed.

A wide spectrum of viable mutants with varying morphological traits could be observed in M2 generation of Soybean. The various types of viable mutants obtained in the Soybean M2 Generation were: - 1. The Branched 2. Tall 3. Dwarf with erect habit 4. Early maturing 5. High yielding 6. Late maturing 7. Short pod 8. Bold seeded 9. Large leaf 10. 4 seeded pod all the concentration of both the mutagens used succeeded in including the different type of viable mutants in Soybean. The frequency of viable mutants showed the highest values at the 0.15% (EMS) and 5KR concentration in varieties JS-335 and 0.20/(EMS) & 20KR concentration in varieties DS-228 respectively. The frequency of viable mutants ranged from 9.42% to 13.77% in EMS 8.00 to 12.45% in EMS and 11.50% in VEMS and 11.50% to 14.26% and 9.45 to 15.96% in GR treatment in Soybean.

Keywords: Ethyl Methane Sulphonate, Mutagenic frequency, spectrum, Gamma Rays.etc

Introduction:

Soybean has an important place in world's oilseed cultivation scenario, due to its high productivity, profitability and vital contribution towards maintaining soil fertility. The crop also has a prominent place as the world's most important seed legume, which contributes 25% to the global vegetable oil production, about two thirds of the world's protein concentrate for livestock feeding and is a valuable ingredient in formulated feeds for poultry and fish. About 85% of the world's soybeans are processed annually into soybean meal and oil. Approximately 98% of the soybean meal is crushed and further processed into animal feed with the balance used to make soy flour and proteins. Of the oil fraction, 95% is consumed as edible oil; the rest is used for industrial products such as fatty acids, soaps and biodiesel. The major soybean producing nations are the United States, Brazil and Argentina. The three countries dominate global production, accounting for 80% of the world's soybean supply Soybean contributes significantly to the Indian edible oil pool. Presently soybean contributes 43 % to the total oilseeds and 25% to the total oil production in the country. Currently, India ranks fourth in respect to production of soybean in the world. The crop helps earn valuable foreign exchange (Rs. 62000 millions in 2012-13) by way of soya meal exports. Soybean has largely been responsible in uplifting farmer's economic status in many pockets of the country. It usually fetches higher income to the farmers owing to the huge export market for soybean de-oiled cake. Agriculture in Maharashtra including allied activities, accounted for 12.4% of the Gross State Domestic Product at current prices in 2011-12 but its role

in State's economy is much wider as agriculture continues to be the main occupation of the state. Around 64.14% of the people are employed in agriculture and allied activities.

Matreials And Methods:

Seeds of these soybean cultivars JS- 335 and DS-228 used in the present investigation were procured from Krishi vidnyan Kendra Baleshwar Taluka –Rahata, District Ahmednagar (Maharashtra) these two cultivar are widely cultivated in Maharashtra. To begin with pilot experiments were conducted to determine the lethal dose (LD_{50}), suitable concentration of the mutagens and duration of treatment for this cultivar of soybean. JS-335 and DS-228 variety of soybean were treated separately with chemical EMS and physical (Gamma radiation) from such experiments it was finally established that concentration of 0.05mM, 10, 15 and 20mM for duration of 12 hours are best suitable for mutagenic treatments for the cultivars of soybean for chemical mutagen treatments, seeds were presoaked in distilled water for 6 hours and subjected to freshly prepared mutagen solutions for 12 hrs. At 25± 2^0C with intermediate shaking. The volume of mutagenic solutions was about 5 times to that of seeds. The seeds, treated with chemical mutagens were thoroughly washed under running tap water for an hour to terminate the reaction of the chemical. For physical mutagen treatment, dry seeds with a moisture content of 10-12% were irradiated with 5KR, 10KR, 15KR 20KR and 25KR from a CO^{60} source available in the department of Biophysics, Government institute of science, Aurangabad (M.S.India).

Every treatment was carried out for 200 seeds. The treated seeds along with control were sown in the field in randomized block design (RBD) in three replications at spacing of 25 cm in rows and 50 cm between rows to rise M_1 generation during Kharif season of 2020. The individually harvested M_1 plants were soon in the field to rise M_2 generation during Kharif season of 2021 in separate rows. The M_2 progeny was raised along with parental varieties (Control) following randomized block design with 3 replication. Each treatment comprised of 2020. M_1 plant progenies and each M_2 progeny row consisted of 10 to 25 plants in three replications. The cultural operation and application of FYM were done as per schedule.

Reseults and Discussion:

Mutation breeding is valuable supplement to the other method of plant breeding in the improvement of crop plants of new architecture, superior biochemical constitutions, suitable growth and development rhythms. Induced mutants have been directly released as new varieties worldwide in several crops. A number of crop varieties have been developed through mutagenesis in India in crop like wheat, rice, soybean, groundnut, cotton, jute, vegetable and ornamental crops. The important aspects of mutation breeding include enhancement of mutation frequency and the alteration of mutation spectrum, which would increase the probability of isolating mutants of economic interest. For the enhancement of mutation frequency and spectrum, the basic information regarding mutagenic sensitivity of the various genotypes, effectiveness of efficiency of physical and chemical mutagens becomes necessary.

Description of Mutants:

At maturity, the plant height in case JS-335 mutant was 67.96% cm. with s spreading habit and no. of branches were the productivity in terms of pod per plants in such mutants was slightly better than the control plants but in case of varieties DS-228 mutant was 61.24 with a spreading habit and no. of branches 6.20 having productivity in terms of pots per plant in such mutants was slightly better than the control plant.Similar result showed by Kaw and Memon

(1979). Kouda & Godoladze (1979) and Nawracala and Konleczny (1991) while Chen (1982) Halvankar (1987) and Harer (1990) observed good amount of hetrosis for this characters

1. Tall Mutant: Tall mutant were recorded in both the cultivars of Soybean. At maturity the cultivar JS-335 attained the mean height 67.96 cm and another cultivar DS-228 attained the mean height 61.24 cm took almost similar number of days for maturity and no. of pod per plant as that of control in M2 generation. The branching of plant result also similar to Rao et.al. (1978) Halvarkar (1987), Root et.al. (1988) and Taware et.al. (1990).

2. Dwarf with erect habit: These mutants shoed an erect habit which made easy them for harvesting the cultivar like DS-335 attained the height of 27.92 cm and having 4-6 branches and other cultivar DS-228 attained the height 27.46 and 3-6 branches. They had short stature and a non-spreading habit. They took comparatively lesser number of days for maturity and showed reduction in number of pod per plants.The dwarf's plant showed in treatment (T_{10}) i.e. 27.46. Similar result showed by Kawand Menon (1979) Kouda & Godoladze (1979) and Nawracale and Konieczay (1991) while Chen (1982) Halvankar (1987) and Harer (1990) observed good amount of neutrons reduced from this characters.

3. Early maturing: There mutants demonstrated a feature of early maturity of plants. In JS-335 mutant attained maturity in 90 to 100 days as against 105 to 115 days in control likewise the varieties DS-228 mutant attained maturity in 85 to 95 days against 90 to 105 days in control. They acquired flowering quite earlier. The productivity in terms of pods per plant was slightly less in mutant than the control plants.

4. High yielding: The Soybean, these mutants showed larger number of pod per plant. In varieties JS-335 an average pod numbers 68.53 and other varieties DS-228 the average pod number per plant was 64.02. Both cultivars with spreading habit. These mutants' revealed slight early flowering as compared with control Ala and Ala (1987b) reported increase in seed weight/plant in M_2 derived from Krapinkon treated with 0.25 dES, but reduced yield in M_3 was observed following 0.01% treated vacancies.

5. Late maturing: These late maturing mutant in Soybean took more number of days to reach maturity as compared with control. The cultivar like JS-335 mutant showed in maturity 105 to 115 days as compared with 100 to 105 days in control plants. The another varieties DS-228 mutant matured in 115 to 120 days as compared with 100 to 110 days in control. They had better height and more number of pods per plant (70 to 100) leading to better productivity.

6. Early Flowering: Flowering is character which plays significant role in altering the life cycle of any plant. The Soybean cultivar JS-335 some mutant's flowers early flowering character in that variety first flowering comes on 28th days from sowing.

7. Late Flowering: Late flowering is another support and mutant due to chemical and physical mutagen. The value of for day to flowering increase on the concentration increased in both varieties. In JS-335 variety the late flowering is obtained the treatment 15 KR & 20 KR was big flowers. But DS-228 variety the late flowering is obtained in treatment EMS-18 hr. 0.10 to 0.15% for 68 hours. So the late maturity is depends on the concentration of mutagen. Delay in flowering has been attributed to delay in germination. (Bianchi et.al. 1968) or slowness in growth of the plant (Iqbal 1972).

8. Short Pod: Pod is very valuable character of this crop. Short pod is reduces the crop yield and bring the crosses to farmer. In Soybean variety JS-335 treatment EMS-12 Hr. (0.10 & 0.15)

showed no. of short pod mutant but in variety DS-228 is showed the treatment EMS-18 hours (0.15 to 0.20%) had short pod i.e. one seed or two seeded.

9. Bold Seeded Mutant: Bold Seeded Mutant showed another supported character. In the Bold Seed gave light amount of protein and oil content. The Bold Seeded plant observed particularity in both varieties. In JS0-335 variety the treatment Gamma rays (15 & 12 KR) the no. of plant were bold seeded. But in variety DS-228 the EMS treatment 18 hr. (0.05%) and 0.10% showed the no. of Bold Seeded Mutant population.

10. Four Seeded Pod Mutant: Four Seeded character is another most valuable character in production of Soybean. It gives the higher yield as compared to the percent one. In variety JS-335 the treatment Gamma rays (10 KR & 14 KR) showed 4 seeded pod mutant. The frequency of that mutant was (0.05%) 5. The DS-228 variety no. of any charge was observed pod Quantitative Characters in M2 generations no. of grain. In JS-335 variety in 10 KR & 15 KR.

(Control)

Fig 07: Field view JS-335

(Control)

Fig 08: Field view DS-228

(0.15%EMS 12Hrs. JS-335)

Fig 09: Early and late maturing mutant JS-335

(15KR DS-228)

Fig 10: Early and late maturing mutant DS-228

(15kR JS-335)

Fig 11: Branched mutant JS-335

(20kR DS-228)

Fig 12: Branched mutant DS-228

(20 kR JS-335)

Fig 13: High yielding mutant

(0.15% EMS12 Hrs. DS-228)

Fig 14: Dwarf with erect mutant

(0.15% EMS 12Hrs. DS-228)

Fig 15: Bold seeded mutant

(15KR JS-335)

Fig 16: 4 Seeded mutant

(20kR JS-335)

Fig 17: Sterile mutant

(20kR JS-335)

Fig 18: Tall mutant

Conclusion:

The investigation on "Gamma ray and Ethyl methane sulphonate (EMS) induced mutation studies in Soybean (Glycine max (L) Merrill)" of cultivar JS-335 and DS-228 was carried out with the objectives to study the micro and macro mutants were observed in both cultivars. The M2 generation was raised June, 2020at Padmashri Vikhe Patil College, Pravaranagar (Loni). The observations were recorded on in both the cultivars of soybean. Both the cultivars JS-335 and DS-228 were Variable types of mutation were found,Early Flowering Mutants, LateFlowering variant, Plant Height Variant, Dwarf Mutant, High yielding variant, branchedhabitatmutant, Bold Seed Mutant, 4SeededPodMutants.

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Literature Review of *Passiflora Edulis* Linn

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Abstract:

The plant Passiflora edulis is aperennial, climber under the family Passifloraceae. The plant is found in tropical regions of America and Asia, bearing purple-colored fruit of 4-5 cm in diameter and weighing 35-45 kg. It's having therapeutically active compounds used for treating diabetes, cancer, etc. The plant can bear 150-180 fruits per year.The farmers yield the highest number of production of fruits and earn the best profit in this crop cultivation. Therefore, it is very essential to know about the potential of this fruit by researching the growth and economic factors for the sake of increasingthe cultivation and production of this fruit.

Keywords: Passiflora edulis, therapeutically, diabetes, cancer.

Introduction:

Passiflora edulis is commonly known as Passion fruit or Passiflora under the family of *Passiflora ceae*originated in Brazil and grown well up to 2000 m in height with an annual rainfall of 1000 mm to 2000 mm in the tropical and sub-tropical regions of America and Asia. In India, passion fruit is found in the states of Himachal Pradesh, Kerala, Manipur, Meghalaya, Mizoram, and Nagaland.

The plant is herbaceous, perennial, healthy and climber producing rounded or ovoid-shapedattractive fruit. It produces solitary flowers located in the leaf axils. The fruit is mostly having tough, soft dark purple-hued rind and faint white specks. Inside, it has orange-colored pulpy juice with 200 to 250 small brown-colored pitted seeds. (Thokchom and Mandal, 2017).It is also known as the climactic fruit, ripening takes place off the plant (***Singh et al., 2006***). It is used in juice, jelly, and ice cream. It is a high-value plant having export potential because of the flavor of its juice (***Patel et al., 2014***).

Biology and Ecology:

Genetics:

The chromosome number reported for *Passiflora edulis* is 2n=18.

Reproduction Biology:

The *Passifloraedulis* opens in the spring season. The fruit is produced in the second year of the plant.*P. edulis* is known as the self-pollinated fruit having a dominant diploid (2n) sporophyte phase in its life cycle.

Physiology:

Passiflora edulis plants can reproduce within after the two years of theirplantation.

Preferred Scientific Name:

Passiflora edulis

Other Scientific Names

- *Passiflora edulis*
- *Passifloraedulisflavicarpa*
- *Passiflora edulis Sims*
- *Passiflora ligularis*
- *Passiflora quadrangularis L.*
- *Passifloramaliformis*

International Common Names

- **India:** Krishna phal
- **Brazil:** Maracuja`
- **Spanish:** Maracuya`
- **Hawaiians:**Liliko`i
- **French:**Grenadille

Local Common Names

Grenadella, Grenadine, Passion flower, Purple granadilla, Purple passion fruit.

Taxonomic Classification of Passion Fruit

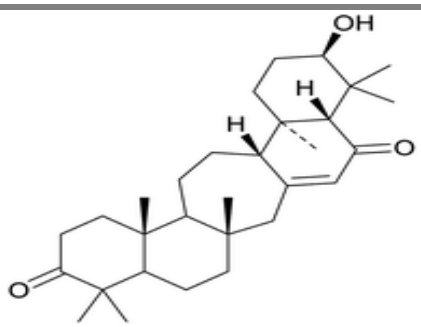
- **Domain:** Eukaryote
- **Kingdom:** Plantae
- **Sub-kingdom:** Tracheobionta
- **Superdivision:** Spermatophyta
- **Division:** Magnoliophyta
- **Class:** Magnaliopsida
- **Sub- class:** Dilleniidae
- **Order:** Malpighiales / Violales
- **Family:** Passifloraceae
- **Genus:** *Passiflora*
- **Species:** *edulis*

Cultivation Condition

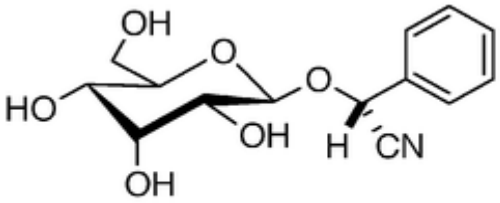
For the cultivation of *P. edulis,*thesub-tropical climatic condition is preferred.It requires an ideal temperature of 20° to 30° C and annual rainfall from 1000 mm to 2000 mm for its growth and flowering. The pH of the soil must be neutral. The propagation is doneby seeds, cuttings, and grafting on immune rootstocks. The nutrition required for the fruit growth is N 150, P 100, and K 200 kg/ha. The nutrition must be applied in the splits after the fruit is harvested.
There is Cross-pollination which takes place by the honeybees after the 1 to 2 hours of the anthesis, which takes place in the early morning. The fruit blooms in the early summer and is matured between 70-80 days of flowering. The yielding of the fruits starts after the 1 – 2 years of the plantation. The very healthy plant can produce a maximum of 150 – 180 fruits per year. (Thokchom and Mandal,2017)

Chemical Composition

The plant P.edulis is reported to have chemical constituents likecitric acid, malic acid, polyphenols, triterpenes, amino acids, flavonoids, and triterpenoids(Xu *et al.,*2013; Zhang *etal.,* 2013; Yuan *et al.,*2017; Hu *et al.,*2018). It also containsbenzylic β-D-allopyranosides **1** and 2.



Triterpenoids



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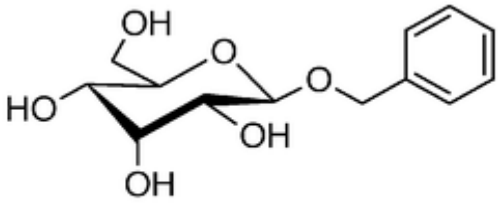

2

Uses

P. edulis is a medicinal plant, known as the good anxiolytic. It is very beneficial for health and balanced nutrition. Recently, more than 110 phytochemical constituents are found in the different parts of the plant, flavonoids and triterpenoids held the largest share. (He *et al.,*2020). This fruit species is sold in fresh fruit markets and then used in juice processing (Zas and John,2016). This plant consists of anticancer, antimicrobial, antidiabetic, antisedative, antioxidant properties, and various remedial measures for curing conditions like respiratory disorder called asthma. The plant parts also help in treating ulcers,and hemorrhoids, such as sedatives.

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Review of *Hylocereus Undatus* Haworth (Dragon Fruit) : Medicinal Approach

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Abstract:

Our environment is filled with a broad range of plants, many of which have therapeutic capabilities. The evolution of human culture has benefited greatly from the use of these therapeutic herbs. Hylocereus Undatus Haworth belongs to the family Cactaceae, it is frequently referred to as "dragon fruit" or "pitaya." It was initially used as an ornamental plant but later became a new fruit crop due to its market value and health advantages. It is becoming more and more well-known as a sugar fruit due to its high nutrient content and antioxidant properties. It helps in the prevention of cardiovascular diseases, and controlling blood sugar levels thus considered to be important fruit for diabetic patients. It plays a vital role in fighting against cough, asthma, wound healing, etc.

Keywords: Hylocereus Undatus, Asthma, Antioxidant, dragon fruit.

Introduction:

The sugared fruit known as dragon fruit, which was just recently introduced to India, is seen as a potential and lucrative fruit crop. Originating in Mexico and South America as a fruit crop. Since at least 100 years ago, it has been grown in Vietnam, then by the French. It is a long-day plant known as "Nobel Woman" or "Queen of the Night" because of its lovely night-blooming flower. The fruit is also known as Jesus in the Cradle, Night Blooming Cereus, Dragon fruit, Pithaya, Strawberry Pear, and Bell of the Night. Because of the bracts or scales on the fruit's skin, it is called a pitaya. Pitaya is a name that means "the scaly fruit." It has decorative significance because of the grandeur of its big (25 cm), creamy-white flowers that bloom at night. The biggest advantage of this crop is that once planted, it will grow for about 20 years, and 1 hectare could accommodate about 800 dragon fruit plants. It is being grown commercially in Israel, Vietnam, Taiwan, Nicaragua, Australia, the United States, and recently in India. (Perween *et al.,*2018, Carrillo-Salazar, 2012, Hitendraprasad et al., 2020)

Recently, dragon fruit farming was established in India, which is heavily reliant on imports of ordinary fruits and vegetables in India to satisfy their nutrient requirements. This fruit is also recognized for its antioxidant and antiproliferation capabilities with phenolic and polyphenolic substances (Tenore *et al.,* 2012, Wu,2006, Nurliyana *et al.,*2010)

Biology and Ecology

Genetics

It is a diploid species and the chromosome number reported for it is 2n=22 (Tel-Zur *et al.,* 2004)

Reproduction Biology

Hylocereus Undatus Haworth is a hermaphroditic flower. They open at the Mexico nocturnal visitors include the nectar-feeding bats *Leptonycteris curasoe* and *Choeronycteris mexicana* which are the main pollinators of this species. (Kakade *et al.,* 2019).

Flowers are hermaphroditic; nevertheless, some pitaya species and cultivars self-incompatible. The extremely showy, edible, white flowers are very large, very fragrant, nocturnal, bell-formed, and maybe 3-4 inches long and 8-9 inches wide. Cream-colored stamens and lobed stigmas Normally, 3 to 5 spherical buttons form on the stem border; two to three of them can develop into flower buds in around 13 days. After 16-17 days, when anthesis occurs, the light green, cylindrical flower buds grow to be around 11 inches long. (Pushpakumara *et al.,* 2006, N'Guyen, 1996)

The dragon fruit itself has an oval shape, is 4 to 9 cm thick, and is 6 to 12 cm long. It is normally red in color and contains numerous bracteoles. Dragon fruit has a physical structure that is loaded with areola (protrusions) where the thorns develop, with 2 to 5 spines ranging in size from 1-3 cm in each areola. Dragon fruit contains extremely few seeds that are black in the flesh. Dragon fruit typically weighs between 150 to 600 g. Dragon fruit flesh is pink, white, red, or yellow in hue and tastes tart and sweet. Dragon fruit thrives in arid, tropical, and subtropical areas with temperatures reaching 40 degrees Celsius. Even in moist tropical settings, this dragon fruit plant will thrive, but at a higher risk. This dragon fruit will appear on plants with physical shapes, such as cacti, 30-50 days following the initial blossoming. This dragon fruit plant is often harvested 5-6 times each year. (Sonawane, 2017, Xu *et al.,* 2016)

Preferred Scientific Name

- *Hylocereus Undatus* Haworth

Other Scientific Names:

- Cactus triangularis
- Cereus triangularis
- Cereus undatus
- Cereus tricostatus
- Hylocereus tricostat (Mizrahi and Nerd, 1999)

International Common Names

- **English:** belle-of-the-night, dragon-fruit, moonlight cactus, night-blooming cereus, queen-of-the-night, red pitaya, strawberry-pear
- **French:** pitahaya rouge, pitaya
- **German:** Distelbirne
- **Spanish:** chacam, chak-wob, junco tapatio, pitahaya, pitahaya dulce, pitahaya orejona, reina de la noche, tasajo, zacamb.

Local Common Names

Dragon fruit, Pitaya, pitahaya, night-blooming cereus, strawberry pear, Belle of the night, Cinderella plant.

Taxonomic Classification of Dragon Fruit

- Domain: Eukaryota
- Kingdom: Plantae
- Subkingdom: Tracheobionta
- Superdivision: Spermatophyta
- Division: Magnoliopsida

- Subclass: Caryophyllidae
- Order: Caryophyllales
- Family: Cactaceae
- Subfamily: Cereoideae
- Genus: *Hylocereus*

Nutrients Composition in Dragon Fruits:

Particulars	Average value (g/100g edible portion)	Particulars	Average value (mg/100g edible portion)
Moisture	85.30	Vitamin C	3.0
Crude protein	1.10	Thiamin	0.028-0.043
Fat	0.57	Riboflavin	0.043-0.045
Glucose	5.70	Niacin	2.8
Fructose	3.20	Vitamin A	0.0111
Sucrose	Not detected	Calcium	10.2
Maltose	Not detected	Iron	3.37
Sorbitol	0.33	Magnecium	38.9
Carbohydrate	11.20	Phosphorus	27.5
crude fibre	1.34	Potasium	272.0
Ash	0.56	Sodium	8.9
Energy	67.70kcal	Zinc	0.35

Cultivation Technique of Dragon Fruit:

Cultivation of Dragon fruit already started in a different part of West Bengal with many success stories of the farmer from different regions. However, it was first successfully grown in Gujrat state. Many nurserymen started propagation for raising planting material of Dragon fruit. High density commercial plantings are possible with 1100–1350 plants per hectare. The full commercial production of a plant can take up to five years, at which point yields of 20 to 30 tons per hectare can be anticipated. *Hylocereus* is specifically designed to measure in tropical settings with little or no rain. After flowering, the cactus-like trees that bear dragon fruit set 30 to 50 days later and may normally go through 5 to 6 rounds of harvesting annually. It may be grown as a weed for free in many places, and some nations consider it an invasive cuckoo weed. (Pandya *et al.,* 2020).

Photochemistry:

Initial phytochemical analysis revealed the presence of alkaloids, saponins, terpenoids, oils, flavonoids, tannins, phenols, carbohydrates, coumarins, and proteins in the methanol and water extract of pitaya or dragon fruit seeds (Sushmitha *et al.,* 2018). Vitamin B1, B2, B3, and vitamin C, as well as protein, fat, carbohydrate, crude fiber, thiamin, niacin, pyridoxine, cobalamin, glucose, phenolic, betacyanins, polyphenol, carotene, phosphorus, iron, and Phyto-

albumin, are all abundant in *Hylocereus undatus* (Le Bellec *et al.,* 2006). It has a high concentration of Phyto-albumins, which are highly prized for their antioxidant effects. (Mahattanatawee *et al.,* 2006, Tenore *et al.,* 2012). Pitaya includes phenolic chemicals, alkaloids, tannins, flavonoids, steroids, proteins, and carbohydrates. (Mahdi *et al.,* 2018)

There are cholinesterase inhibitor alkaloids like donepezil, tacrine, rivastigmine, and quinacrine that can be used to treat Alzheimer's disease. Like phenylpropanoids, which are also contained in both extracts, coumarins have anti-inflammatory, antioxidant, anti-bacterial, anti-tubercular, anti-fungal, and anti-viral properties. Lupane glycine, betulinic acid, and oleanolic acid are examples of saponins that can be utilized to treat type 2 diabetes as well as chronic kidney disease. Omega-3 fatty acids, conjugated linoleic acids, phytosterols, and medium-chain triglycerides are present in the oil of pitaya seeds and are helpful in the treatment of obesity and bone health. (Joshi and Prabhakar, 2020)

Conclusion:

Dragon fruit owing to its rich nutrient contents and antioxidant properties is gaining popularity as a super fruit. The burgeoning population and the health concern people are showing interest in this fruit due to its medicinal property and health benefits. It requires very less water for growth and development. The fruit of *H. undatus* is a potentially useful source of complementary medicine that works as an antioxidant, anticancer, hypocholesterolemic, cardio-protective, antibacterial, and prebiotic agent. The fruit is made up of several different chemical components, including sugar, crude fiber, flavonoids, thiamin, niacin, pyridoxine, cobalamin, glucose, phenolics, betacyanins, polyphenols, carotene, phosphorus, iron, and Phyto-albumin.

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Selection of Physiologically and Genetically Superior F_1progenies of Rice for Drought Tolerance Under Flooding and Moisture Condition

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Abstract:

In this study, a number of 143 F_1 rice seeds derived from a cross between ADT37 and CR Dhan 801 were used for evaluating their performance to drought stress at seedling stage under flooding and moisture condition. More number of F_1 seedlings grown under moisture condition were noted to be tolerant to drought stress when compare to seedlings of flooding. The value of drought tolerance degree was high in F_1 seedlings of moisture condition. Heterosis percentagealsowas recorded as high in many F_1 seedlings for mid and better parent value under moisture condition. In genetic analysis, percentage of genetic (Vg) and phenotypic variation(Vp) was found to be high in tolerant seedlings of moisture condition.In case of genotypic (GCV) and phenotypic coefficient of variance (PCV)high percentage was registered in susceptible and tolerant seedlings of flooding and moisture condition, respectively. Heredity percentage was high in susceptible and moderate tolerant seedlings of flooding and moisture condition, respectively. In this study, it is found that more number of F_1 seedlings is associated with drought tolerance at physiological and genetical level under moisture condition when compare to flooding. These superior rice lines could be used for further drought improvement programme.

Keywords: ADT37, CR Dhan 801, Drought stress, Heterosis, Heredity, drought tolerance degree.

Introduction:

Rice crop (*Oryza sativa* L.) is cultivated in a wide range of varying environments worldwide and therefore, effect of variable rainfall is associated with impact of drought on rice production. Since rice is highly vulnerable to water stress, it accounts for several morphological changes such as plant height reduction, leaf rolling, leaf senescence, etc. at different growth stages in response to drought stress (Henry *et al.,* 2016; Kumar *et al.,* 2015). Potentially, the most critical stage of rice growth is at the time of seed germination and early seedling growth for water stress (Ahmad *et al.,* 2009). Nowadays more than 80 percent of available water is used only for irrigated agriculture sector worldwide. However, over the years, pressures are starting to mount demands from other stakeholders also for more water than the use of water in agriculture. This situation will affect the production of food, fodder and feed adversely. In many developing countries, global water resources are dwindling at an alarming rate recently. In Tamil Nadu state of India, the Cauvery delta areas face a cycle of drought and flood intensively and there was a report on decline in the overall rainfall between 1974 and 2014 in these areas. And, these areas have received only 168 mm instead of 1000 mm per year in 2016. Hence, only way to manage agricultural drought for increasing agricultural production is genetic improvement of crops for drought tolerance. Here, performance of F_1 rice lines derived from a cross (ADT 37 x CR Dhan 801) to drought stress at seedling stage was evaluated under flooding and moisture condition.

Materials and Methods:

Source of rice seeds

A small quantity of rice seeds of ADT 37 from Tamilnadu Rice Research Institute (TRRI), Aduthurai, Tamilnadu state and CR Dhan 801rice seeds from National Rice Research Institute (NRRI), Cuttack, Odisha state were obtained.

Development of F_1 generation:

In the cross-pollination, a rice variety, ADT37 was used as female parent (recurrent parent) and CR Dhan 801 as male parent (donor). The male parent contains drought tolerant three quantitative trait locus (QTLs), DTY 1.1, 2.1 and 3.1. The F_1 generation was derived through cross-pollination by transferring anthers from male parent to female parent.

Experiment design and Evaluation for drought tolerance at seedling stage:

In this study, some amount seeds from F_1 generation were germinated along with both parental lines in cupsand the seedlings were transferred to pots. Here, two types of experiments were conducted in Net house of college campus. In one experiment, seedlings of F_1 and parental lines were grown under flooding condition and in another experiment, these seedlings were grown under moisture condition in big plastic pots. At 30 days-old-seedlings stage, drought stress was imposed on seedlings by withholding water irrigation in both experiments for 15 days. After stress period, seedlings were re-irrigated and drought scoring was done according to IRRI standard scale for drought tolerance (IRRI, 1996) (0-Highly tolerance; 1-Toerance; 3-Moderately tolerance; 5-Moderately susceptible; 7-Susceptibe; 9-Highly susceptible).

Drought tolerant degree (DTD) :

DTD is defined as the mean of the ratios of green leaf length to total leaf length of the top three leaves in every plant after severe drought treatment. DTD values thus vary from zero to one. The green leaf length and the total leaf length of the first leaf are designated as F1 and F2, respectively. Similarly, the green leaf length and the total leaf length of the second leaf are separately designated as S1 and S2, and those of the third leaf as T1 and T2. The untreated control cultivars were handled in the same way to obtain their DTD values(Xiaofeng, et al., 2018). The DTD value ofeach material was calculated by the following formula:

$$Xj = \frac{1}{N} \sum_{i=1}^{n} [(F1/F2 + S1/S2 + T1/T2)/3]$$

$$\text{DTD value} = (X_I + X_{II} + X_{III})/3$$

Heterosis:

Study of Heterosis was done according to Turner (1953) for drought tolerance and grain yield characters as follows:

Heterosis over mid parent (H1) $HMP(\%) = \frac{F1 - MP}{MP} \times 100$

Heterosis over better parent (H2) $HBP(\%) = \frac{F1 - BP}{BP} \times 100$

Where, $F1$ = mean of $F1$, MP = mean of the two parents and BP = mean of the better parent.

Heredity:

The GCV (Genotypic coefficient of variance) and PCV (Phenotypic coefficient of variance) values were computed as per Burton and De vane (1953).

Genotypic and phenotypic variances were calculated as follows:

$\sigma 2\ g = \frac{MS1 - MS2}{r}$

$\sigma 2\ ph = \frac{MS1}{r}$

where $\sigma^2 g$ is genotypic variance; $\sigma^2 ph$ is phenotypic variance; MS1 is mean square for the entries; MS2 is mean square for the residuals; and r is replication.

Genotypic coefficient of variance (GCV) and phenotypic coefficient of variance (PCV) were determined as follows:

$GCV\% = \frac{\sqrt{\sigma 2 g}}{X} * 100,$

$PCV\% = \frac{\sqrt{\sigma 2\ ph}}{X} * 100,$

where GCV is genotypic coefficient of variance; PCV is phenotypic coefficient of variance; $\sigma 2\ g$ is genotypic variance; $\sigma 2$ ph is phenotypic variance; and X is sample mean.Heritability as per cent of mean was estimated following the method of Johnson *et al.* (1955).

Results:

Development of F_1 generation:

A number of 289F_1 seeds were derived through a cross between ADT37 and CR Dhan 801. Among them, a 50% of seeds were used for evaluating their performance under drought stress condition at seedling stage.

Drought tolerance Score:

In drought screening, seedlings of F_1generation and parental lines grown under flooding and moisture condition showed adifferential reaction to drought stress in the first three leaves of the plant (Table-1; Fig.1). Under flooding, 5.17% of F_1 plants was noted to score 9 (highly susceptible) followed by 15.51% to score 7 (susceptible), 34.48%to score 5 (moderately susceptible), 15.51% to score 3 (moderately tolerance), 22.41%to score 1 (tolerance) and 6.89% to score 0 (highly tolerance)1st leaf from top of the plant among 54 F_1 plants.For 2nd leaf, 25.86%of F1 plants to score 9, 27.58% to score 7, 31.03% to score 5, 8.62% to score 3. 3.44% to score 1 and 3.44% to score 0 were noted. For 3rd leaf, 84.48% F_1 plants accounted to score 9 followed by 0% toscore 0% to score 5, 0% to score 3, 0% to score 1 and 0% to score 0.Under moisture condition, in 84 F_1 plants, 98.82%, 0%, 0%,1.17%, 0% and 0% seedlings were registered to score 0, 1, 3, 5, 7 and 9, respectively, for 1st leaf. For 2nd leaf, 18.82%, 0%, 12.94%, 16.47%, 35.29%, and 16.47%, to score 0, 1, 3, 5, 7 and 9, respectively, For 3rd leaf, all 84 seedlings were grouped to score 9 (Fig.2).

DTD value for drought tolerance:

Drought score of F_1 seedlings and parental lines are interpreted with drought tolerance degree as shown in the Table-1. Under flooding condition, the DTD value in donor and recurrent parent was in the value of 0.31 and 0.62, respectively and the DTD value of F_1 population ranged from 0.10 to 0.74.Among 58 F1 progenies, 68.96% and 13.79% F_1 progenieswere more valuethan ADT37 and CR Dhan 801, respectively. Under moisture condition, the DTD value was 0.50 in ADT37 and 0.76 CR Dhan 801. In F1 progenies, this value ranged from 0.33 to 0.72 and

among them, 42.85% progenies had higher value than ADT37, but no one to CR Dhan 801 (Table-1; Fig.3).

Heterosis:

Heterosis study conducted for drought tolerant and susceptible rice seedlings is mentioned in the Table-1. Under flooding, highest percent of heterosis for mid and better parentin F_1 population was 60.86 and 138.70, respectively and the lowest percent was -78.26 for mid parent and-67.74 for better parent. Under moisture condition, the maximum percent of mid-parent heterosis was 18.03 and the minimum percent was -63.93. In better parent heterosis, highest and lowest percent was registered to44.0 and -56.0, respectively.

Heredity:

Data for the analysis of genetic variations in the F_1 population is given in the Table-2. In the present investigation for drought tolerance in the F_1 populationof flooding, the percent of genetic variation (Vg) ranged from 0.23 to 5.26 and the highest and lowest variation was noted in between 0.0 and 0.10 and 0.31 and 0.40 DTD value, respectively.Under moisture condition, the percent of genetic variation (Vg) ranged from -2.04 to 16.95 in F_1 population and the highest and lowest variation was noted in between 0.71-0.80 and 0.41-0.50 DTD value, respectively. In the phenotypic variation (Vp) under flooding, the maximum and minimum percent was 7.64 and 0.63between 0.01and 0.10 and 0.31and 0.40 DTD value, respectively.Under moisture condition, the maximum percent of phenotypic variation (Vp) of F_1 population was 18.33in between 0.41and 0.50 and minimum percent was 1.07 between 0.21 and 0.30 DTD value.

In case of GCV, highest percent in F_1 population under flooding was noted to 47.95in between 0.0and 0.10 DTD valueand lowest percent was 0.0 inbetween 0.71 and 0.80 DTD value.Under moisture condition, highest and lowest percent of GCV was noted to 94.80 % and 0.0% in F_1progenies having DTD value in the range of 0.21 - 0.30and 0.71-0.80 value, respectively. The percentage of PCV was high (96.95%) in the range of 0.71-0.80 DTD values andlow (18.42) in between 0.31 and 0.40 under flooding.Under moisture condition,maximum PCV percentwas notedto 101.98in F_1 plants with DTD value in the range of 0.21-0.30 and minimum percentwas noted to 15.29 in between 0.41and 0.50. In heredity study in F_1 population under flooding, high percentage was noted to 68.84 in F_1 plants having DTD values between 0.31-0.40 and low to -54.25in plants with DTD values between 0.71 and 0.80.Under moisture condition, maximum heredity percent was noted to 92.19% in between 0.41-0.50 and minimum percent (17.75) in between 0.21and 0.30 DTD value.

Discussion:

Drought scoring is an one of the primary criteria for selection of drought tolerant rice genotypes (IRRI, 2014) and leaf rolling with tip drying is used for scoring drought tolerance as one of the acclimation responses of rice as well as a criterion for scoring drought tolerance (Kadioglu and Terzi, 2007). In this study, the performance of F_1 rice seedlings in response to drought stress was unique as well as similar under flooding and moisture condition. In the evaluation of three leaves, it was noticed that there was difference in the drought response among F_1progenies grown under flooding and moisture condition in 1st and 2nd leaf compared to 3rd leaf. Here, more than 90 per cent of the F_1 progenies along with both parental lines have showed highly susceptible reaction to the 3rd leaf under both conditions. The impact of drought stress might be stronger in the older leaves when compare to young leaves and it was difficult to

identify number of tolerance plants in older leaf. Besides, we found the differential reactions of F_1progenies to drought stress in 1st and 2nd leaf for flooding and moisture condition, respectively. In this case, the F_1 progeniescould easily be grouped into highly tolerance, tolerance and moderately tolerance, susceptible and highly susceptible. Moreover, in this evaluation, we could select more number of highly tolerant plants from F_1 plants grown under moisture condition rather than flooding.In the DTD evaluation, F_1 progeniesaccounted for highly tolerant and susceptible reaction are correlated with high and low DTD value, respectively. For example, F_1 plant (#F1-57) having lowest DTD value (0.10) is matched with score 7-9-9 (S-HS-HS) of 3 leaves and F_1 plant (#F_1-11) having highest DTD value (0.74) with score 1-3-7 (T-MT-S). Thus, it reveals that the lowest and highest DTD value correlates with plant susceptibility and tolerance, respectively. This result coincides with a previous study on screening of rice genotypes for drought tolerance (Xiaofeng, et al. 2017). In this study, more number of F_1 plants with high DTD value was noted under moisture condition when compare to flooding.

Heterosis is described as the superiority of an F_1 hybrid over its both parents. In this study, heterosis study was carried out for each F_1 plant andamong 58 F_1 progenies under flooding, 36.20 % and 72.41 % of F_1 plants showed positiveheterosis to mid-parent and better parent, respectively. Under moisture condition, 28.23 % and 48.23 % of F_1 plants among 85 F_1 plants accounted for positive heterosisto mid and better parent, respectively. Here, the positive percentage of heterosis was high for better parent rather than mid parent under both conditions. Positive heterosisindicatesclose relationship with drought stress tolerance when compare to negative heterosis. The number of F_1 plants with positive heterosis of both mid and better parents was higher under moisture condition rather than flooding condition. Moreover, it is observed that the negative and positive heterosis is associated with less and more DTD value, respectively.

In this study, percent of phenotypic variation is recorded to be more than that of genotypic variation under both conditions and the variation of Vg and Vp is noted to be higher in F_1 population grown under moisture condition than that of flooding condition. According to Adhikari, et al. (2018), high phenotypic values are associated with high genotypic variations and less environmental variations and low values are vice-versa. Here, high value of PCV and GCV is correlated with less DTD values under both conditions and high value for drought tolerance is associated with the wide variability for the trait.In a previous study, it is reported that the higher percentage of PCV is associated with the environment influence on the expression of character rather than genes, whereas the higher percent of GCV is a significant contribution of environment and genotypes for grain yield (Massaoudou, et al., 2018). The higher PCV versus GCV indicates a significant contribution of environment and genotypes by environment interaction in the expression of drought tolerance in both conditions. Similar results have been reported on cultivated sorghum by Bello et al. (2007) in Nigeria. The estimates of heritability reflect the values of phenotypic variations and therefore, low heritability helps to remove the ineffective rice line for a particular character. In this study, we found that F_1 progenies having more DTD value (0.41 and 0.60) have accounted for low heritability percentage (0.0-14) and high heritability (60-86%) was in plants having less DTD value (in between 0.0 and 0.40) under flooding. In case of moisture condition, the percent of heritability was high in plants having both more DTD values (0.31-0.70). The high heritability observed for drought tolerance character indicates the predominance of both additive and dominant gene effects in the inheritance of the character. High heritability is revealed the major role of additive gene action in the genetic

control of this trait. Similar results were also reported by Revathi, et al. 2016, Nandeshwaret al.(2010) and Adhikari, et al. (2018). In this study, the percentage of genetic inheritance is more or less similar in F_1 progenies having more and low DTD value under flooding whereas, under moisture conditionit is high in F_1 progenies associated with more DTD value and vice-versa. The determination of the heritability is very important one than the coefficient of variation which is only associated with the extent of total variability present for a character (Lakshmana et al. 2009; Govindaraj, et al. 2011).

In the present study, these results reveal that rice seedlings grown under water limited (moisture) condition could able to improve its genetics in response to drought stress rather than seedlings in flood. In conclusion, most of the F_1 seedlings grown under flooding and moisture condition were susceptible and tolerant to drought stress, respectively. In case of DTD value, Vp, Vg, PCV, GCV and Heredity, F_1 seedlings grown under moisture condition have accounted for higher value rather than that of grown under flooding. This is one of the ways to selected superior rice line at early stage of rice growth and further molecular confirmation of selected seedlings may be utilized for future breeding program for development of drought tolerance lines.

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Table-1 shows the IRRI SES Score, DTD value and Heterosis for drought tolerance in F_1 population under flooding and moisture condition.

Geno type	Flooding				Heterosis		Geno type	Moisture				Heterosis	
	Leaf Position				MP	BP		Leaf Position				MP	BP
	1st Leaf score	2nd Leaf score	3rd Leaf score	DTD Value				1st Leaf score	2nd Leaf score	3rd Leaf score	DTD Value		
D	5	7	9	0.31			D	0	5	9	0.50		

RP	0	5	7	0.62			RP	0	0	5	0.76		
F_{1-1}	7	7	9	0.27	-41.30	-12.90	F_{1-59}	0	5	9	0.51	-16.39	2
F_{1-2}	3	9	9	0.37	-19.56	19.35	F_{1-60}	0	7	9	0.46	-24.59	-8
F_{1-3}	5	5	9	0.46	0.0	48.38	F_{1-61}	0	3	9	0.61	0	22
F_{1-4}	1	7	9	0.48	4.34	54.83	F_{1-62}	0	7	9	0.43	-29.50	-14
F_{1-5}	3	7	9	0.44	-4.34	41.93	F_{1-63}	0	7	9	0.43	-29.50	-14
F_{1-6}	3	7	9	0.43	-6.52	38.70	F_{1-64}	0	0	9	0.66	8.19	32
F_{1-7}	5	7	9	0.37	-19.56	19.35	F_{1-65}	0	7	9	0.46	-24.59	-8
F_{1-8}	5	7	9	0.27	-41.30	-12.90	F_{1-66}	0	5	9	0.56	-8.19	12
F_{1-9}	1	3	7	0.69	50.00	122.58	F_{1-67}	0	7	9	0.49	-19.67	-2
F_{1-10}	5	5	9	0.34	-26.08	9.67	F_{1-68}	0	7	9	0.44	-27.86	-12
F_{1-11}	1	3	7	0.74	60.86	138.70	F_{1-69}	0	0	9	0.66	8.19	32
F_{1-12}	5	5	7	0.53	15.21	70.96	F_{1-70}	0	0	9	0.66	8.19	32
F_{1-13}	1	7	9	0.47	2.17	51.61	F_{1-71}	0	3	9	0.64	4.91	28
F_{1-14}	1	5	7	0.71	54.34	129.03	F_{1-72}	0	7	9	0.48	-21.31	-4
F_{1-15}	5	5	9	0.41	-10.86	32.25	F_{1-73}	0	3	9	0.65	6.55	30
F_{1-16}	1	5	9	0.52	13.04	67.74	F_{1-74}	0	0	9	0.66	8.19	32
F_{1-17}	1	7	7	0.63	36.95	103.22	F_{1-75}	0	0	9	0.66	8.19	32
F_{1-18}	5	5	9	0.38	-17.39	22.58	F_{1-76}	0	0	9	0.66	8.19	32
F_{1-19}	1	7	9	0.45	-2.17	45.16	F_{1-77}	0	9	9	0.33	-45.90	-34
F_{1-20}	1	5	7	0.67	45.65	116.12	F_{1-78}	0	5	9	0.52	-14.75	4
F_{1-21}	1	5	9	0.59	28.26	90.32	F_{1-79}	0	9	9	0.40	-34.42	-20
F_{1-22}	0	5	7	0.70	52.17	125.80	F_{1-80}	0	3	9	0.60	-1.63	20
F_{1-23}	0	5	9	0.56	21.73	80.64	F_{1-81}	0	5	9	0.50	-18.03	0
F_{1-24}	0	5	9	0.52	13.04	67.74	F_{1-82}	0	7	9	0.45	-26.22	-10
F_{1-25}	5	5	9	0.41	-10.86	32.25	F_{1-83}	0	5	9	0.52	-14.75	4
F_{1-26}	1	3	7	0.67	45.65	116.12	F_{1-84}	0	7	9	0.41	-32.78	-18
F_{1-27}	0	1	9	0.70	52.17	125.80	F_{1-85}	0	7	9	0.46	-24.59	-8
F_{1-28}	9	0	7	0.18	-60.86	-41.93	F_{1-86}	0	9	9	0.41	-32.78	-18
F_{1-29}	3	9	9	0.35	-23.91	12.90	F_{1-87}	5	7	9	0.33	-45.90	-34
F_{1-30}	9	1	9	0.34	-26.08	9.67	F_{1-88}	0	3	9	0.61	0	22
F_{1-31}	3	5	9	0.51	10.86	64.51	F_{1-89}	0	7	9	0.41	-32.78	-18
F_{1-32}	7	9	9	0.13	-71.73	-58.06	F_{1-90}	0	5	9	0.57	-6.55	14
F_{1-33}	7	7	9	0.23	-50.00	-25.80	F_{1-91}	0	7	9	0.44	-27.86	-12
F_{1-34}	7	9	9	0.24	-47.82	-22.58	F_{1-92}	0	9	9	0.33	-45.90	-34

F_{1-35}	3	9	9	0.32	-30.43	3.22	F_{1-93}	0	5	9	0.52	-14.75	4
F_{1-36}	5	3	9	0.42	-8.69	35.48	F_{1-94}	7	7	9	0.22	-63.93	-56
F_{1-37}	5	7	9	0.39	-15.21	25.80	F_{1-95}	0	5	9	0.54	-11.47	8
F_{1-38}	5	7	9	0.31	-32.60	0.00	F_{1-96}	0	0	9	0.66	8.19	32
F_{1-39}	5	0	9	0.53	15.21	70.96	F_{1-97}	0	9	9	0.40	-34.42	-20
F_{1-40}	5	3	9	0.48	4.34	54.83	F_{1-98}	0	7	9	0.47	-22.95	-6
F_{1-41}	5	7	9	0.39	-15.21	25.80	F_{1-99}	0	7	9	0.47	-22.95	-6
F_{1-42}	3	5	9	0.44	-4.34	41.93	F_{1-100}	0	0	9	0.66	8.19	32
F_{1-43}	5	9	9	0.16	-65.21	-48.38	F_{1-101}	0	3	9	0.58	-4.91	16
F_{1-44}	3	7	9	0.40	-13.04	29.03	F_{1-102}	0	0	9	0.66	8.19	32
F_{1-45}	7	9	9	0.21	-54.34	-32.25	F_{1-103}	0	3	9	0.65	6.55	30
F_{1-46}	9	5	9	0.23	-50.00	-25.80	F_{1-104}	0	3	9	0.65	6.55	30
F_{1-47}	5	7	9	0.32	-30.43	3.22	F_{1-105}	0	7	9	0.44	-27.86	-12
F_{1-48}	7	9	9	0.20	-56.52	-35.48	F_{1-106}	0	0	9	0.72	18.03	44
F_{1-49}	1	9	9	0.32	-30.43	3.22	F_{1-107}	0	5	9	0.50	-18.03	0
F_{1-50}	1	7	9	0.50	8.69	61.29	F_{1-108}	0	7	9	0.44	-27.86	-12
F_{1-51}	7	9	9	0.14	-69.56	-54.83	F_{1-109}	0	7	9	0.44	-27.86	-12
F_{1-52}	3	5	9	0.47	2.17	51.61	F_{1-110}	0	5	9	0.55	-9.83	10
F_{1-53}	5	5	9	0.38	-17.39	22.58	F_{1-111}	0	3	9	0.64	4.91	28
F_{1-54}	5	9	9	0.27	-41.30	-12.90	F_{1-112}	0	0	9	0.66	8.19	32
F_{1-55}	7	9	9	0.13	-71.73	-58.06	F_{1-113}	0	3	9	0.61	0	22
F_{1-56}	5	9	9	0.18	-60.86	-41.93	F_{1-114}	0	0	9	0.66	8.19	32
F_{1-57}	7	9	9	0.10	-78.26	-67.74	F_{1-115}	0	7	9	0.44	-27.86	-12
F_{1-58}	5	9	9	0.22	-52.17	-29.03	F_{1-116}	0	9	9	0.35	-42.62	-30
	-	-	-	-			F_{1-117}	0	3	9	0.59	-3.27	18
	-	-	-	-			F_{1-118}	0	0	9	0.71	16.39	42
	-	-	-	-			F_{1-119}	0	0	9	0.66	8.19	32
	-	-	-	-			F_{1-120}	0	0	9	0.66	8.19	32
	-	-	-	-			F_{1-121}	0	7	9	0.45	-26.22	-10
	-	-	-	-			F_{1-122}	0	7	9	0.48	-21.31	-4
	-	-	-	-			F_{1-123}	0	5	9	0.51	-16.39	2
	-	-	-	-			F_{1-124}	0	7	9	0.42	-31.14	-16

	-	-	-	-			F_{1-125}	0	7	9	0.43	-29.50	-14
	-	-	-	-			F_{1-126}	0	9	9	0.37	-39.34	-26
	-	-	-	-			F_{1-127}	0	7	9	0.42	-31.14	-16
	-	-	-	-			F_{1-128}	0	5	9	0.53	-13.11	6
	-	-	-	-			F_{1-129}	0	9	9	0.33	-45.90	-34
	-	-	-	-			F_{1-130}	0	9	9	0.34	-44.26	-32
	-	-	-	-			F_{1-131}	0	9	9	0.38	-37.70	-24
	-	-	-	-			F_{1-132}	0	9	9	0.40	-34.42	-20
	-	-	-	-			F_{1-133}	0	7	9	0.46	-24.59	-8
	-	-	-	-			F_{1-134}	0	7	9	0.46	-24.59	-8
	-	-	-	-			F_{1-135}	0	5	9	0.51	-16.39	2
	-	-	-	-			F_{1-136}	0	5	9	0.51	-16.39	2
	-	-	-	-			F_{1-137}	0	7	9	0.42	-31.14	-16
	-	-	-	-			F_{1-138}	0	9	9	0.40	-34.42	-20
	-	-	-	-			F_{1-139}	0	9	9	0.37	-39.34	-26
	-	-	-	-			F_{1-140}	0	9	9	0.38	-37.70	-24
	-	-	-	-			F_{1-141}	0	7	9	0.46	-24.59	-8
	-	-	-	-			F_{1-142}	0	0	9	0.66	8.19	32
	-	-	-	-			F_{1-143}	0	7	9	0.48	-21.31	-4

Table-2 shows the percentage of genetic variations under flooding and moisture condition

Range of DTD value	Vg %	Vp %	GCV %	PCV %	h^2 %
	Flooding				
0.0 - 0.10	0.23	0.63	47.95	79.37	36.50
0.11 - 0.20	2.45	3.57	22.36	26.99	68.62
0.21 - 0.30	2.67	4.21	20.42	25.64	56.29
0.31 - 0.40	5.26	7.64	15.28	18.42	68.84
0.41 - 0.50	4.13	7.05	15.63	20.42	58.58
0.51 - 0.60	1.13	4.89	15.18	31.59	26.58
0.61 - 0.70	0.85	4.91	15.36	56.93	17.31
0.71 - 0.80	2.04	3.76	0.0	96.95	-54.25
0.81 - 0.90	-	-	-	-	-
0.91 - 1.0	-	-	-	-	-
	Moisture				
0.0 - 0.10	-	-	-	-	-
0.11- 0.20	-	-	-	-	-
0.21 - 0.30	0.19	1.07	94.80	101.98	17.75
0.31 - 0.40	9.38	10.78	19.14	20.52	87.01
0.41 - 0.50	16.95	18.33	14.70	15.29	92.19
0.51 - 0.60	5.41	7.19	23.25	26.81	75.24
0.61 - 0.70	11.52	13.68	16.97	18.49	84.21
0.71 - 0.80	-2.04	3.76	0.0	96.05	54.25
0.81 - 0.90	-	-	-	-	-
0.91 - 1.0	-	-	-	-	-

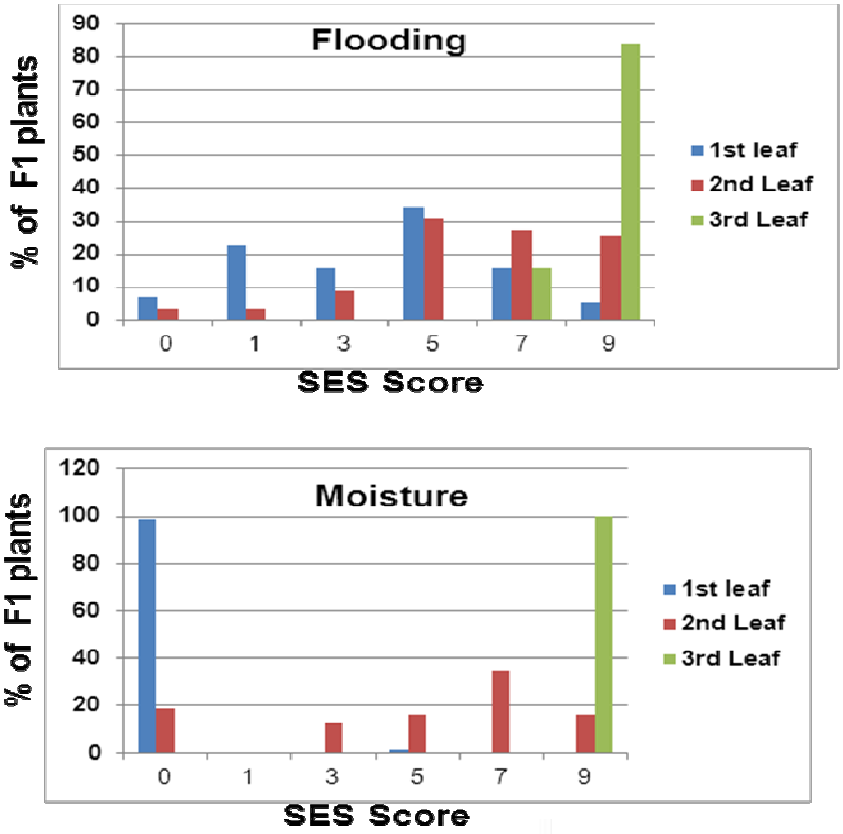

Fig.1 shows the percentage of F1 progenies with different drought score.

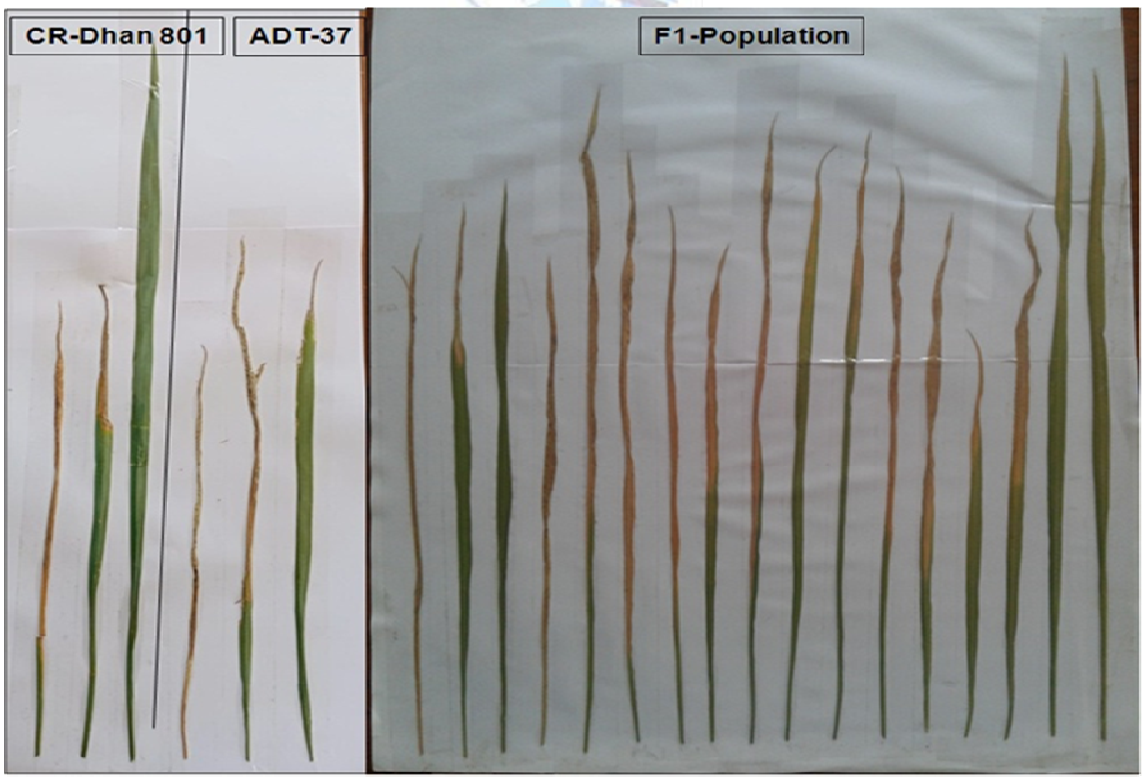

Fig.2 shows differential reactions of F1 progenies and parental lines Drought stress.

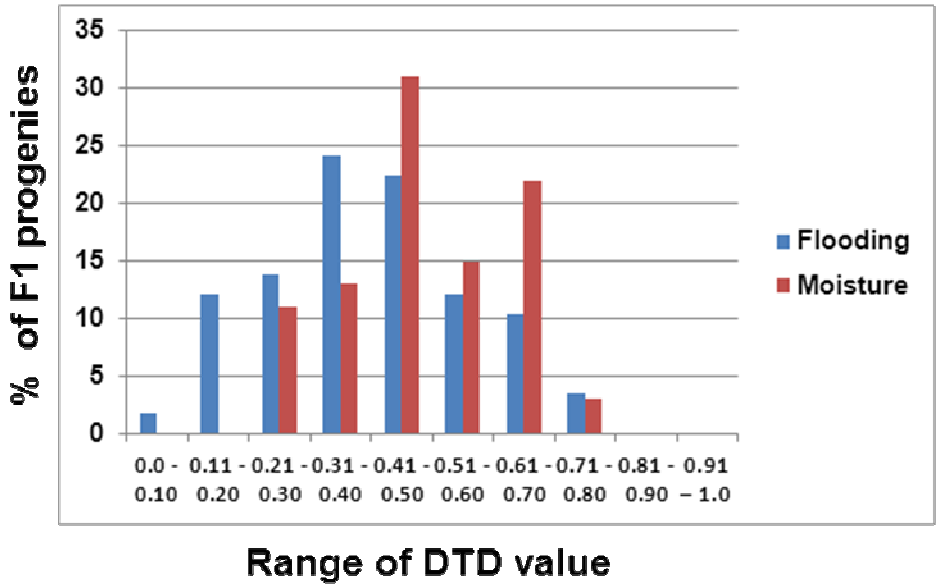

Fig.3 shows the percentage of F1 progenies with different DTD score

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Prevalence of Wilt Complex Incidence on Black Pepper in Karnataka, India

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Abstract:

An intensive roving survey was undertaken to know the occurrence of the burrowing nematode, of Radopholus similis and fungus, Phytophthora capsici associated with the wilt complex disease in black pepper in disease suspected pepper vine gardens of black pepper growing districts of malnad areas viz., Chickmagalur, Shimoga, Coorg, Uttara Kannada and Hassan districts of Karnataka during Kharif 2020-21.The wilt complex was noticed in all the locations surveyed with a range of 27.28 per cent to 35.23 per cent. In Chickmagalur district, maximum wilt complex incidence in Mudigere taluk (16.66 % to 63.40 %) followed by Koppa taluk (14.58 % to 51.50 %), N. R. Pura (16.05 % to 51.20 %) respectively, whereas lowest wilt complex incidence in Chickmagalur taluk as recorded (17.33 % to 43.50 %) followed by Sringeri (22.13 % to 48.50 %) respectively.

In Shivamogga district, maximum wilt complex incidence was recorded in Shikaripura (18.36 % to 45.68 %) followed by Hosanagara (19.63 % to 41.10 %) and Soraba (22.35 % to 40.25 %) respectively, whereas the lowest incidence was recorded in Bhadravathy (18.50 % to 34.50 %) followed by Thirthahalli (18.25 % to 35.50 %).The survey conducted in 270 locations from selected five districts viz., Chickmagalur, Coorg, Shivamogga, Hassan and Uttara Kannada during 2013-14. The wilt complex noticed in all locations surveyed, with a range of 16.05 % to 63.40 % in Chickmagalur district followed by Shivamogga (18.25 % to 45.68 %), Coorg (16.22 % to 44.50 %) and Uttara Kannada (20.68 % to 43.55 %), whereas least was noticed in Hassan district with a range of 16.18 per cent to 32.16 per cent. Maximum complex incidence was recorded in Bilimalligesara (33.86 %) followed by Kalluvally (32.23 %), Paniyur-2 (31.84 %), Paniyur–3 (31.05 %), Paniyur-1 (30.12 %), whereas lowest wilt complex incidence was recorded in Karimunda (17.41 %) followed by Karimalligesara (24.10 %) and Paniyur – 5 (27.19 %).

Key words: Wilt complex, Black pepper, Phytophthora capsici, Radopholus similis

Introduction:

Black pepper (Piper nigrum L.), (Family Piperaceae) known as the "King of Spices" has remained most precious and valuable spice in the world. It is also called as "Black gold" due its durability and value. It is playing a vital role in International trade. It is said that the European invaded India primarily for this very spice. Black pepper is native to India and is extensively cultivated in tropical regions. Currently, Vietnam is the world's largest producer and exporter of black pepper, producing 34 per cent of the world's demand (Anon., 2005).

In India, black pepper is being cultivated in an area of 118 million ha with a production of 45 million tonnes. In Karnataka, black pepper is cultivated in an area of 10,690 ha with a production of 12 million tonnes during 2014-15 (Anon., 2015).

The main objective of the survey is to get the information about the interaction of nematodes and pathogens in causing complex disease in black pepper growing areas of Karnataka.

Review Of Literature And Rationale:

Panniyur-1, Panniyur-3 and Panniyur-8 are hybrids evolved at the Pepper Research Station, Panniyur (Kerala Agricultural University). IISR Girimunda and IISR Malabar excel are the two hybrids released from ICAR-Indian Institute of Spices Research, Kozhikode, Kerala (Devasahayam et al., 2015).

Association of the burrowing nematode R. similis with the so called "yellow(s) disease" of black pepper plants was first reported in 1936 in Indonesia. This disease caused the loss of 22 million black pepper plants within 20 years in Bangka Island, Indonesia (Christie, 1959). Later, R. similis was also reported on black pepper plants in India, Sri Lanka, Malaysia and Thailand (Koshy et al., 2005).

In Kerala, more than 90 per cent of black pepper gardens were infested with root- knot nematode infestation (Ramana and Mohandas, 1987).

By keeping in view the above gaps in research, the present investigation was carried out to know the status of wilt complex in black pepper.

The foot rot or quick decline or quick wilt caused by Phytophthora capsici was a soil borne disease which attacks leaves, roots, branches and fruit spikes of black pepper and the fungus was spread by soil during cultivation operations in pepper gardens. The roots and collar regions were most adversely affected parts leading to rapid wilting and death of vines (Anandaraj et al., 1989).

Slow decline (slow wilt or yellows disease) caused up to 32 per cent crop loss in Indonesia (Sitepu and Kasim, 1991).

The root gall development and population build up of M. incognita was suppressed in black pepper on inoculation with R. similis in succession in sterile soil under pot culture conditions (Sheela and Venkitesan, 1981). Synergistic interaction has been noticed between M. incognita and Fusarium spp. too (Sheela and Venkitesan, 1993).

R. similis and M. incognita were considered to cause serious damage to black pepper crops (Koshy et al., 2005) with annual economic loss of 38.5 to 64.6 per cent.

In Vietnam, farmers were not very well aware of the occurrence of plant parasitic nematodes in their fields. They often confused with symptoms caused by nematodes with those caused by other plant pathogens, resulted in control measures not being applied properly or not being applied at all (Thuy, 2010).

Methodology:

Collection of soil and root samples

Soil and root samples from 5 to 10 spots were collected randomly with the aid of shovel in the root zone of standing black pepper crop. Later, a composite sample of 200 cc soil and 5 g roots were put in a polythene bag with proper labeling. Information pertaining to the crop, locality soil conditions etc., were also collected along with the samples as per Appendix – I. The soil and root samples were processed on the same day or kept in the refrigerator at 4°C for a couple of days.

Processing of soil samples and estimation of nematode population

Soil samples collected from the field were brought to the laboratory and stored in refrigerator at 4°C. Soil sample of 200 cc was washed thoroughly and processed using combined Cobb Sieving and Baermann's funnel technique (Ayoub, 1977). The total number of plants

showing foliar yellowing symptoms and defoliation were recorded by using the following scale (Mohandas and Ramana, 1991).

Foliar Yellowing Index (FYI): 1-4 scale

Sl. No.	Scale	Descriptions
1	1	No leaves showing yellowing
2	2	Up to 20 per cent of leaves showing yellowing
3	3	20-60 per cent leaves showing yellowing
4	4	More than 60 per cent leaves showing yellowing

Defoliation Index (DFI): 1-4 scale

Sl. No.	Scale	Descriptions
1	1	Less than 10 per cent defoliation
2	2	More than 10 per cent upto 30 per cent defoliation
3	3	More than 30 per cent upto 60 per cent defoliation
4	4	More than 60 per cent defoliation

While collecting soil and root samples lesion characters were also recorded. The wilt disease incidence in the fields was calculated by using following formula.

$$\text{Disease incidence (\%)} = \frac{\text{Number of plants infected}}{\text{Total Number of plants observed}} \times 100$$

Results And Discussion:

An extensive roving survey was carried out in selected black pepper growing areas in malnad districts during Kharif - 2020-21 to find out the incidence of nematode fungal wilt complex in black pepper. The soil and root samples were collected from all the places and were brought to the laboratory for analysis.

All the 135 soils and root samples were found positive for plant parasitic nematodes. A total of five major genera of plant parasitic nematodes were recorded from rhizosphere of black pepper plantations in five districts of malnad regions of Karnataka. The plant parasitic nematodes recorded during present study were Radopholus similis, Meloidogyne incognita, Pratylenchus coffeae, Helicotylenchus multicinctus, Rotylenchulus reniformis and other parasitic and free living nematodes (Table 1).

During survey, the highest nematode population of 1,23,798 per 200 cc soil and 5 g roots was recorded in Chickmagalur district followed by Shivamogga district with 1,07,560 nematodes per 200 cc soil and 5 g roots and Coorg district with 79,922 nematodes per 200 cc soil and 5 g roots. The lowest nematode population was recorded in Hassan district with 25,902 per 200 cc soil and 5 g roots followed by Uttara Kannada, which recorded 27,866 nematodes per 200 cc soil and 5 g roots.

During the survey, maximum wilt complex incidence was recorded in Chickmagalur district with 31.28 per cent followed by Coorg (30.94 %), Uttara Kannada (29.33 %) and Shivamogga (29.07 %) respectively, whereas least wilt complex incidence was recorded in Hassan district (25.77 %) (Table1).

In Chickmagalur district, five taluks were surveyed for nematode occurrence. Among them, Mudigere taluk recorded the highest number of nematode population of 805, 30 per 200 cc soil and 5 g roots followed by Chickmagalur with 27,598 nematodes per 200 cc soil and 5 g roots. Lowest nematode population was recorded in Koppa taluk with 310, 19 nematodes per 200

cc soil and 5 g roots followed by N. R. Pura taluk with 22, 140 nematodes per 200 cc soil and 5 g roots.

In Mudigere taluk, the highest nematode population per 200 cc soil was recorded in G. Hosally (6064) followed by Phalghuni (4745) and Banakal (4302). The lowest nematode population was recorded in Kunduru (2602) followed by Bettadamane (2602).

In Chickmagalur taluk, the highest nematode population (4134) was recorded in Kunduru followed by Attigere (3858) and Aldur (3848) per 200 cc of soil and 5g roots. The lowest nematode population was recorded in Vastare (2672) followed by Mavinakere (3012) per 200 cc soil and 5 g roots respectively.

In Koppa taluk, maximum wilt complex incidence was recorded in Addadda (51.50 %) with total nematode population of 4050 followed by Kagga (43.50 %) with 3444 nematodes per 200 cc soil and 5 g roots and least incidence was recorded in Belagola (14.58 %) followed by Gunavanthe (16.30 %) and Jayapura (18.53 %) with 1430 and 464nematodes per 200 cc soil and 5 g roots respectively.

Among the villages of Sringeri taluk, maximum wilt complex incidence was recorded in Heruru (48.50 %) followed by Kavadi (43.66 %) and Beguru (42.50 %). However, the lowest wilt complex incidence was recorded in Nemmaru village (18.79 %) followed by Hadi (22.13 %) respectively.

In Shivamogga district, 7 taluks were surveyed for the presence of plant parasitic nematodes. Highest nematode population was recorded in Soraba taluk (29971) followed by Thirthahalli (26628) per 200 cc soil and 5 g roots. The lowest nematode population was recorded in Bhadravathi (11142) followed by Shivamogga (13986) per 200 cc soil and 5 g roots respectively.

With respect to wilt complex incidence in Shivamogga district, maximum wilt complex incidence was recorded in Sagara taluk (40.10 %) followed by Shivamogga (30.41 %). The lowest wilt complex incidence was recorded in Thirthahalli (27.60 %) followed by Bhadravathi (27.80 %).

In Shivamogga taluk, highest number of plant parasitic nematodes was recorded in Aladahalli (2876) followed by Hittiru (2842) and the lowest was recorded in Gajanuru (918) followed by Ayanuru (1250) per 200 cc soil and 5 g roots respectively.

In Shivamogga taluk, maximum wilt complex incidence was recorded in Hitturu (39.80 %) followed by Lakshmipura (36.13 %) and the lowest wilt incidence was recorded in Gajanuru (18.64 %) followed by Anesara (22.05 %) respectively.

Table 1: Incidence of wilt complex in malnad regions of Karnataka

Location		Village name	Soil type	Cultivar	FYI	DFI	Wilt incidence (%)
Chickmagalur	Mudigere	G.Hosally	Sandy loam	Panniyur 1	3	3	63.40
		Banakal	Sandy loam	Panniyur-1,2	3	2	40.10
		Bettadamane	Sandy loam	Panniyur2	3	1	33.92
		Gowdahally	Sandy	Panniyur 1	2	1	23.61
		Kalasa	Sandy loam	Panniyur 2	2	1	17.33

	Kenjige	Sandy loam	Panniyur 2	2	2	28.57
	Kunduru	Sandy loam	Panniyur 1	3	1	16.66
	Phalghuni	Sandy loam	Panniyur 2	3	3	59.00
				Mean		**35.23**
Chickmagalur	Aldur	Red Sandy	Panniyur 1	3	1	36.10
	Belawadi	Sandy loam	Panniyur 1	3	1	28.57
	Basagal	Sandy clay loam	Panniyur 2	2	3	34.63
	Bidare	Sandy loam	Panniyur 1	2	2	22.13
	Attigere	Sandy loam	Panniyur 2	3	3	43.50
	Vastare	Sandy clay loam	Panniyur 1	3	1	26.33
	Kunduru	Sandy loam	Panniyur 2	3	2	41.66
	Mavinakere	Sandy loam	Panniyur 5	2	1	17.33
				Mean		**31.28**
N.R.Pura	Aduvally	Sandy loam	Karimunda	3	1	16.66
	Badagabylu	Sandy loam	Panniyur 1	3	2	43.62
	Echikere	Sandy loam	Panniyur 2	2	1	22.13
	Shimse	Sandy loam	Panniyur 1	3	2	33.43
	Varkate	Sandy loam	Panniyur 1	2	1	17.86
	Gubbiga	Sandy loam	Panniyur 2	3	3	51.20
	Ballekoppa	Sandy loam	Panniyur 1	2	1	16.05
	Bannuru	Sandy loam	Panniyur 1	2	1	17.33
					Mean	**27.28**
Koppa	Addadda	Sandy loam	Panniyur 2	3	3	51.50
	Belagola	Sandy loam	Panniyur 2	2	1	14.58
	Gunavanthe	Red Sandy	Karimunda	1	1	16.30
	Jayapura	Red Sandy	Panniyur 1	2	2	18.53
	Kagga	Sandy	Karimalligesara	3	2	43.50

			loam				
		Nilavagilu	Red Sandy	Panniyur 2	2	1	21.60
		Shanuvally	Sandy loam	Kari Malligesara	3	2	39.61
		Situru	Sandy loam	Panniyur 1	3	2	36.85
						Mean	**30.30**
	Sringeri	Addagadde	Sandy clay	Panniyur 2	2	1	22.61
		Beguru	Sandy loam	Panniyur 2	3	3	42.50
		Hadi	Clay loam	Karimalligesara	2	1	22.13
		Menase	Clay loam	Panniyur 1	2	2	22.80
		Heruru	Sandy loam	Panniyur 1	3	3	48.50
		Honnavally	Sandy loam	Bilimalligesara	2	3	36.66
		Kavadi	Sandy loam	Panniyur 1	3	3	43.66
		Nemmaru	Red Sandy	Panniyur 2	2	1	18.79
						Mean	**30.23**
Shivamogga	**Shivamogga**	Aladahalli	Sandy loam	Panniyur 1	3	1	33.21
		Anesara	Sandy clay loam	Panniyur 1	2	1	22.05
		Arenakoppa	Sandy loam	Panniyur 2	3	1	36.13
		Ayanuru	Sandy loam	Kaluvalli, Panniyur-1	3	2	33.09
		Balenakoppa	Red sandy	Kaluvalli	2	1	24.05
		Gajanuru	Red Sandy	Karimalligesara	2	1	18.64
		Hitturu	Sandy loam	Bilmalligesara Panniyur 1	3	2	39.80
		Lakshmipura	Sandy loam	Panniyur 2	3	1	36.33
						Mean	**30.41**
	Hosanagara	Balur	Red Sandy	Panniyur 1	2	2	18.66
		Kalsae	Red sandy	Bilimalligesara	3	2	29.20
		Magodu	Red sandy	Kaluvalli Panniyur 1	3	2	24.80
		Nanjavally	Sandy loam	Panniyur-1	3	3	41.10
		Yadur	Sandy loam	Panniyur 1	3	2	36.00
		Begadally	Red sandy	Panniyur-1	2	1	19.63
		Ginikallu	Sandy loam	Kaluvalli, Panniyur-1	3	3	39.80
		Malali	Red sandy		3	2	29.64
						Mean	**29.85**
	Shikaripura	Gogga	Sandy loam	Panniyur 1	3	2	32.33
		Thogarasi	Red Sandy	Panniyur-2	3	1	18.65
		Hittal	Red sandy	Panniyur 1	3	2	23.13

		Annapura	Clay loam	Panniyur-2	2	1	19.63
		Kaniy	Sandy clay	Panniyur 1	2	2	18.36
		Jakkanahally	Sandy	Panniyur 1	3	2	26.31
		Sampally	Sandy loam	Panniyur-1	3	3	45.68
		Malla	Sandy loam	Panniyur-1	3	2	39.61
						Mean	**27.96**
	Bhadravathi	Anaveri	Sandy loam	Panniyur 1	2	1	33.70
		Aradottilu	Sandy	Panniyur 5	2	2	29.80
		Hallikere	Sandy loam	Kaluvalli	3	2	34.50
		Matthighatta	Clay loam	Panniyur 1	3	1	22.50
		Shanklipura	Red Sandy	Panniyur-1	2	1	18.50
						Mean	**27.80**
	Sagara	Adur	Clay loam	Kaluvalli Panniyur 2	3	2	32.86
		Besur Gijaga	Red Sandy	Panniyur 1	3	1	22.66
		Kalmane	Sandy clay loam	Panniyur 1	2	2	26.86
		Heggodu	Sandy	Karimunda	2	1	18.36
		Kippadi	Sandy loam	Panniyur 1	2	1	22.16
		Udri	Sandy	Panniyur 1,2,3	2	2	21.50
		Valur	Sandy loam	Panniyur 1	3	3	40.10
		Hebbase	Sandy loam	Kaluvalli	3	2	38.50
						Mean	**27.87**
	Thirthahally	Alageri	Sandy loam	Kaluvalli Panniyur-1 Bilimalligesara	3	1	31.50
		Alur	Sandy loam	Panniyur 1,2,	3	2	33.50
		Demlapura	Sandy loam	Panniyur 1	2	2	29.36
		Shiruru	Red Sandy	Karimunda	2	1	18.25
		Yadehally	Red Sandy	Panniyur 1	2	1	21.50
		Thalale	Sandy loam	Panniyur 1,3	3	2	31.75
		Karadiga	Red Sandy	Panniyur 1	2	1	19.50
		Kalavati	Sandy loam	Panniyur 5	3	2	35.50
						Mean	**27.60**
						Mean	**32.00**
Coorg	**Somavarpete**	Abbimata	Sandy loam	Panniyur 1	3	2	38.25
		Agalli	Sandy loam	Panniyur 1	3	1	32.50
		Bettadahally	Sandy loam	Panniyur 3	3	2	33.86
		Doddakodi	Sandy loam	Panniyur 1	2	2	28.65
		Honnekodi	Red Sandy	Panniyur 1	2	1	25.50
		Kirkodli	Sandy loam	Panniyur 1	3	3	44.50
		Koothi	Sandy loam	Panniyur 2	3	2	38.50
		Hulase	Sandy loam	Panniyur 1	3	2	39.25
						Mean	**35.12**
	Madike	Balemuri	Sandy loam	Panniyur 5	2	2	23.13
		Biligere	Red Sandy	Panniyur 1	2	1	16.22

		Kakathuru	Clay loam	Panniyur 2	3	2	32.33
		Kiggalu	Red Sandy	Panniyur 2	2	1	16.88
		Made	Sandy loam	Panniyur 1	3	2	37.10
		Palooru	Sandy loam	Panniyur 1	3	3	39.61
		Sampaje	Sandy loam	Panniyur 2, 3	3	1	37.10
		Yevakapadi	Sandy loam	Panniyur 1	3	1	32.16
						Mean	**29.31**
	Veerajapete	Ammathi	Sandy loam	Panniyur 1	3	3	43.55
		Beguru	Sandy loam	Panniyur 1	2	2	28.12
		Huchinad	Red Sandy	Paniyur 2	3	1	24.05
		Kadanur	Red Sandy	Panniyur 5	2	2	18.75
		Yedur	Sandy loam	Panniyur 2	3	3	39.61
		Nalkeri	Red Sandy	Panniyur 2	3	1	22.13
		Theralu	Sandy loam	Panniyur 1	3	1	32.16
		Yedur	Sandy clay loam	Panniyur 1	2	2	18.64
						Mean	**28.37**
Hassan	**Sakaleshpura**	Balagodu	Sandy laom	Panniyur 1	2	2	28.57
		Devihally	Red Sandy	Panniyur 1	2	1	18.50
		Ibbadi	Sandy loam	Panniyur 1	2	3	32.16
		Igoor	Red Sandy	Karimunda Panniyur - 1	2	1	16.18
						Mean	**27.77**
Uttara kannada	**Sirsi**	Ajjibal	Sandy loam	Panniyur 1	2	2	29.33
		Heggar	Sandy loam	Panniyur 1	3	2	38.68
		Kalve	Sandy loam	Panniyur 1	3	3	43.55
		Kannalli	Sandy loam	Karimalligesara	3	2	39.61
		Belale	Red Sandy	Karimalligesara	2	1	20.68
						Mean	**30.23**
	Siddapura	Akkunji	Sandy loam	Karimunda	3	2	36.13
		Begar	Red Sandy	Panniyur 1	2	2	18.28
		Hegge	Sandy loam	Panniyur 1	2	3	32.16
		Murur	Red sandy	Panniyur 5	3	1	22.13
		Kastur	Sandy loam	Bilimalligesara	3	2	33.43
						Mean	**28.43**

An extensive roving survey was carried out in black pepper growing regions of malnad districts during 2013 to find out the incidence of Radopholus similis and Phytophthora capsici wilt complex in black pepper. The data collected among the survey revealed that, incidence of wilt complex severity varied in different localities. The wilt complex was noticed in all the locations surveyed with a range of 27.28 per cent to 35.23 per cent.

In Chickmagalur district, maximum wilt complex incidence in Mudigere taluk (16.66 % to 63.40 %) followed by Koppa taluk (14.58 % to 51.50 %), N. R. Pura (16.05 % to 51.20 %) respectively, whereas the lowest wilt complex incidence in Chickmagalur taluk as recorded (17.33 % to 43.50 %) followed by Sringeri (22.13 % to 48.50 %) respectively.

The survey was conducted in 270 locations from selected five districts viz., Chickmagalur, Coorg, Shivamogga, Hassan and Uttara Kannada during 2013-14. The wilt complex was noticed in all the locations surveyed, with a range of 16.05 % to 63.40 % in Chickmagalur district followed by Shivamogga (18.25 % to 45.68 %), Coorg (16.22 % to 44.50 %) and Uttara

Kannada (20.68 % to 43.55 %), whereas the least was noticed in Hassan district with a range of 16.18 per cent to 32.16 per cent.

Maximum complex incidence was recorded in Bilimalligesara (33.86 %) followed by Kalluvally (32.23 %), Panniyur-2 (31.84 %), Panniyur–3 (31.05 %), Panniyur-1 (30.12 %), whereas the lowest wilt complex incidence was recorded in Karimunda (17.41 %) followed by Karimalligesara (24.10 %) and Panniyur – 5 (27.19 %).

The present findings are in confirmation with the reports of: Abraham Jose et al. (1996): Jahagirdar (1998): Koshy et al. (2005): Aravind et al. (2011) and Rashid and Eapen (2014).

Jahagirdar (1998) reported that, maximum wilt incidence (68.50 %) was recorded in Karalikoppa (64.40%) village of Shivamogga district followed by Neeranakki (64.40 %), Devarakoppa (62.30 %) of Sirsi and Gaddemane (61.30 %) of Mudigere taluk.

Plant-parasitic nematodes could also cause substantial damage to black pepper plants. Yellowing of the leaves of black pepper plants caused by R. similis and Meloidogyne spp. has been described. R. similis could cause "yellow(s) disease" and "slow wilt disease" of black pepper plants (Koshy et al., 2005).

Aravind et al. (2011) opined that, foot rot and slow decline diseases caused by P. capsici or R. similis pose major economic threat to black pepper production. The movement of pathogens and the consequent disease outbreak was largely due to latently infected plantlets and the contaminated nursery medium.

Slow decline disease of black pepper was mainly due to feeder root damage caused by R. similis and M. incognita either alone or in association with Fusarium spp. and P. capsici. There is a gradual reduction in the vigor and productivity of the vine which lead to death over a period of few years and hence called slow decline (Rashid and Eapen, 2014).

The present study brought about a detailed account on the incidence of wilt complex in major pepper growing areas of state, compared to earlier studies and helps to identify the hotspots of pepper wilt complex in Karnataka state and formulation of preventive management strategies.

The disease incidence varied from location to location, which might be due to cropping patterns, agronomic practices followed, environmental conditions and build up of inoculum. The higher disease incidence could be attributed to the use of susceptible cultivars from the infected field, apart from monocropping and mismanagement that has also aggravated the disease situation. Practicing improper management practices by farmers in the initial period of the crop also makes it difficult to manage the wilt complex.

In the present study, it has been observed that, farmers are spraying Bordeaux mixture by unscientific preparation, bad agronomic practices followed, not using any nematicides for control of nematodes and non judicious use of fertilizers and pesticides for other crops in the orchards. The efficacy of these fertilizers and pesticides might be lost in short durations because of heavy rainfall and hence, provides protection for a short period. These situations lead to the increased population of nematodes and causes considerable yield loss. This aggravated wilt complex might lead to severe loss to the black pepper growers.

The prophylactic management practices were not followed by farmers to manage P. capsici in black pepper in almost all the locations surveyed. The selection of infected vines, use of soil without proper sterilization for nurseries and planting of vines in infested soil might lead to the increased wilt incidence in the areas surveyed (Devasahayam et al., 2015).

Conclusion :

Black pepper is one of the most widely used spices, because of piperine content of 5-10 % in commercial white and black pepper. Among the different diseases affecting black pepper, burrowing nematode and wilt disease complex caused by Radopholus similis and Phytophthora capsici were observed in severe form. The information available on this disease complex as well as pathogens in Karnataka is very meager. Hence, studies were undertaken to survey study, pathogenecity, interaction studies, screening of popular varieties for resistance, various factors affecting disease development and management of wilt complex with suitable management practices.

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Synthesis of Zinc Oxidenano Particles Using Plant Leaf Extract of Asphodelus Macrocarpus.

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Abstract:

Modern science, Nanotechnology is an ablaze field for the researchers. Zinc oxide nanoparticles (ZnONPs)are known to be one of the most multifunctional inorganic nanoparticleswithitsapplicationin Treatment of urinary tract infection. Nanoparticles were synthesized using Asphodelus Macrocarpus fresh leafExtract and were characterized by UV-visible spectroscopy (UV–vis), X-ray diffractometer (XRD), FourierTransform infrared spectroscopy (FT-IR), Scanning electron microscopy (SEM), Energy dispersive analysisofx-ray (EDAX),Atomicforcemicroscopy(AFM).Therefore,the studyrevealsanefficient,eco-friendlyand simple method for the green synthesis of multifunctional ZnO NPs using Asphodelus Macrocarpus. Urinary tract Infection causing micro beswere isolated from the disease affected patient urine sample. The synthesized Nanoparticles have been tested against the pathogenic culture showed a very good zone of inhibition Compared with plant extract. It indica test the bio medical capability of ZnO NPs

INTRODUCTION:

Nanotechnology involves the use of materials havingnanoscale dimension in the range of 1-100 nm.Operating with researchers to have much better understanding of biology . The green synthesis ofnanoparticle has greatly reduce the use of physical and chemical method . various chemical methodhave been proposed for the synthesis of zinc oxide nanoparticles , such as reaction of zinc with alcohol ,vapourtransport, hydrothermalSynthesis, precipitationmethod[1-4].

Theusegreensynthesismethodbytheuseofresearcherisrapidlyincreasingduetolessusagesofchemical, eco-friendlynatureand onestep synthesisofzincoxidenanoparticles[5]. They also have potential application in the field of medicine Like drug delivery,biological activities such as antimicrobial, an-Tioxidant, etc., and diagnosis ofdiseases. Antimicrobial activity of ZnO NPs against various pathogens such as B.subtilis, Salmonella, Listeria monocytogenes, Staphylococcus aureus and E. coliusing disc Diffusion method has been reported . Also reported simiLar results byPunicagranatum mediated synthesized ZnO NPsSome of the proposedmechanism responsible for antibacterialactivity Of ZnO NPs includes disruptionof the cell membrane, oxIdative stress induction and generation of reactiveoxygen (ROS). It was reported that ZnO NP has showed high antibacterialActivity against urinary infection disease . Further the antibacTerial activity of the se biological synthesized ZnONP swas evaluated against different pathogenic microorganisms. Our aim of the Study is to synthesis ZnO NPs fromthe plant Asphodelus Macrocarpus and their Antibacterial activity against pathogens causing urinary tract infections.

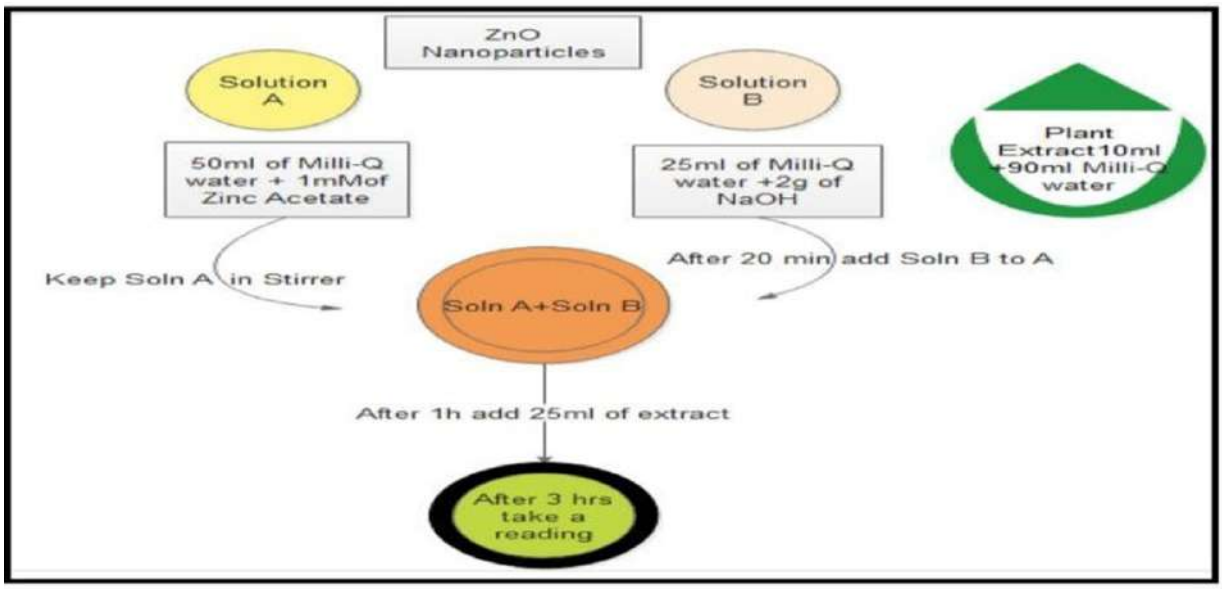


Fig.1)schematicrepresentationofSynthesisofzincoxidenanoparticles.

1) Plantcollection:

The leaves of Asphodelus Macrocarpus are collected from natural source .It is medicinally important plant . fresh green leaves and flowers are harvested during the month June to September.

2) Preparation of plan textract:

5 g of fresh leaves were washed with tap water followed by distilled water and then cut andsoakedin250mlbeaker containing 100ml distilled water. The solution was boiled at 70 degrees Celsius for 8 minutes. The leaf extract was allowed to cool room temperature , filtered through Whatmannumber2filter paper and filter was stored for further experimentaluse.

3) SynthesisofZnoNps:

1 mM of zinc acetate was dissolved in 50 ml distilled water and kept in stirrer for 1 hrsrespectively [4]. Then 20 ml NaoH solutions was slowly added into the zinc acetate solution and 25ml of plant extract was added to the same. The colour of the reaction mixture was changed after 1hr incubation time . The solution was left in a stirrer for 3 hrs yellow colour appeared after theincubation time confirm the synthesis of zinc oxide nanoparticles . The precipitate was separatedfrom the reaction solution by centrifugation at 8000 rpm at 60 degree Celsius for 15 min and pellets was collected. Pellets were dried using hot air ovenat 80^0 for 2 hr and preserved in air tight bottle of further studies.

Application of zincoxide nano particles

1) ZincoxideNpusedascatalystinBigineli Reaction

Biginellireactionismulticomponentreaction.WeusedZnONP's asCatalystinBiginellireaction . At room temperature , it gives product 3,4-dihydropyrimidime from the Aldehyde and Beta-dike to esterandurea.

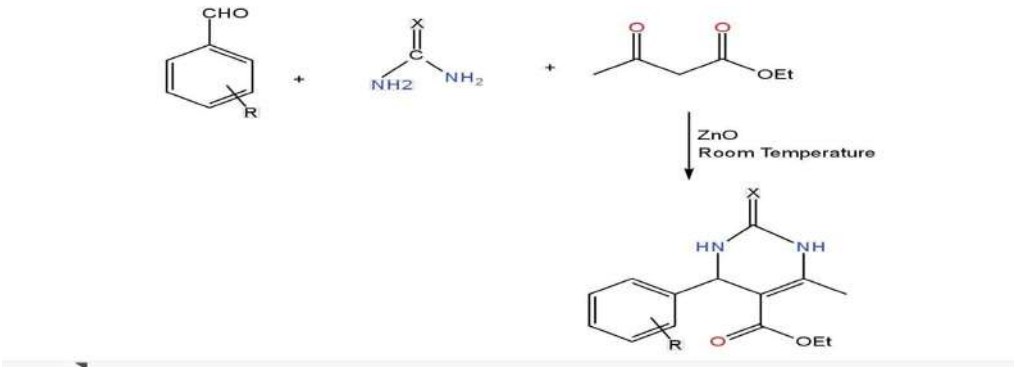
Dihydropyrimidimes heterocyclic units and widely used in natural and Syntheticorganic chemistryduetotheirwidespectrum ofbiologicalactivity.

- GeneralProcedureforSynthesisof3,4-dihydropyrimidinone:

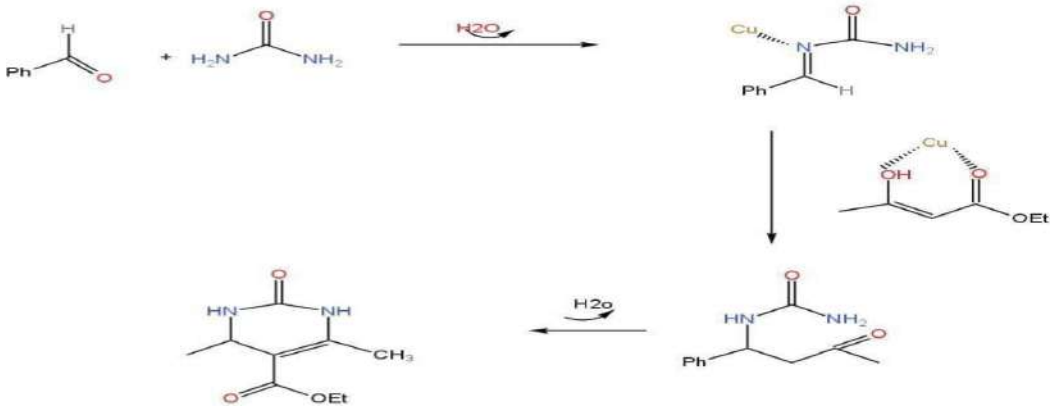
A mixture of benzaldehyde (1 ml), β-diketoester (ethylacetoacetate) (1.24 ml)andurea(0.88 gm) wasstirredfor30Minutes in the presence of 20 mg of highly dispersed

reaction mixture Zincnanoparticlesfromthepreviousexperiment.ThereactionwasMonitoredbythin layer chromatography using ethylacetate/hexane (2:3) as eluent. Themixturewasthen recrystallized.Recordthemp,tlc.

Reaction:



Mechanism:



Results:

1.Theresultleadsdownbytheexperimentcoppernanoparticleacts As catalysts for the synthesis of biologically active 3,4Dihydropyrimidinone.

2.Theproductswereobtainedrapidlywithhighyieldatroom Temperature.

3.Theyieldsofthisreactionis85%.

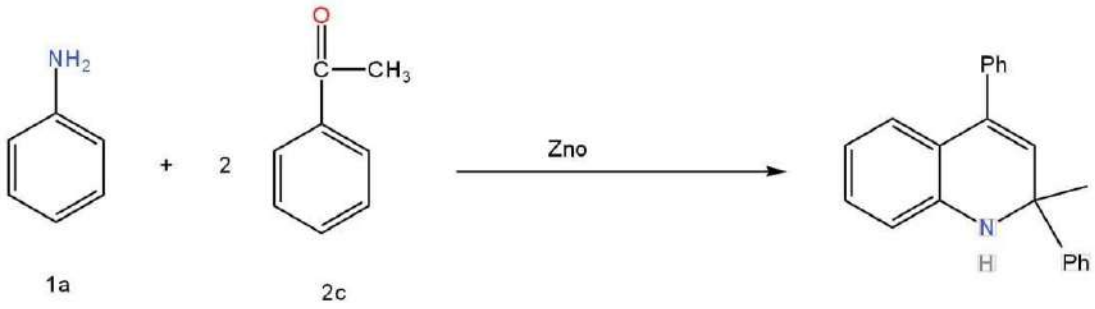
ZnoNpsusedasCatalystinSynthesisofDihydroquinoline

Generalprocedure:

1 mol of aniline ,10 mol of ketone and 0.01 gm zno particle in 1 mlToluenewasheatedat80^{0}Cfor6 hr.

Progress of reaction mixture monitored by TLC. After the completionof the reaction theCatalyst can be easily removed by filtrations. The filtrate was evaporated. Pure product is obtained.

Reaction:



Results:

TheobtainedproductshaveBP210^{0}Cand yieldisabout84.50%.

Resultsanddiscussion:

Zinc oxide nanoparticles has attracted great attention because of their suspension opticalproperties. Visual colour change is the preliminary test for nanoparticle synthesis. The colourchangesfromhaifwhite to yellowrepresentthesynthesisof ZnoNps.

Conclusion:

Thegreensynthesisofnanoparticleusedinthisexperimentfound To be eco-friendly , non- toxic and less usages of chemical comparedtoPhysical and chemical method.

ThepresenceofphytochemicalsintheleafextractitselfhelpintheSynthesis of metal oxide nanoparticles by inducing oxidation andreductionreaction.

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Green Synthesis of Indole Derivatives

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Abstract:

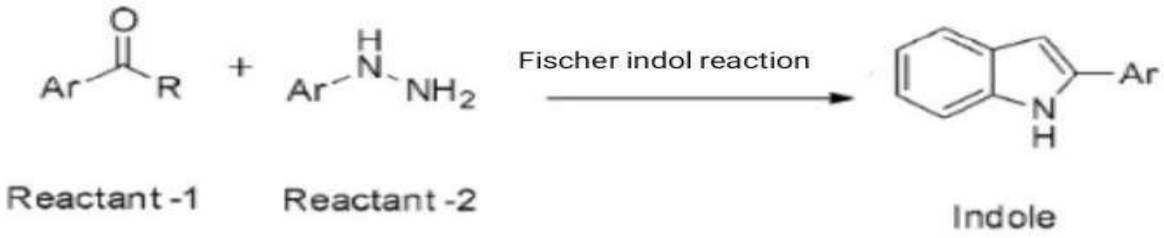
To synthesis of different substituted indole derivative possess a number of biological activities like antimicrobial, antioxidant, antimalarial etc. rather than conventional method the reagent hereby are replaced by Garlic & Ginger Juice. The formed compounds have been evaluated by physical methods like melting point, thin layer chromatography, elemental analysis and functional group analysis.

Keywords: Indolederivatives,aldehyde,antimicrobial,antioxidant,antimalarial

Introduction:

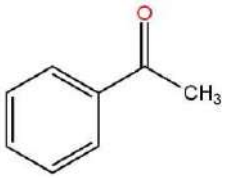
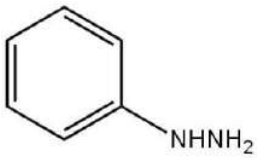
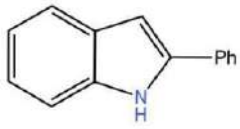
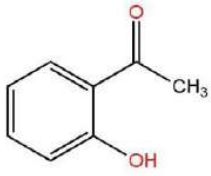
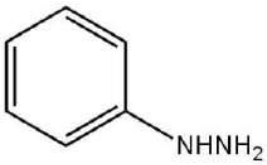
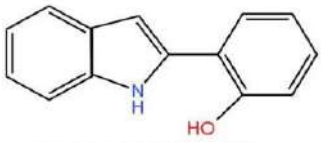
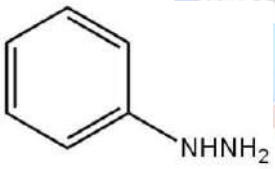
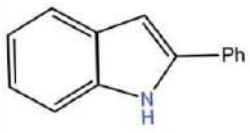
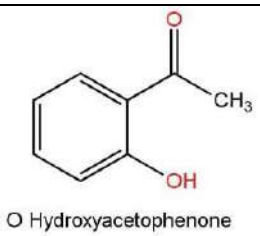
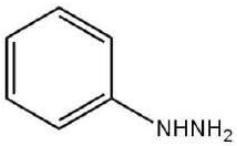
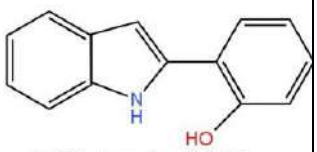
The indole ring system is present in many biologically active medicinal agents and natural products. The first synthesis of substituted indoles was conducted by Fischer and Jourdan as early as 1883, and since then the bicyclic heteroaromatic core has been the target of many synthetic approaches and reactivity studies. Indoles are also prominent structural elements in the neurotransmitter serotonin, the anti-inflammatory drug indomethacin and other molecules showing promise in the treatment of cardiovascular disease, erectile dysfunction, cancer and neurological conditions.Indole derivatives are prepared by conventional methods by reaction of various ketones with phenyl hydrazine in presence of acid and organic solvents. To minimize the use of hazardous chemicals, the same reactions are performed using Garlic & Ginger Juice

General Reaction-



Procedure

The reaction was carried out by mixing the phenyl hydrazine (1.6ml) .Add the Ketone(2ml) and Garlic or ginger juice (acid) (5ml) add to it. Then add ethanol (4.5ml), PPA (2ml) in a beaker.Themixturewasstirred with the help of magnetic stirrer at R.T. 1hr stirrer the mixture. The Progress of reaction mixture was monitored by TLC.Crude product is obtained.Recrystalisation with ethanol.Pure product is obtained

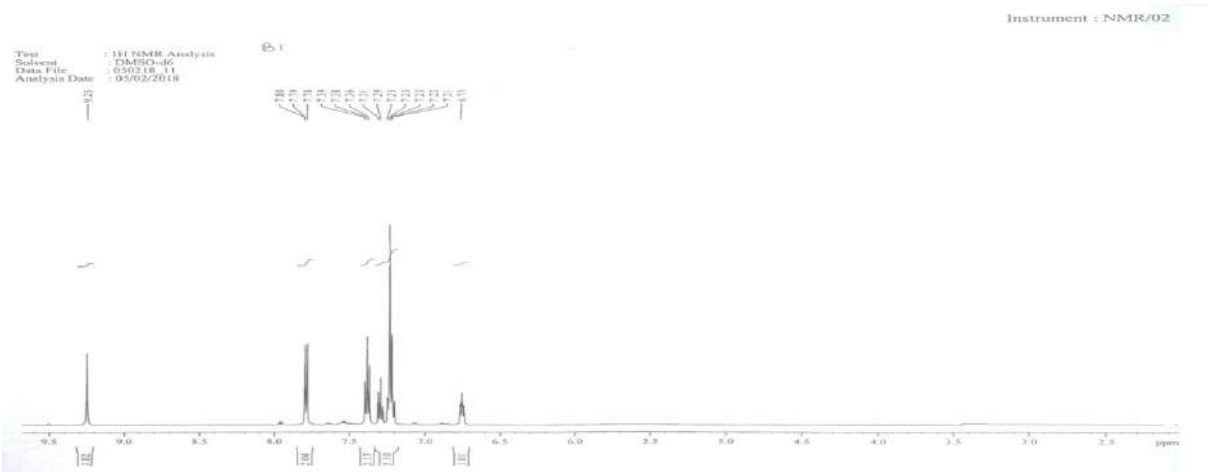
	Reactant-1	Reactant-2	Catalyst	Product	Temp conditon
A	 Acetophenone	 phenylhydrazine	Ginger	 2-Phenyl indole	R.T
B	 O Hydroxyacetophenone	 phenylhydrazine	Garlic	 2-(2-hydroxyphenyl)-indole	R.T
C	 Acetophenone	 phenylhydrazine	Ginger	 2-Phenyl indole	R.T
D	 O Hydroxyacetophenone	 phenylhydrazine	Garlic	 2-(2-hydroxyphenyl)-indole	R.T

Result Table:

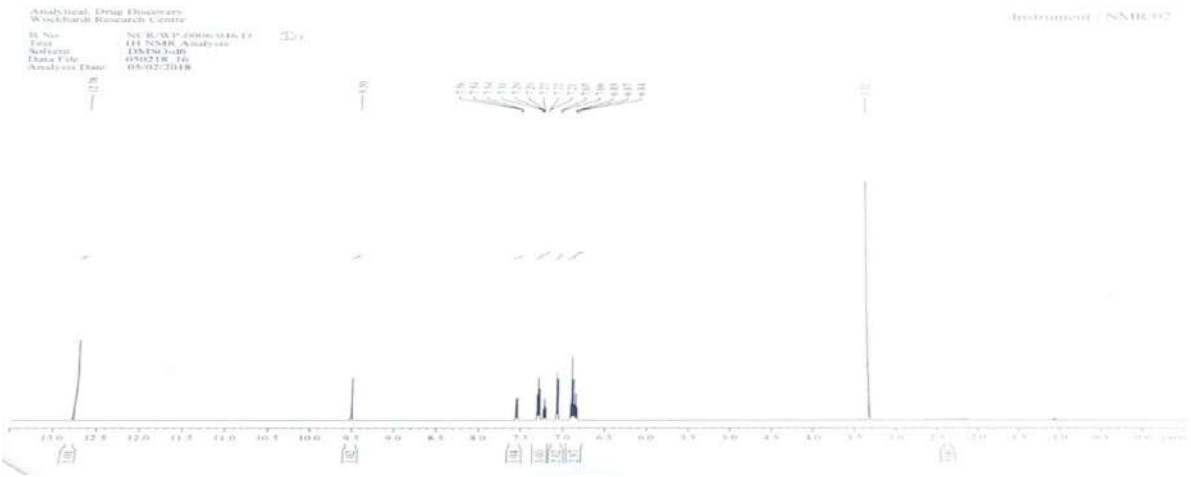
The Melting Point, % of yield, molecular formula of synthesized compounds

Sr.No	Product	Yeild	Sr.No
	2-phenylindol	75.70%	A
B	2-(2hydroxyphenyl)-indol	75.91%	B
C	2-phenylindol	5.10%	C
	2-(2hydroxyphenyl)-indol	5.79%	D

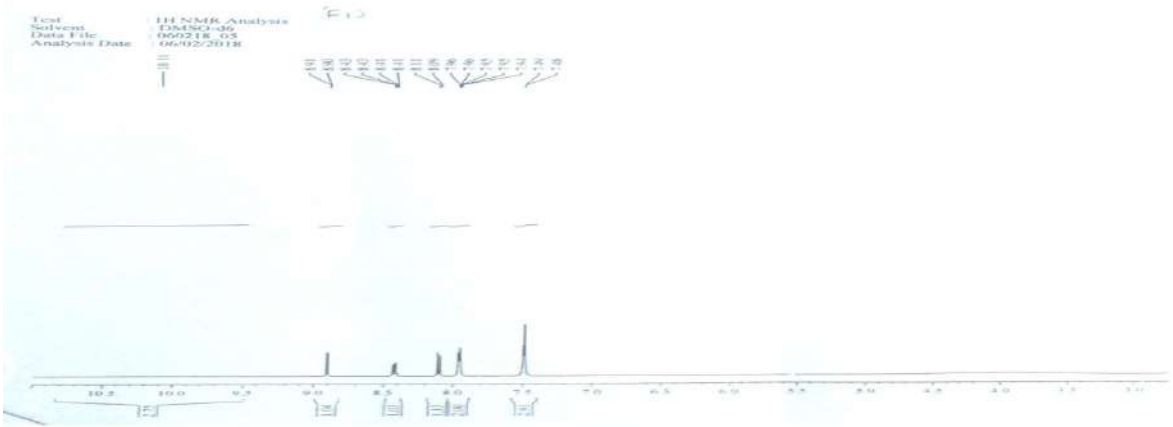
(1)2-phenyl-1H-indole-3-carbaldehyde



(2) 2-(2-hydroxyphenyl)-1H-indole-3-carbaldehyde



(3)5,7-dinitro-2-phenyl-1H-indole-3-carbaldehyde



Discussion:

The synthesis of the different substituted indole derivatives A,B,C,D has done.The formation Derivative A has yield 75.70%, B has yield 75.91%,C has yield 75.10% and D has

yield 75.79%. The synthesis of substituted indole derivatives A has high yield than other substituted indole derivatives B,C,D

Conclusion:

The indole ring system is present in many biologically active medicinal agents and natural productscan be synthesized by using green catalyst

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Silver Nanoparticles: A Review on Green Synthesis of Silver Nanoparticles by Using Plant Extract, Characterization and Their Antioxidant Activity by Different Methods

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Abstract:

The idea of nanoparticles, which display singular and remarkably different properties from their bulk, was first introduced by nanotechnology. Particles with one or more dimensions and sizes between one and one hundred nanometers are known as nanoparticles. In the field of medical science and disease treatment, the environmentally friendly synthesis of silver nanoparticles has received considerable global attention. The green synthesis of silver nanoparticles using plant extracts is thought to be an alternative to the chemical method of synthesizing nanoparticles. The data obtained using the green method were analysed using a variety of methods, including UV-Vis., FT-IR, XRD, TEM, AFM, and DLS. This review focuses on the plant mediated silver nanoparticles, Characterization and their antioxidant activities using various methods.

Keywords:- Green synthesis, Silver nanoparticles, Plant extracts, Antioxidant activity.

1. Introduction:

With promising future developments, nanotechnology has a significant impact on current research and product development. Particles up to 100 nm in size are considered nanoparticles (Keerawelle & Thiripuranathar, 2019). The need to create environmentally safe nanoparticle synthesis protocols without the use of toxic chemicals is currently on the rise. As a result, scientists who study the synthesis and assembly of nanoparticles are now interested in biological systems (Sivaraj & Vanathi, 2017). Because the properties of the nanoparticles are different from those of their bulk (Flieger et al., 2021),they have a wide range of applications in various industries, including drug delivery targeting and biosensors (N. Kumar et al., 2018).One of the most recent applications of nanomaterials in the analytical chemistry area was the determination of antioxidant activity in metal nanoparticles (Vilela et al., 2014).

In general, either a "top down" or "bottom up" approach is used to produce and stabilise nanoparticles. In the "top down" strategy, bulk material is reduced in size using a variety of physical and chemical methods(Rajeshkumar & Bharath, 2017), whereas in the "bottom up" strategy, nanoparticles are created through the self-assembly of atoms into nuclei that then develop into nanoscale particles (Rafique et al., 2020).

The use of excess energy, various hazardous compounds that create biological hazards, heavy equipment, and other resources are required for the chemical and physical methods, which are frequently not eco-friendly or safely sound. Aside from these methods, plant-mediated AgNPs synthesis appears to be very fast, simple,non-toxic, and environmentally friendly. In contrast to other biological synthesis techniques, which involve difficult procedures such as maintaining microbiological cultures, the use of plant extracts in the synthesis of metal nanoparticles has more advantages (Hasan, 2014; Rajeshkumar & Bharath, 2017).

This review article summarises the publications based on the research done all over the world and focuses primarily on the study of plant mediated silver NP synthesis, characterization techniques, and the antioxidant activity of AgNPs by different methods.

2.Mechanism Of Plant Mediated Silver Nanoparticles:

Synthesis Of Silver Nanoparticles By Plants :

When compared to microbial synthesis, plant assisted synthesis of NPs is more effective in terms of yield. Numerous studies have been done on the green synthesis of AgNPs using various flora and fauna extracts. The majority of the literature review revealed that the researchers' first preference for synthesising silver nanoparticles from plants was leaf extract. In the process of creating AgNPs through plant-mediated synthesis, plant extractions are added to an aqueous $AgNO_3$ solution, where the Ag ions in the solution go through a reduction process to create Ag NPs. Many biochemicals and metabolites found in plants can act as reducing and stabilising agents in the synthesis of biogenic substances. Silver ions serve as electron acceptors, and the biomolecules found in plant extracts serve as reducing agents, allowing silver ions to be reduced to silver metal more easily (Ansari, 2018). Since it takes knowledge of the specific phytochemical required for the synthesis of stabilised NPs, phytochemical-mediated NP synthesis is a rare process (Journal et al., 2016;Shaikh et al 2020; Singh et al., 2020).The schematic diagram of synthesis of silver nanoparticles are shown below-

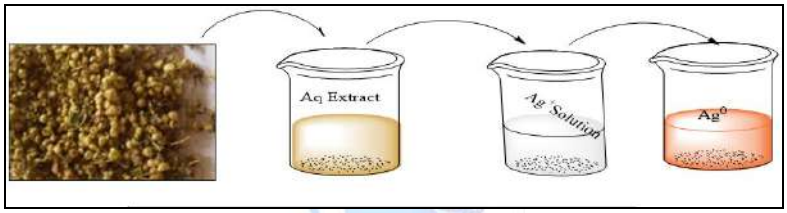

FIGURE 1.SYNTHESIS OF SILVER NANOPARTICLE BY PLANT EXTRACT

3. CHARACTERIZATION OF SILVER NANOPARTICLES:

Silver nanoparticles require sophisticated techniques for characterization because they are in the nanoscale dimension. It is crucial to characteriseAgNPs in order to learn about their size, shape, morphology, structure, surface chemistry, surface charge, dispersity, and surface area. The following discussion covers several methods for characterization of silver nanoparticles.

3.1. Uv-Visible Spectrophotometry :

One of the most popular methods for characterisingsynthesised nanoparticles is UV-vis spectrophotometry, which is also used to check the stability and synthesis of AgNPs.Furthermore, UV-Vis spectrophotometry is concise, quick, sensitive, and selective for various kinds of nanoparticles.It involves calculating how much ultraviolet or visible light a constituent in solution has absorbed. In the UV- Visible range, UV-Vis measures the ratio, or function of ratio or the intensity of two light beams. The valence band and conduction band in AgNPs are very close to one another, allowing for free electron movement. AgNPscombined oscillation of its electrons in resonance with the incident light wave causes these electrons to produce a surface plasmon resonance (SPR) band(Elamawi et al.) . The dielectric medium, morphology, shape, size, and chemical surroundings of synthesized nanoparticles are all factors that affect the absorption spectra of AgNPs. According to numerous studies, AgNPs produces absorption bands in the UV-Visible spectrum at wavelengths between 200 and 800 nm, and it is used to characterise nanoparticles with a range of 2-100 nm.(Joshi et al., 2018)

3.2. X-Ray Diffraction Analysis (Xrd):

Toexamine the crystal or polycrystalline structures, analytical methods like X-ray diffraction have been used(Bagherzade et al., 2017), andidentify the different chemical species qualitatively, resolve chemical compounds quantitatively (Cabral et al., 2013) ,particle sizes and assess the degree of crystallinity(Dey et al., 2009), and so on. When an X-ray beam is projected onto a crystal and the incident beam is scattered by the atoms, diffraction patterns form. The scattered x-rays interact with one another. This interference could be observed by employing Bragg's Law to determine various properties of the crystal or polycrystalline material. As a result, XRD can be used to investigate the structural properties of a wide range of materials, including biomolecules, polymers, superconductors, glasses, and so on. Diffraction patterns are crucial for the analysis of these materials. Diffraction patterns that have been created may reflect the crystal's chemical and physical properties. Since measurements are typically made in Angstroms, crystallite size (information on unit cell dimensions), strain, and crystal structure can all be determined using X-ray diffraction as a primary characterization tool. The overall oxidation state of the particles as a function of time is used by XRD spectra to identify the crystalline nature of the silver nanoparticles(Vasireddy et al., 2012).

3.3.Transmission Electron Microscope (Tem):

A powerful and effective tool for characterising the nanoparticles is the transmission electron microscope (TEM). It is used to obtain quantitative measurements of the synthesised nanoparticles' size distribution, particle size, and morphology. A sample is interacted with by an electron beam in TEM, which creates an image on a photographic plate (Asoro et al., 2013). The ability of TEM to identify and measure the chemical and electronic structure of individual nanoparticles is unique. Compared to SEM, TEM has some advantages, including better spatial resolution and more analytical measurements of nanoparticles. (Ren et al., 2019)

3.4. Fourier Transform Infrared Spectroscopy (Ftir):

The surface chemistry of metal nanoparticles is studied using FTIR spectroscopy, and it is also used to determine whether biomolecules are involved in the synthesis of the nanoparticles (Kudle et al., 2013). Additionally, the catalytic interactions between an enzyme and its substrate have been examined using FTIR and the confirmation of functional molecules that have been covalently grafted onto silver (S. Kumar & Barth, 2010). A portion of the infrared radiation that is transmitted through a sample is absorbed by it while the remaining is transmitted through it. The resulting spectrum represents the absorption and transmission by generating a molecular fingerprint for the sample, which represents the identity of the sample. The investigation of the part played by biomolecules in the reduction of $AgNO_3$ to silver can be done easily, inexpensively, and non-invasively using FTIR (Rajeshkumar & Bharath, 2017).

3.5.Atomic Force Microscopy:

Atomic force microscopy is based on physical scanning of samples at the sub-micron level with an atomic scale probe tip and provides ultra-high resolution in particle size measurement (Shi et al., 2003). Samples are typically scanned in either contact or noncontact mode, depending on their properties. In contact mode, the topographical map is generated by tapping the probe on the surface across the sample, while in non-contact mode, the probe hovers over the conducting surface. One of the most significant advantages of AFM is its ability to image non-conducting samples without any special preparation. This capability enables imaging of delicate biological and polymeric nano and microstructures.Furthermore, provides the most

accurate description of size, size distribution, and real-world picture, which aids in understanding the effect of various biological conditions(Zur Mühlen et al., 1996).

3.6. Dynamiclight Scattering (Dls) Spectroscopy:

Another quick, simple, and nondestructive method for measuring particle size in the micrometre and nanometer regimes is dynamic light scattering (DLS). In this method, a monochromatic light source, such as a laser, is passed through a suspension of nanoparticles, which scatter light at various intensities due to Brownian motion, and size is calculated using the Stokes-Einstein relationship. It functions best with monodisperse nanoparticles and typically measures the hydrodynamic diameter of nanoparticles affected by the surfactant, stabilising, and capping agents as well as the presence of an electrical double layer adsorbed on the surface of nanoparticles. AgNPs zeta potential is also measured by the DLS, a large magnitude value denotes electrostatically stabilised nanoparticles(Dove Press, 2018; Dawadi et al., 2021).

4. Antioxidant Activity:

In addition to the numerous applications of AgNPs, an abundance of articles focusing on the silver nanoparticles antioxidant properties have been published over the past ten years. Here, we've compiled a list of recent techniques for determining the antioxidant capacity of silver nanoparticles as well as their methods of production. As can be seen, biosynthesis (especially using plant extract) has generated more publications than any other method of creating AgNPs, which may be explained by its simplicity, availability, and low cost.

1) Dpphassay

The purple stable free radical DPPH (2,2-diphenyl-1-picrylhydrazyl) reacts with a hydrogen donor. The existence of delocalized spare electrons on the whole molecule prevents dimerization and imparts colour to the DPPH molecule, with absorption maximum at roughly 520 nm in UV/Vis spectra. After reaction, the DPPH radical yields the reduced form DPPH (hydrazine form), resulting in a colour change from purple to pale yellow. The degree to which the purple colour fades is determined on the antioxidant concentration. The scavenging capability is often measured in organic solvents rather than aqueous media.(Devanathadesikan et al., 2020; Vilela et al., 2014).

2) Ferric Reducing Power Assay

In an acidic medium, the colourless Fe^{3+}-2,4,6-tripyridyl-s-triazine complex is reduced to the intensely blue Fe^{2+}. 2,4,6-tripyridyl-s-triazine complex to perform the FRAP (ferric reducing antioxidant power). Increasing absorbances measured at 593 nm are used to calculate FRAP values. The FRAP methods have a number of drawbacks. Even without antioxidant properties, substances that have a lower redox potential than the Fe^{3+}/Fe^{2+} pair's redox potential may convert Fe^{3+} to Fe^{2+} and raise the FRAP value to produce falsely high results. However, not all antioxidants decrease Fe^{3+} quickly enough to be measured.

3) Hydroxyl Radical Scavenging Activity

This test is based on quantifying the breakdown product of 2-deoxyribose by condensation with TBA. The reaction mixture contained 2-deoxy-2-ribose (2.8 mM), KH_2PO_4-KOH buffer (20 mM, pH 7.4), $FeCl_3$ (100 mM), EDTA (100 mM), H_2O_2 (1.0 mM), ascorbic acid (100 mM), and various amounts of the test sample or reference substance (0-200 g/ml).(Shete et al., 2014).

From the literature survey it is also clear that the most commonly used method of AgNPs antioxidant capacity determination is DPPH assay. Authors usually compare the antioxidant capacity of extract with that of prepared silver nanoparticles.

5. Conclusion:

Nanotechnology is improving our everyday lives by enhancing the performance and efficiency of everyday objects. It provides a clean environment by providing safer air and water, and clean renewable energy for a sustainable future. Nanotechnology has gained a wide attention where more investment is made for the research and development by top institutions, industries and organisations. Nanotechnology has established to be an advanced field of science where extensive research is carried out to implement the technology. It is being tested for various new applications to increase the efficiency and performance of the object or process and subsequently reduce the cost so that it is accessible for everyone. Because of their tunable properties, Ag NPs have long piqued the interest of researchers. Silver nanoparticles are typically produced by reducing silver salts with plant extract. Antioxidant properties of AgNPs. This action is caused by the presence of functional groups on the surface. Because of their high efficacy, non-toxicity, eco-friendliness, and low cost, AgNPs may be used as antioxidants in the future. As a result, our discovery will open up new avenues for the widespread production and application of these AgNPs in a variety of fields.

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Competing Interests:

All authors certify that thay have no affilations with or involvement in any organization or entity with any financial interest or non- financial interests in the subject matter or materials discussed in this manuscript.

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Algal Dominance in Contaminated Water Region of Godavari River

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Abstract:

The Godavari River is running all over the city of Nanded, and we found that some of the sites of river which is directly come in contact with anthropogenic activity are highly contaminated. To find out the actual pathogens, its identifications and characterizations, we took some of the water samples from different locations of Godavari River.Green mat of algal bloom on running and stagnant water can be easily observed by just a single look from the bridge. Godavari river is full of water and it is evergreen whole year. We observed that, the zone or sites where these green mats of algal blooms are highly contaminated regions, it can be easily can recognized by its really bad odor.

The sample taken from contaminated river site are analysed through several microbiological identifications test. In the present investigations we found that the collected samples were contaminated with Bacillus megaterium, Escherichia coli, Kleibsiellaand sometime presence of Vibrio also detected. Among all collected samples B. megateriumis most dominant bacterium species.

Keywords: Pathogens, water-borne diseases, Godavari River

Introduction:

The microbial contaminations and pathogens responsible for human diseases are enormously present in River water which is stagnant. The water current which is continuously in flowing can carry everything along with the current. The water which is kept undisturbed for long time can be responsible for the growth of enormous pathogens responsible for several human diseases. Not only these causal organisms can grow but in such environment, the microbes which can able to secrete toxin also can be inhabited. The water present in such water body is not potable and responsible poisoning and diseases of pet animals.

The pathogens along with all sorts of microbes are the one of the important part of biotic factor of ecosystem. The microbial pathogens generated because of anthropogenic activity like faecal contaminations are considered to be the vital factor for the health of people drinking the river water (BayoumiHamuda&Patko, 2012). In developing countries contaminated water is the major cause of several diseases. Quality assuarance of surface and ground water is could major issue in developing countries (Pekárová et al., 2009). The pathogenic microbes present in river water are the major issue with respect to public health and can be reason to have health protections with respect microbial contaminations in river water (Fey et al., 2004; Straub & Chandler, 2003; WHO, 2002).

Materials And Methods:

Media:

Different types of media were used for selective growth, enrichment culture, and indication of specific properties. Media preparation and sterilization were done according to the

protocol and standard recipe.

Sample collection:

Water samples were collected from different contaminated sites of Godavari River water body. The collected samples were serially diluted by microbiological techniques and spread and streaked on nutrient agar plates. Isolated colonies obtained were further purified and processed for biochemical analysis for their identifications. Initially the rough outline of microbes regarding their identity is to be done by colony characterizations like size, pigmentation, form, margin, elevation and texture (Cappuccino & Sherman, 2005).

Gram stain:

Gram staining was done to differentiate between two principal groups of bacteria: gram positive and gram negative.

Biochemical characterization of the bacteria:

Once we got the broad outline with respect to identifications of microbes we have gone throuch several biochemical chacteracterization for the confirmation of bacteria. The biochemical tests performed were Triple sugar iron agar test, IMViC test (Indole production test, Methyl red test, Voges- Proskauer test, Citrate utilization test), MIU test (Motility test, Indole test and Urease test), Nitrate reduction test, Catalase test, Oxidase test, Casein hydrolysis test, Gelatin hydrolysis test, Starch hydrolysis, Blood agar, MacConkeys Agar and Mannitol Agar.

Species Diversity:

Diversity of species was calculated by richness and evenness of species by Shannon-Weiner index (Shannon and Weiner, 1963), species dominance was calculated by Simpson's index (Simpson, 1949) and Margalef (1958).

Results And Discussion:

For present investigation water samples were collected from Godavari Rivers and further analyzed for microbial contaminations (Table 1). Godavari River is very holly place and present near to Kaleshwar temple. Also we found water purifier plant over there to make potable water for nearby villages.

The samples were collected from different locations of Godavari river and co-ordinates for sampling sites are as follows:

Table 1: Sampling sites and its coordinates

Sample Code	Longitude	Latitude	No. of Microbes
S1 (Kaleshwar temple)	$19^0$7'20.44	$77^0$17'1.66	06
S2 (NaginaGhat)	$19^0$8'37.4"	$77^0$18'28.27"	06
S3 (GovardhanGhat)	$19^0$8'39.62"	$77^0$18'41.19"	04

Diversity indices were calculated manually and compared with standard software (Microsoft Excel), and we found thatBerger Parker Index (37.5%), Shannon-Weiner (1.0822), andSimpson Dominance (34.4 %)(Table 2).

Table 2(a): Measurement of diversity indices from sampling sites with respect to one another

No	Category	Value	x	x^2	-x ln(x)
1	S-1	6	37.5%	0.141	0.368
2	S-2	6	37.5%	0.141	0.368

3	S-3	4	25.0%	0.062	0.347
R1	**Simpson Dominance**			0.3438	
R2	**Shannon Entropy**				1.0822

Table 2(b): Measurement of diversity indices from sampling sites with respect to one another

Diversity Indices	
Index	**Value**
Number of Sites *N*	3
Richness *R*	3
Berger Parker Index p_{imax}	37.5%
Shannon Entropy[1)] *H* (nat)	1.0822
Shannon Entropy[1)] *H* (bit)	1.5613
Number Eq. ^1D (True Diversity)	3.0
Shannon Equitability *H*/ln*N*	98.5%
Simpson Dominance *SD*	34.4%
SD (unbiased - finite samples)	30.0%
True Diversity ^2D (Order 2)	2.9
Gini-Simpson Index 1-*SD*	65.6%
Gini-Simpson Equitability	98.4%
[1)]**sometimes referred to as Shannon-Weaver or Shannon-Wiener Index**	

Location 1(S1): Sampling sites for microbial investigations of Godavari River

Location 2 (S2): Sampling sites for microbial investigations of Godavari River

Location 3 (S3): Sampling sites for microbial investigations of Godavari River

We have taken some water samples to find out contaminating microbes. The taken samples were serially diluted and spread on nutrient agar plates and we found that (See Fig. 1 and 2), numerous bacteria are there, which are responsible for water contaminations.

Table 3: Obtained isolates were tested for colony characteristics

Isolate No.	Isolate	Colour	Shape	Margin
1	SC1	White	Oval	Straight,entire
2	SC2	Creamy	Round	Entire, Smooth
3	SC3	White	Oval	Discontinues
4	SC4	Off White	Round	Smooth
5	SC5	White	Round	Smooth
6	SC6	Creamy	Irregular	Curled
7	SC7	Orange, milky	Round	Entire
8	SC8	White	Round	Continues
9	SC9	White	Irregular	Curled
10	SC10	Off, White	Circular	Entire
11	SC11	White	Round	Smooth
12	SC12	White	Round	Smooth
13	SC13	White	Irregular	Discontinues
14	SC14	White	Round	Entire
15	SC15	Creamy	Oval	Irregular
16	SC16	Milky	Oval	Rough

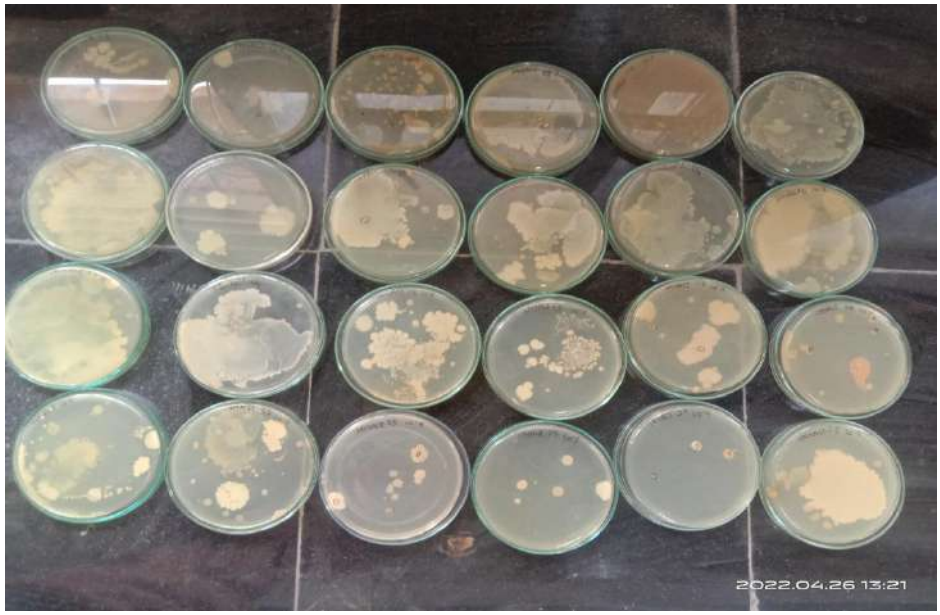

Figure 1: Bacterial colonies obtained after serial dilutions and spread plate techniques.

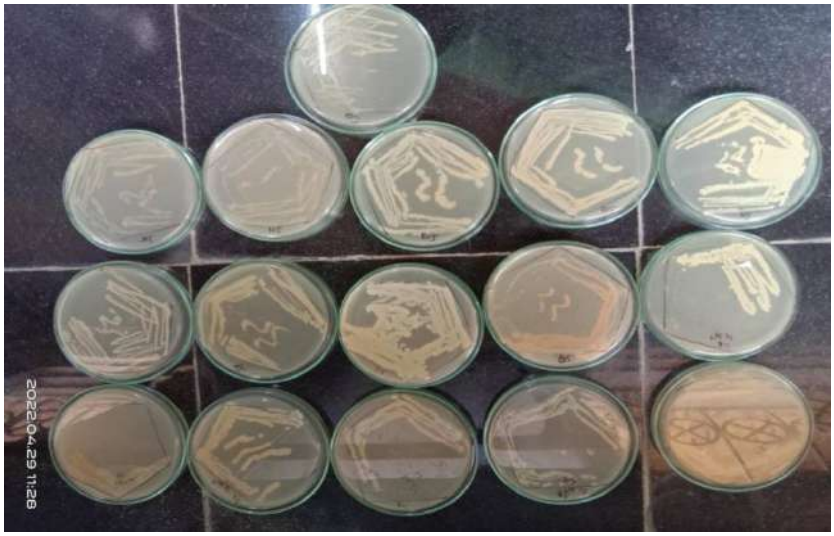

Figure 2: Bacterial colonies obtained after serial dilutions and streak plate techniques.

Figure 3: Isolates were tested for triple iron sugar test

Figure 4: Isolates tested for Voges-Proskaur test

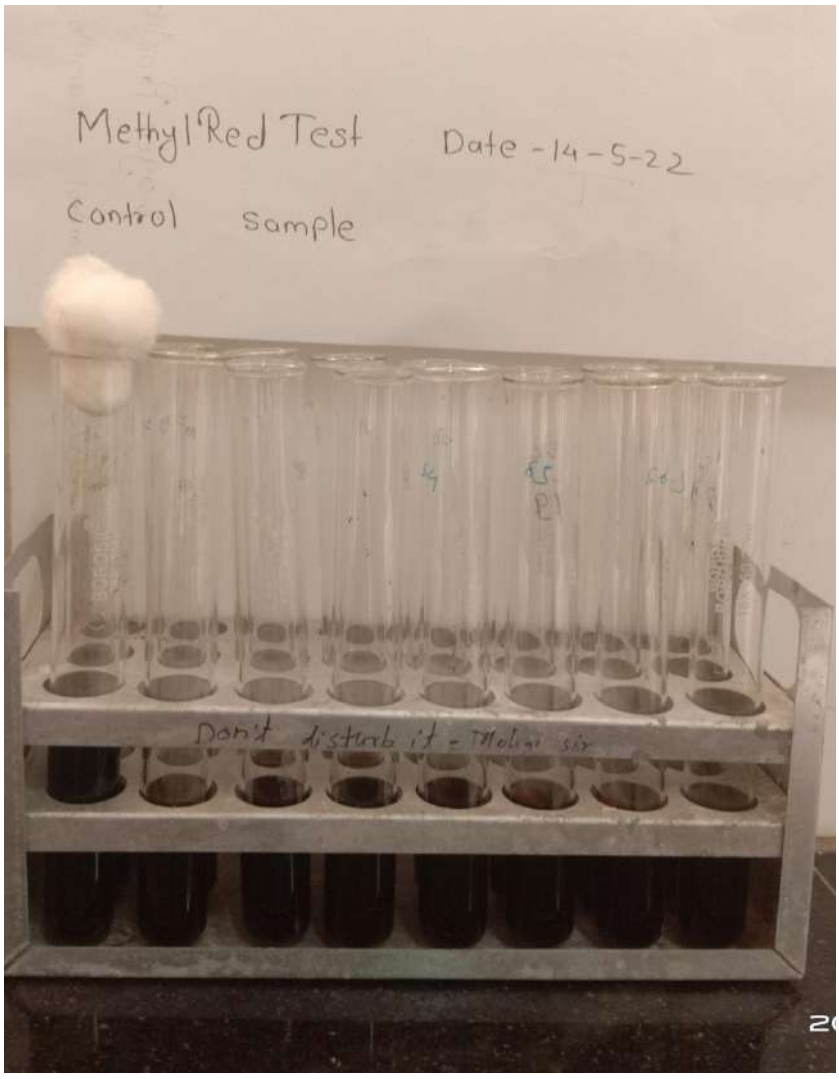

Figure 5: Bacteria tested for Methyl red test

Figure 6: Isolates tested for Indole test

Figure 7: Isolates tested for H2S production

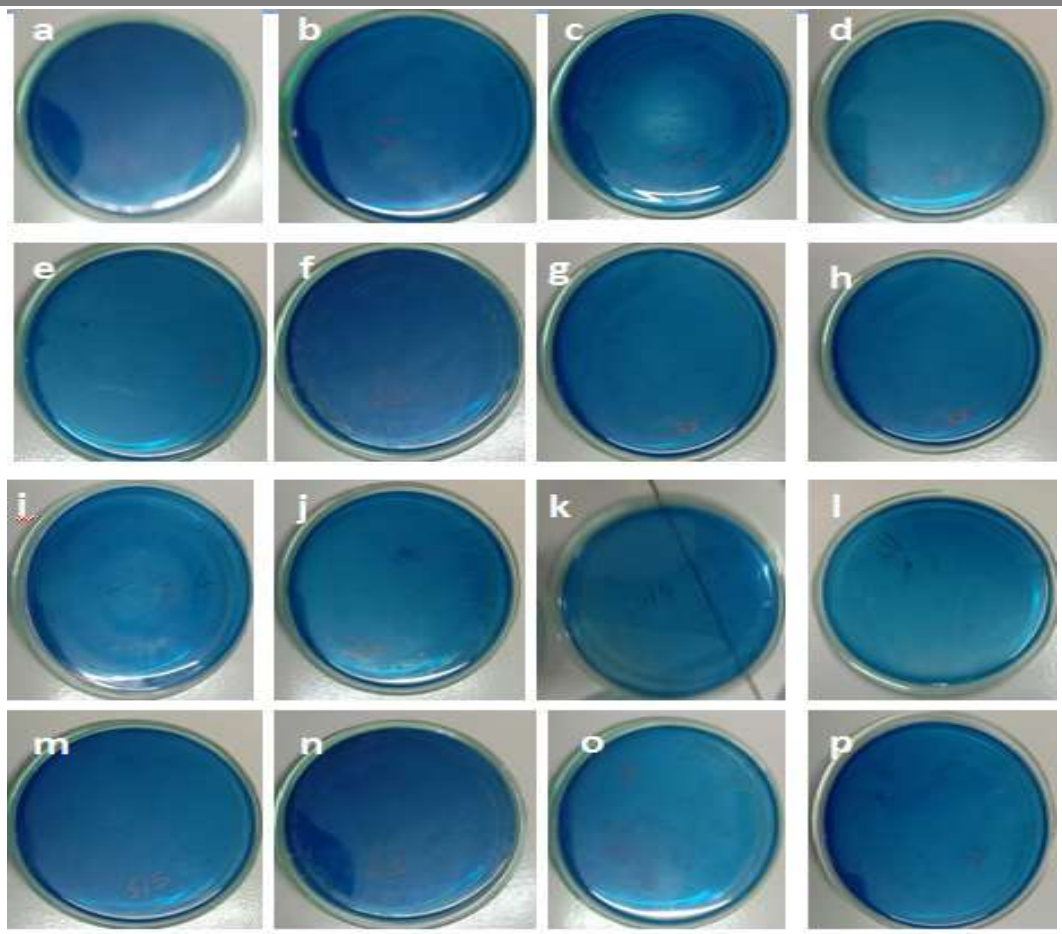

Figure 8: Isolates tested for Simmons Citrate Agar test

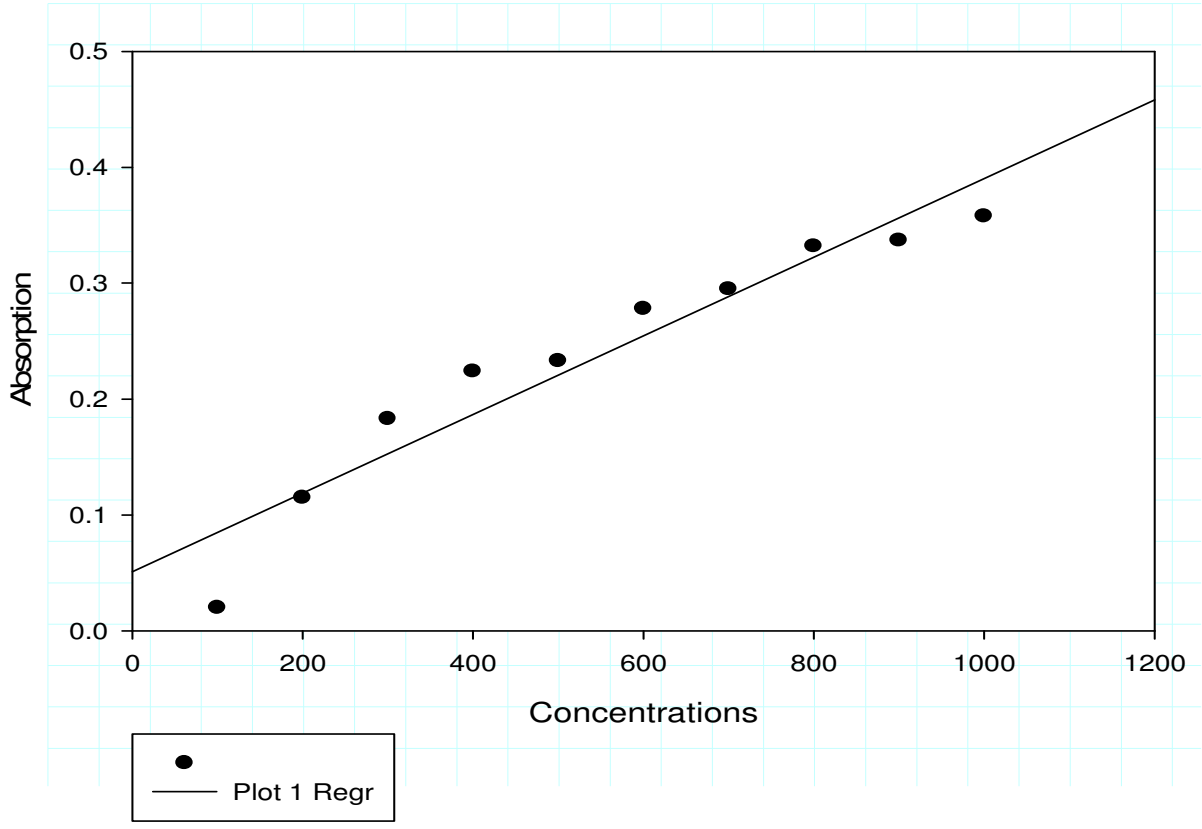

Figure 9: Standard graph for protein estimations by taking Bovine Serum albumin as standard.

The protein estimation has been done to find live microbial activity in water bodies. We found protein concentrations in collected samples are like 130 mg/L, 6.145 mg/L and 36.31 mg/L from S3, S2 and S1 samples respectively. From this data we can interpret that the sample S3 is having more microbial activity in comparison to others. As the efflux of sewage water is directly released over there, which makes it more contaminated.

In the present investigations we found that the collected samples were contaminated with *Klebsiellaaerogenes, Escherichia coli and Preteus vulgaris*. Among all collected samples*Klebsiellaaerogenes*is most dominant bacterium species (Table 4).

Table 4 : Biochemical analysis of obtained isolates and identifications of microbes

Sr. No.	Isolates	GS	IT	MR	VP	SC	TSA	H_2S	Identified Microbes
1	SC1	-	+	+	-	-	+	-	*Escherichia coli*
2	SC2	-	+	+	-	-	+	-	*Escherichia coli*
3	SC3	-	+	+	-	-	+	+	*Proteus vulgaris*
4	SC4	-	+	+	-	-	+	-	*Klebsiellaaerogenes*
5	SC5	-	+	+	-	-	+	-	*Escherichia coli*
6	SC6	-	+	+	-	-	+	-	*Klebsiellaaerogenes*
7	SC7	-	+	+	-	-	+	-	*Escherichia coli*
8	SC8	-	+	-	-	-	+	+	*Proteus vulgaris*
9	SC9	-	+	+	-	-	+	-	*Escherichia coli*
10	SC10	-	+	+	-	-	+	-	*Escherichia coli*
11	SC11	-	+	+	-	-	+	-	*Klebsiellaaerogenes*
12	SC12	-	+	+	-	-	+	+	*Proteus vulgaris*
13	SC13	-	+	+	-	-	+	-	*Klebsiellaaerogenes*
14	SC14	-	+	+	-	-	+	-	*Klebsiellaaerogenes*
15	SC15	-	+	+	-	-	+	-	*Klebsiellaaerogenes*
16	SC16	-	+	+	-	-	+	-	*Klebsiellaaerogenes*

GS: Gram Staining, IT: Indole test, MR: Methyl Red Test, VP: VogesProskaur Test, SC: Simmons Citrate Agar test, TSA: Triple iron sugar Test

The bacterial isolates detected in contaminated water samples are highly sensitive to plant extracts and blooming algal extracts. We made extractions of algal secondary metabolites, collected from locations of Godavari Rivers and found that the bacteria can easily prevented upto 15 fold activity. The microbes identified in present investigations are highly sensitive to algal toxins secreted during algal bloom formations (Fig. 10). During the antimicrobial assay we observed that the, region where algal contaminations is predominant, there were another microbial flora exist because of continuous secretions of algal toxins into river water. In assay we found multifold inhibitions of microbial flora because of algal extracts.

Figure 10: Growth inhibitions of bacterial isolates by toxins secreted by algal blooms.

Conclusion:

The contamination of microbial pathogens coming from drinking water which is taken from running river water current is the major concern of health issues of human beings and animals. In present investigations we observed microbes which are pathogenic as well toxic to animals. Here we have taken water from different locations and we observed some the water bodies contains faecal contamination in some of water bodies there is dominance of algal blooms responsible for secretions of algal toxins which are deadly poisonous and neurotoxic. The whole Nanded city is covered by Godavari River and efflux of anthropogenic activity is directly release into water bodies which results in the eutrophications and generations of algal blooms. The faecal contaminations are in some of locations are directly released into water body, we can detect by the presence of enteric bacteria.

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Study on Food Biopreservative Application of Bacteriocin by *Lactobacillus Pentosus* B25 on Raw and Pasteurized Milk

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Abstract:

Bacteriocin is employed as a food preservative thanks to its medicine activity. It principally used for increase the period of time of food. It works as natural preservative similarly as mix with chemical preservatives. In study, we tend to use the 5% bacteriocin in raw milk and pasteurized milk. The raw milk extend their life up to eight days and pasteurized milk extending up to forty two days. The preservative activities of the bacteriocins tested on milk showed that the bacteriocin B25 had most reduction of microorganism population and thereby extending the period of time and enhancing the protection of food merchandise.

Keywords: Bacteriocin, Milk sample, Preservatives, MBRT Test

1. Introduction:

Lactobacillus species are primarily employed in the food trade in probiotics like Yakult and Vitagen, however also can be found in yoghurts and alternative hard dairy farm merchandise like cheese, wherever they're used as starter cultures. Daeschel, (1989) declared that in some food system carboxylic acid microorganism represent the dominant micro flora. The organisms are ready to manufacture antimicrobial compounds against competitive flora, as well as food borne spoilage and morbific microorganism. The antimicrobial impact exerted by carboxylic acid microorganism is that the production of carboxylic acid and reduction of hydrogen ion concentration, and lactic acid, diacetyl, oxide, fatty acids, aldehydes and alternative compounds. Fuller, (1989) according that lactic acid microorganism are used as adjuncts in food to supply a good selection a health advantages. The establishment of the gut by probiotic microorganism prevents the expansion of harmful microorganism by competitive exclusion and by the assembly of matter viz., organic acids and antimicrobial compounds. Piard and Desmazeaud, (1991) had made antimicrobial compounds from the lactic acid microorganism, which may be classified as low mass compounds like oxide, greenhouse emission, diacetyl and high mass compounds like bacteriocins. Agar well diffusion methodology and neutral living thing culture filtrate obtained from isolates of *L. acidophilus, L. delbrueckii spp. bulgaricus, L. salivarius and Lactococcuslactis spp. lactis* from Dahi showed weak to moderate inhibition of *Staphylpcoccus aureus, Bacillus caryophylloid dicot genus, E. coli, Bacillus brevis, Bacillus circulans, Bacillus coagulans, Bacillus laterosporus, Bacillus,* and *P. aeruginosa* and according the potential of exploitation neutral living thing cellular filtrate of lactic acid microorganism within the bio preservation of foods. Yoneyama*et al*., (2004) showed that nisin and a few of the recently isolated novel bacteriocins were effective bio-preservatives in sure food systems during which focused bacteriocin preparations or the bacteriocin manufacturing strains had been used. The Lactic acid microorganism strains owe their antagonistic activity to either decrease within the hydrogen ion concentration or to bacteriocin production creating them ideal for cheese creating and preventing the expansion of *S. aureus*. In 2007, Vuyst and Leroy, according that bacteriocins

may be used as food additives and as an alternate to the addition of bacteriocins to foods, bacteriocins could also be made directly within the food as a results of starter culture or co-culture activity.

In present study, we tend to confirm the period of time of milk by exploitation bacteriocin that is made by true bacteria pentosus (B25) as a food preservative.

2. Materials And Methods:

The bio preservative potency of the bacteriocins B25 obtained from *L.pentosus* B25 made up our minds as represented by Joshi et al., protocol with slight modification. Every flask contained 50 ml raw milk and pasteurized milk, out of that one is management i.e. while not bacteriocin and one is sample i.e. with bacteriocin. for every sort 50 ml sample used and bacteriocin was side at 5ml and analysed for 2, 4, 6, eight and ten days (Raw milk) and most up to two months (Pasteurized milk). For raw milk, after every 1 day and for pasteurized milk, after every 6 days, the quality and stability of milk was studied with respect to (1) colony count (2) pH (3) Clotting test (4) Alcohol test (5) Acidity test (6) Resazurin test and (7) Methylene blue reductase test.

2.1 a Determination of colony count:

The residual activities were taken every 2 days interval and serially diluted at 10^{-6} were made and the plated on nutrient agar and was incubated at 37^0C for 24 hours. The colony count was recorded and compared with the control (without bacteriocin).

2.2 b Quality control test of Milk:

2.2 b(i) pH Determination:

The pH of medium was determined using pH probe (Lab Serv, AcuStar$^+$ V, pH/ Conductivity Meter).

2.2. b(ii) Clot on boiling (C.O.B) test:

The test is quick and simple. It is one of the old tests for too acid milk (pH<5.8) or abnormal milk (e.g. colostral or mastitis milk). If a milk sample fails in the test, the milk must contain many acid or rennet producing microorganisms or the milk has an abnormal high percentage of proteins like colostral milk. Such milk cannot stand the heat treatment in milk processing and must therefore be rejected. Boil a small amount of milk in a spoon, test tube or other suitable container. If there is clotting, coagulation or precipitation, the milk has failed the test.

2.3 The alcohol test:

The test is quick and simple. It is based on instability of the proteins when the levels of acid and/or rennet are increased and acted upon by the alcohol. Also increased levels of albumen (colostrum milk) and salt concentrates (mastitis) results in a positive test.

The test is carried out by mixing equal amounts of milk and 68% of ethanol solution in a small bottle or test tube. (68 % Ethanol solution is prepared from 68 mL 96% (absolute) alcohol and 28 ml distilled water). If the tested milk is of good quality, there will be no coagulation, clotting or precipitation, but it is necessary to look for small lumps. The first clotting due to acid development can first be seen at 0.21-0.23% Lactic acid. For routine testing 2 ml milk is mixed with 2 ml 68% alcohol.

2.4 Acidity test:

Bacteria that normally develop in raw milk produce more or less of lactic acid. In the acidity test the acid is neutralised with 0.1 N Sodium hydroxide and the amount of alkaline is

measured. From this, the percentage of lactic acid can be calculated. Fresh milk contains in this test also "natural acidity" which is due to the natural ability to resist pH changes .The natural acidity of milk is 0.16 - 0.18%. Figures higher than this signifies developed acidity due to the action of bacteria on milk sugar.

To 9 ml of the milk measured into the porcelain dish/conical flask, 1 ml Phenolphthalein is added and then slowly titrated again 0.1 N Sodium hydroxide present in the burette under continuous mixing, until a faint pink colour appears. The amount of ml of Sodium hydroxide solution required was noted and % lactic acid was estimated.

2.5 Resazurin test:

Resazurin test is the most widely used test for hygiene and the potential keeping quality of raw milk. Resazurin is a dye indicator. Under specified conditions Resazurin is dissolved in distilled boiled water. The Resazurin solution can later be used to test the microbial activity in a given milk sample. Resazurin can be carried out as 10 min test, 1 h test, 3 h test. The 10 min Resazurin test is useful and rapid, screening test used at the milk platform. The 1 h test and 3 h tests provide more accurate information about the milk quality, but after a fairy long time. They are usually carried out in the laboratory.

10 ml of milk and 1 ml of Resazurin was added in test tube, mixed the dye thoroughly and incubated in water bath and response was observed as change in colour and quality of milk was decided. Following table 1 has shown the reading and result of this test.

Table 1: Readings and Results (10 Minute Resazurin Test)

Resazurin Test	Colour	Grade of milk	Action
1	Blue	Excellent	Accept
2	Light blue	v. good	Accept
3	Purple	Good	Accept
4	Purple pink	Fair	Separate
5	Light pink	Poor	Separate
6	Pink	Bad	Reject
7	White	Very bad	Reject

2.6 Methylene blue reductase test:

Transfer 10 ml of each milk sample into appropriately labelled test tube. Add 1 ml of redox indicator, methylene blue to each test tube containing milk sample. Tighten the test tube mouth with stoppers. Gently invert the tubes at about four or five times to ensure proper mixing of the methylene blue solution. Keep the tubes in the water bath at 37^0C. Note the incubation time. That is, the time elapsed for the colour to turn whitish appearance. Stabilize the tubes for 5 minutes.

Table 2: Result of Methylene blue reductase test

Sr. No.	Time in reduction	Quality of milk
1	Within 30 min	Very poor quality
2	Between 30 min and 2 h	Poor
3	Between 2 and 6 h	Fair
4	Between 6 and 8 h	Good
5	Not reduced in 8 h	Excellent

3. Result And Discussion

Application of bacteriocin as a Food bio preservative

3.a Application of bacteriocin as food bio preservative in Raw Milk:

Bacteriocin is employed as a food preservative thanks to its bactericide activity. It principally used for increase the period of time of food. It works as natural preservative likewise as mix with chemical preservatives. The milk extend their life up to eight days and milk extending up to forty two days (photoplate 1). The preservative activities of the bacteriocins tested on milk showed that the bacteriocin B25 had most reduction of microorganism population and thereby extending the period of time and enhancing the protection of food merchandise.

Table 3a, b represents the clotting formation, odour, clotting, colour modification in Resazurin take a look at, you look after carboxylic acid and thiazine enzyme take a look at of milk (photoplate two and 3). Figure one represents the colony count, hydrogen ion concentration and carboxylic acid concentration of milk.

Table 3a: Quality control studies of Raw Milk

Sr. No.	Coagulation Formation		Odour		Clot on Boiling test		Alcohol Test	
Day	C	S	C	S	C	S	C	S
1	No	No	N	N	-	-	-	-
2	No	No	N	N	-	-	-	-
3	No	No	Ab	N	+	-	+	-
4	Y	No	Ab	N	+	-	+	-
5	Y	No	Ab	N	+	-	+	-
6	Y	No	Aci	N	++	-	++	-
7	Y	No	H. Aci	N	++	+	++	+
8	Y	Yes	H. Aca	Ab	++	+	++	+

Legends: N-Normal, Ab.-Abnormal

Table 3b: Quality control studies of Raw Milk

Sr. No.	Resazurin Test		Lactic Acid Test (%)		MBRT Test (h) Reduction	
Day	C	S	C	S	C	S
1	Blue	Blue	0.58	0.58	8	8
2	Blue	Blue	0.58	0.58	8	8
3	Purple Pink	Blue	0.67	0.58	5	8
4	Light pink	Blue	0.95	0.67	1	8
5	Pink	Purple	1.165	0.67	1	5
6	Pink	Purple	1.506	0.81	½	5
7	White	Purple pink	1.963	0.83	½	5
8	White	Light pink	2.358	1.43	½	3

3.b Application of bacteriocin as a food bio-preservatives in Pasteurized Milk:

Table 4a, b represents the clotting formation, odour, clotting, colour modification in Resazurin take a look at, you look after carboxylic acid and thiazine enzyme take a look at of milk (Photoplate 1 and 2). Figure two represents the colony count, hydrogen ion concentration

and carboxylic acid concentration of milk. Similarly, the bacteriocin of *L.fermentum* had most reduction on microorganism population. These results additional disclosed that microorganism count drastically reduced in each the treated and untreated sample. (Joshi *et al*., 2006). Combined impact of warmth and bacteriocin additionally extended storage lifetime of milk by suppressing growth of various microorganisms (Sharma et al., 2008)). Similar work done by Cao-Hoang *et al.,* (2010); Mills *et al.,(*2011).

Table 4a: Quality control studies of Pasteurized Milk

Sr. No.	Coagulation Formation		Odour		Clot on Boiling test		Alcohol Test	
Day	C	S	C	S	C	S	C	S
1(1)	No	No	Normal	Normal	-	-	-	-
2(6)	No	No	Normal	Normal	-	-	-	-
3(12)	No	No	Abnormal	Normal	+	-	+	-
4(18)	Yes	No	Abnormal	Normal	+	-	+	-
5(24)	Yes	No	Abnormal	Normal	+	-	+	-
6(30	Yes	No	Acidic	Normal	++	-	++	-
7(36)	Yes	No	Highly acidic	Normal	++	+	++	+
8(42)	Yes	Yes	Highly acidic	Abnormal	++	+	++	+

Table 4b: Quality control studies of Pasteurized Milk

Sr. No.	Resazurin Test		Lactic Acid Test (%)		MBRT Test (h) Reduction	
Day	C	S	C	S	C	S
1(1)	Blue	Blue	0.58	0.58	8	8
2(6)	Blue	Blue	0.58	0.58	8	8
3(12)	Purple Pink	Blue	0.67	0.58	5	8
4(18)	Light pink	Blue	0.95	0.67	1	8
5(24)	Pink	Purple	1.165	0.67	1	5
6(30	Pink	Purple	1.506	0.81	½	5
7(36)	White	Purple pink	1.963	0.83	½	5
8(42)	White	Light pink	2.358	1.43	½	3

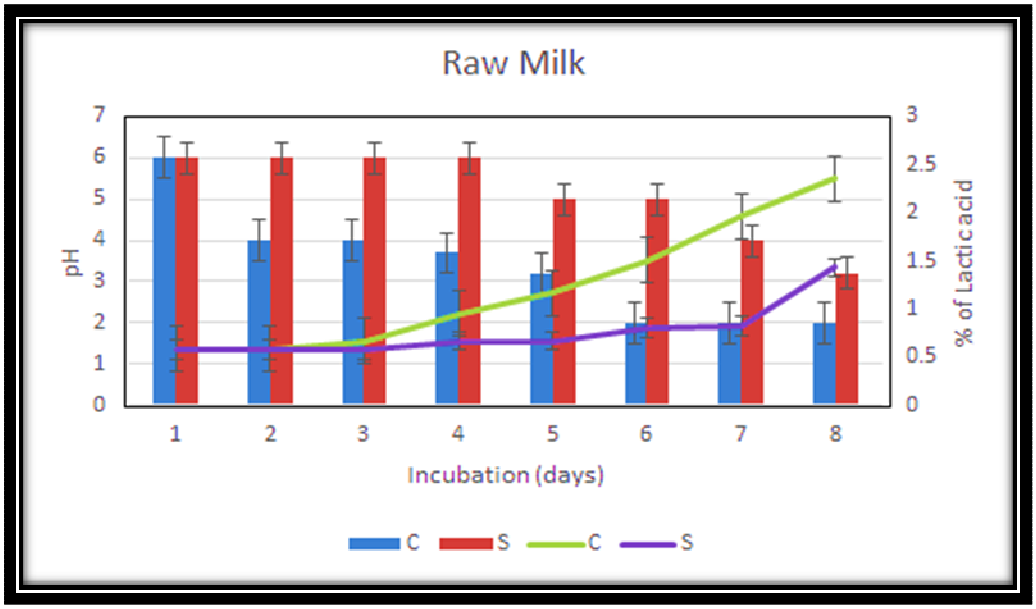


Fig. 1: pH and lactic acid concentration

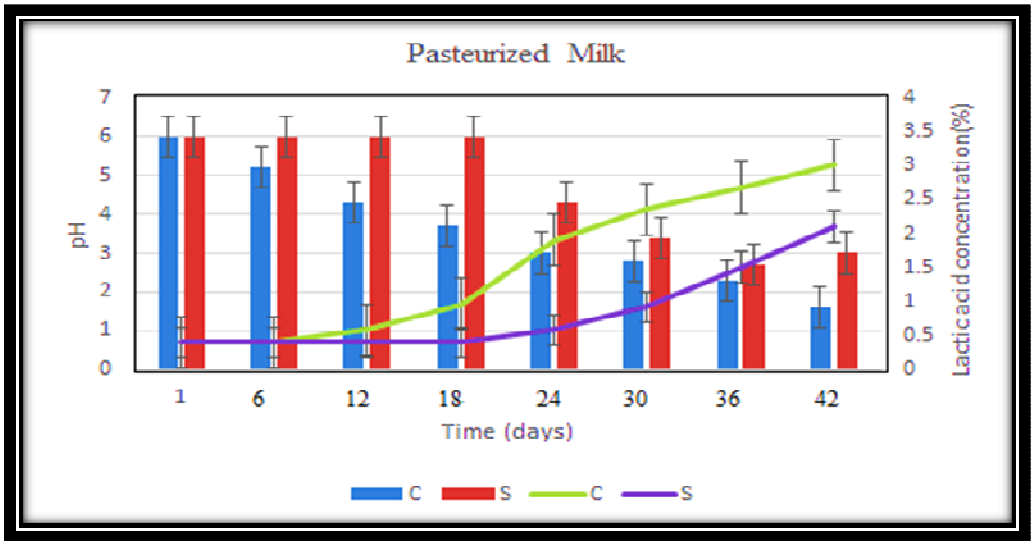
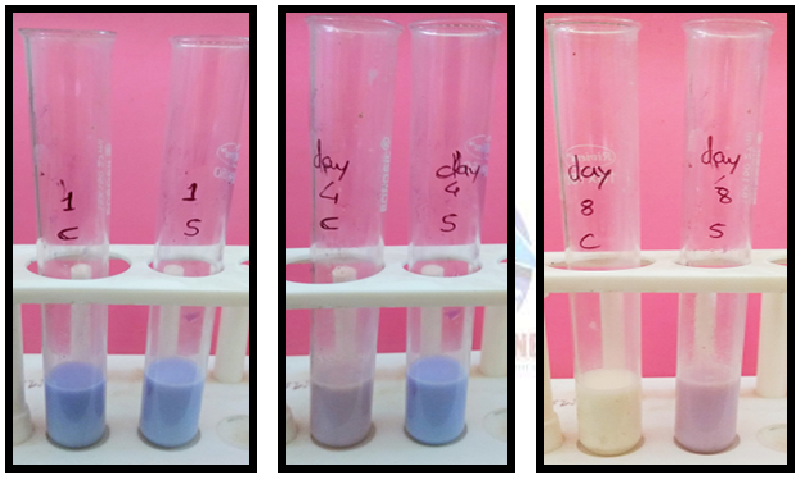
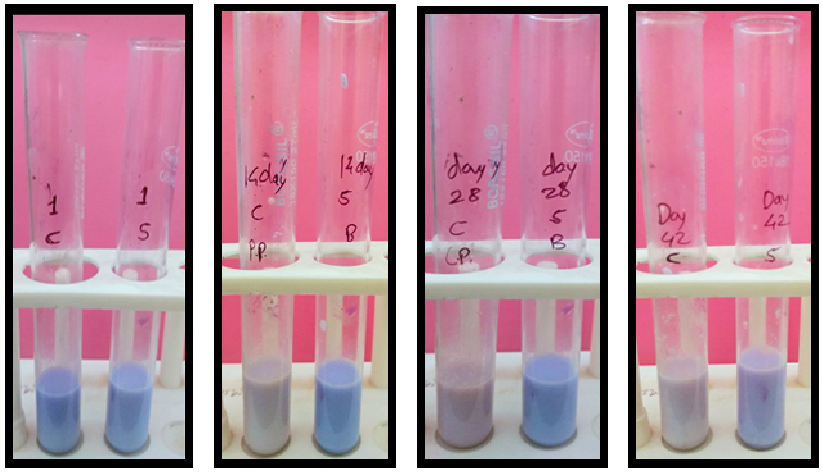


Fig. 2: pH and lactic acid concentration

PHOTOPLATE 1

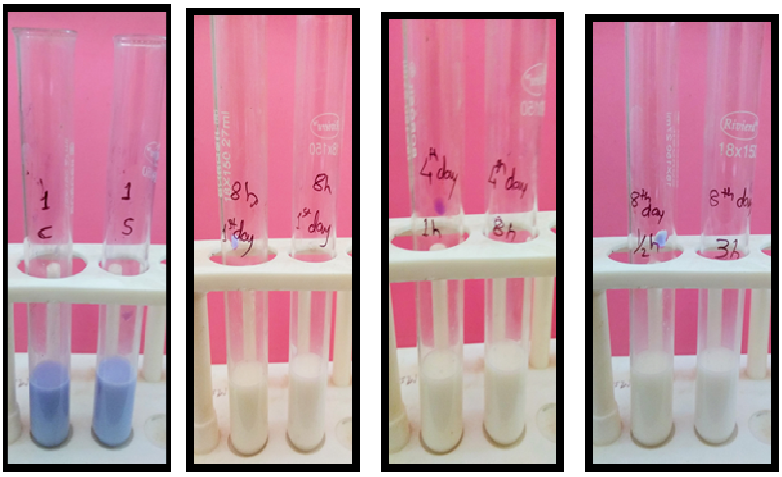


A. Resazurin test of Raw Milk

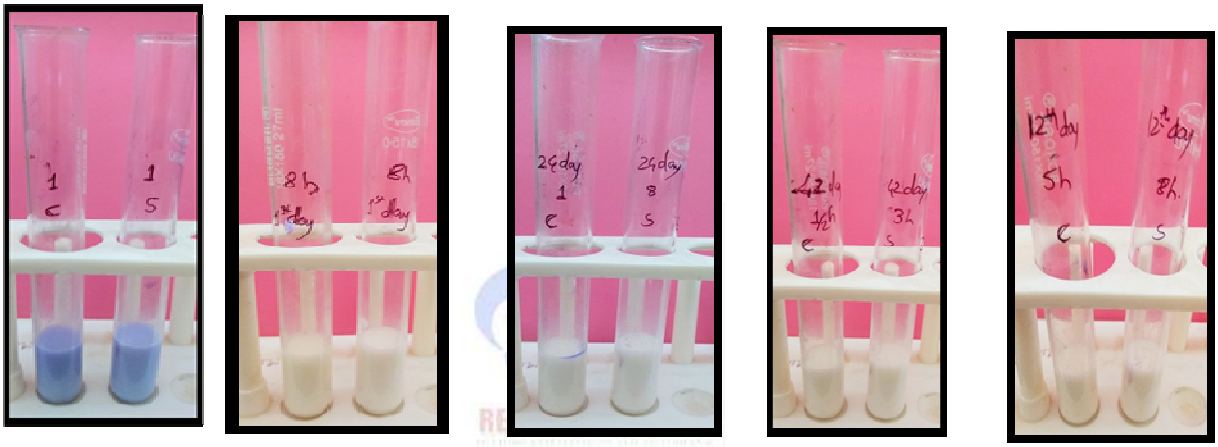


B. Resazurin test of Pasteurized milk

PHOTOPLATE 2



A. Methylene Blue Reductase test of Raw milk –Blue colour reduced in white colour



B. Methylene Blue Reductase test of Pasteurized milk

4. Conclusion:

These bacteriocins have tolerance to wide environmental factors, it can be used as a bio preservative in food industries. Bacteriocin is employed as a food preservative thanks to its bactericide activity. It principally used for increase the period of time of food. It works as natural preservative likewise as mix with chemical preservatives. In this study, we tend to use the 5 % bacteriocin in raw milk and pasteurized milk. The milk extend their life up to eight days and milk extending up to forty two days. The preservative activities of the bacteriocins tested on milk showed that the bacteriocin B25 had most reduction of microorganism population and thereby extending the period of time and enhancing the protection of food merchandise.

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Inorganic Phosphate Solubilizers and Siderophore Producing Rhizobacteria Isolated from *Triticumaestivum* (Wheat) for Sustainable Agriculture

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Abstract:

The rhizosphere is the region of soil that is influenced by root secretions and associated soil microorganisms. Rhizobacteria are root associated bacteria that can have a detrimental, neutral or beneficial effect on plant growth. Here, an attempt has been made to screen and identify phosphate solubilizer and siderophore producing rhizobacteria from rhizospheric soil of wheat field. Samples were collected from rhizosphere of wheat field of different 6 region of Gujrat,India (Kutch, Jamnagar, Junagadh, GirSomnath, Amreli and organic farming field). 34 pure cultures were obtained in solid Nutient Agar Media. Isolates were screened on Pikovskaya's agar plates for phosphate solubilization and chrome azurol S agar medium for siderophore production. The 14% isolates were able for Phosphate solubilization and 17% were positive for siderophore production. This study will facilitate accurate identification of the bacterial types that rhizospheric traits essential in synthesis of plant hormones, soil nutrient solubilization and help in fiulfilment of the iron requirement of plants by causing its solubilization and chelation from organic or inorganic complexes present in soil and in sight an immunological response in the plants, thereby enhancing their capability to overcome diseases.

Introduction:

Cereals such as rice, wheat, chick pea and maize are the major grains that sustain humanity. Wheat grows in temperate climates and shows the staple food for 35% of the world's population and provides more calories and proteins, than any other crop. The population all around the world is on hike while the food production is entirely stagnant. Thus, to meet the increasing demand of the increasing population scientists are now target towards the techniques that can lead to increase in food production. Due to climate change, increased population pressure and adverse environmental impacts on agriculture fields are continually facing many detrimental effects, which finally lead to scarcity of food production. To overcome the situation, new mechanism must be developed to meet the increased food demands with sustainable food production that has the potentiality to provide adequate food nutrition without hampering the fields. One such mechanism that is used to meet the agricultural need is "Biofertilizer". Biofertilizers due to its renewable, cheap and environmentally safe nature has gained increasing popularity in the past one decade in the field of agriculture and food production. The use of chemical fertilizers and pesticides has caused enormous effect to the environment. Biofertilizers will help to solve such problems as increased salinity of soil and chemical run off from the agricultural field.It has been found to minimize the use of chemical fertilizers, improved soil fertility status and enhancing the crop production by their biological activity in the rhizosphere. Extensive research were carried out on the use of bacteria (Azotobacter, Azospirillum,

Rhizobium, phosphobacteria) and VAM fungi as biofertilizers to supplement nitrogen and phosphorus fertilizers.

Objectives:

The present study aims at isolating and characterization the phosphate solubilizing bacteria and siderophore producing bacteria from wheat field in order to improve the agronomic efficacy of Phosphate solubilizers.

Problem statement and Hypothesis:

This work has been taken up to carry out isolation and characterization of Rhizospheric bacteria from wheat field and to perform the comparative study of their phosphate solubilizing and iron chelating traits to help in better understanding of the mechanism of Plant – Rhizobacteria interaction.

We presume that this work will enable the researchers as well the farmers to appreciate the role of Rhizobacteria in the enhancement of pant growth and yield. This work would also throw light on the effect of various factors on the PGPR activities and to optimize the conditions for its best utilization.

Materials And Method:

Bacterial Isolation:

Sample sites

Different region of Gujarat on the bases of different soil types as mention below::

Sandy and saline soil type: Kutch region

Medium black and saline soil type: GirSomnath region

Mixed red and black soil type: Amreli region

Medium black, calcareous soil type: Junagadh region

Medium black, shallow soil type: Jamnagar region

Organic farming soil: Sudavad, (Junagadh) region

For isolation of rhizosphere bacteria, 1.0 gram of the soil was mixed in 9.0 ml of saline solution (0.9% NaCl) (w/v). The soil suspension was vortexed for five minutes to remove soil, stones,debris and dead bacterial cells. Soil suspension were serially diluted (10-1 to 10-6) respectively. 100 µl of supernatant of each dilution of rhizospheric soil solution were transferred onto different prepared NA medium and incubated at the appropriate temperature. The purified bacteria cultures were identified based on their morphology and screened for different PGP traits [Gupta A, Meyer JM, et al, (2002)].

Characterization and identification of bacteria:

Preliminary identification of isolates was performed using morphological characterization. After 24 h of growth on N agar at 30°C, colonies of purified bacteria isolates were characterized for their following traits: size, shape, pigmentation, margin, elevation, opacity, consistency and Gram's nature by KOH string test.

Qualitative estimation of phosphate solubilization bacteria:

Qualitative estimation of Phosphate solubilization done by measuring the P solubilizing index (PSI). Bacterial isolates were screened in vitro for their phosphate solubilizing activity using Pikovaskaya's medium supplemented with Bromothymol Blue (BTB). The cultures were spot-inoculated on the Pikovskaya'swith BTB medium plates and incubated at 30°C for 7 days.

The appearances of the clear zone around bacterial growth were indicated positive results for phosphate solubilization [ZawKoLatt, et al (2017)].

PSI calculated according formula PSI= C+H/C, (C= colony diameter; H= halozone diameter)

Quantitative estimation of phosphate solubilizing bacteria:

Quantitative estimation of P solubilization determined by Vanadomolybdate phosphoric method. Fresh colony was inoculated in Pikovakaya's broth and incubated in shaking condition at 120 rpm/min at 28°C for 7 days. Uninoculated broth medium served as a control. 2 ml of culture was taken and centrifuged at 10,000 rpm for 15 min. the content of soluble P was estimated by using molybdate blue method by spectrophotometer at 882 nm. The pH of medium also measured with a digital pH meter.

Siderophoreproduction:

Detection in plate culture

Siderophore production of each isolate was determined on Chrome Azurol S (CAS) medium following the (Schwyn&Neilands 1987). ME agar medium with Chromo Azurol S (CAS) (blue agar) was inoculated in the plate with 24 hr old bacteria and kept for incubation at 30oC for 72 hr. The blue colour of the medium to orange or presence of yellow to light orange halo surrounding the colony indicates the production of siderophore.

Quantitative estimation

MEB medium was prepared and used for siderophore production. 24 hr old culture of microorganisms were used to inoculate for 24 hr at 30oC with constant shaking at 120r.p.m. Following the inoculation, fermented broth was centrifuged (10,000 r.p.m. for 15 min) and cell free supernatant was subjected to detection and estimation of siderophore. Quantitative estimation was done by CAS – Shuttle assays31,32. In which 0.5 mL of culture supernatant was mixed with 0.5 mL of CAS reagent and absorbance was measured at 630 nm against a reference consisting of 0.5 mL of uninoculated broth and 0.5 mL of CAS reagent. Siderophore content in the liquor were calculated by using following formula:

$$\%\text{Siderophore units} = \frac{Ar - As}{Ar} \times 100$$

Where Ar = Absorbance of reference at 630 nm (CAS reagent)

As = Absorbance of sample at 630 nm.

Results And Discussion:

Qualitative and Quantitative estimation of phosphate solubilizing bacteria:

The results observed in qualitative phosphate solubilizing capacity of isolates are presented in table 1. The clear zone surrounded the bacterial colony on Pikovaskaya'smediun indicated positive result. There were 14% organisms were found as a phosphate solubilizers. Inorganic phosphate released by isolates in TCP broth during 3, 5 and 7 days shown in figure 1.

Table:1 Phosphate Solubilizing Index of isolates on TCP media during 3,5 and 7 DAI

	DAI 3		DAI 5		DAI 7	
Isolate code	ZOS (cm)	PSI	ZOS (cm)	PSI	ZOS (cm)	PSI
SW1	3	4.55	3.2	4.2	3.6	4.6
SW7	3.1	4.1	3.3	4.3	3.5	3.9
SW8	1.2	2.5	1.4	2.1	1.6	2.3
JUW1	3.2	4.2	3.6	4.0	3.8	4.1

JUW3	2.0	2.6	2.6	3.1	2.8	3.1

Key words: ZOS – zone of solubilization, PSI – phosphate solubilizing index

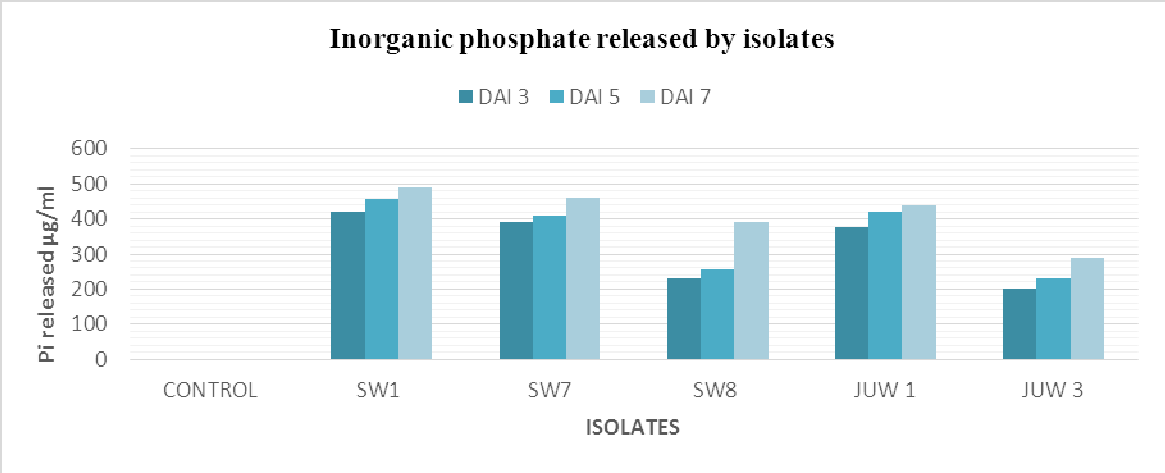

Fig.: 1 Inorganic phosphate released by isolates in TCP broth during 3,5 and 7 days

Siderophoreproduction:

The production of siderophore on CAS agar medium and siderophore unit is shown in table 2.formation of yellow colour zone around the bacterial colonies indicated production of siderophore by bacteria strain. There were 17% isolates positive for siderophore production.

Table 2: siderophore production by isolates:

Isolate code	Yellow zone	Siderophore unit
OW1	+	47.36
OW5	+	153.15
SW6	+	105.7
SW9	+	52.63
JUW 5	+	128.94
JUW 6	+	36.84

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Importance of the Adequate Nutritional Diet and Environment for the Health

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Abstract:

During the COVID Pandemic-19 situation Globally about locally serve and delivery food system are taken very consciously that transformation is necessary to order to ensure the serve and delivery of healthy, safe, and nutritious foods in both sustainable and equitable ways. Now a day people are being aware about intake of fresh healthy diet and fitness for improvement their immunity system. Food systems are complex entities that affect diets, human health, but healthy diet facilities and serve system increasing a range of other outcomes including economic growth, natural resource and environmental resiliency, and socio cultural factors. However, food systems contribute and these are vulnerable to ongoing climate and environmental changes that threaten their sustainability. Although there has been significantly focus on this topic in recent years, many gaps in our knowledge persist on the relation between environmental factors, available traditional food serve and now a recent delivery system and nutritional outcomes about the view of health. In this article, we summarize this emerging field and describe what innovative nurturing environment relationabout nutritious diet, health and fitness. Survey research is needed in order to bring about food policy changes in the era of climate disruption and environmental degradation. As well as Environmental impacts of catering and in-house food consumption and impacts on sectoral and national levels; Use freezer. While there are plenty of benefits to eating fresh food, frozen foods can be just as nutritious. They also stay edible for much longer. A lot of seafood, for example, is frozen before it reaches your supermarket and then thawed and put on display. That means it will only stay fresh for a few days. By buying frozen seafood, we can extend the shelf life of the product considerably. Cooking and freezing food especially produce before it goes bad is a great way to avoid having to toss it. Fight climate change from preventing food and vegetables waste; if it is going to waste, we can use it naturally as a generic fertilizer in the farm and recent era in India utilized polyhouse system to the production of various vegetables and fruits. It is grown in adjustable adequate environment. Therefore it is fresh and edible as well as lot of nutrient content included in it. it is effective use to increasing the product. We can avoid of bad impact of greenhouses. We can best use it also in farm i.e. in the farmhouse or parsbag (Home garden) about view of multipurpose vegetable and fruits production it was to consumption of family or society. Preventing food waste is the most effective way to shrink its impact on the earth and planet. If we avoid producing food that we don't eat, we can save the land, water, and energy that would have been used to make it. And awareness is a good first step; according to Re-FED, educating consumers about food waste could prevent 7.41 million tons of greenhouse gas emissions.Benefits of Fruits and vegetables in Herbal house garden; greens spinach, green chili, cucumber, tomato, onion and fenugreek vegetable we can grow in house garden. They are purely organic. If you go through a lot of greens, it's a good idea to plant in home garden some in the summer to at least supplement your needs and reduce your food budget and prevent spoilage by picking just what you need from the

garden. Edible herbal fresh vegetables and fruits use healthy diet for our health and main aim of the research is to keep always healthy environmental free from pollution. The Main natural sources are being Extinct its reason growth of development and urbanization. It is dangerous for living microbial which is protecting always to the healthy environment. One third of the microbial will be extinct in the future. Its directly effect on environment such as many researcher found in their study. Climate changes impact on biodiversity; globally due to climate warming changes and the season has been also completely changed. Fastly increasing encroachment of the urbanization, for their breaking a lot of tree therefore biodiversity extinct and Increase in pollution.If there such situation has longer, then which cities are situated at the bank of the sea these will being under the sea water till 2050. It is dangerous pointer assembles for all human being. It is global climate warming influences.

Keywords: nurturing environment, sustainable nutritious diets, serve and delivery food systems, Anthropometric changes, climate disruption, COVID-19, fitness and health, healthy diet.
Topic: healthy diet, climate, adequate nutritious diet, food science and nutrition and nurturing environment.
Issue Section: affect of environment about food, nutritional diet on the health and fitness.

Introduction:

About the view of scientifically and clinical nutrition to be beneficial impactful into the healthy environment, it is essential to consider how the broader food system affects diets, nutrition, and health outcomes of populations. Healthy and nutritious diet has boost the immunity power and beneficial to health and fitness during the COVID-19 pandemic as well as considerable always other situation. There is considerable debate on how foods serve and delivery systems can be better positioned to provide safe and healthy diets and support human health in a way that is environmentally sustainable and resilient to climate change, as well as other disruptions and shocks.

1) The many researcher embarks are being focus on Clinical Nutrition (CN) into the view of improvement health and fitness from increasing the immunity power.

2) It is only including about essential content in that relationship between food intake systems and dietary, nutritional, and environmental outcomes. Food systems for intake diet involve the production, processing, packaging, distribution, marketing, purchasing, consumption, and waste of food as well as another view of environmentally beneficial its importance about health and fitness.

3) There were remain many research questions and gaps in the knowledge of evidence on how are available healthy fresh food by serve and deliver to the people via the healthy environment systems so that they benefit both human nutrition and health while protecting ecological resources, supporting livelihoods and affordable foods, and upholding social, cultural, and ethical values. This article will summarize this emerging field, and describe what new science, research, and evidences are needed to bring about food policy changes in the era of climate disruption and environmental degradation.

Impacts of climate and environmental change on nutritious diet, health and fitness:

Climate and environmental changes and will continue to affect human health globally on a vast scale in future. As climate change progresses, the environmental conditions needed for optimal human health will come under threat, including clean air, drinkable water, low pathogen

exposure, and the ability to produce, raise, harvest, and gather crops, animals, seafood, and wild foods in sufficient and safe quantities and/or qualities. Climate change introduces instability into the food processing and its supply, raises prices of food, and ultimately reduces access to nutrient-dense and healthy foods for certain populations; for example, rising sea temperatures are affecting marine life and threatening fish populations, a major source of protein, essential fatty acids, and Omega-3 and micro nutrients for many around the world. The impacts of lost biomass from the oceans are expected to dis-proportionally affect countries in the global South. Some models suggest that changes in food availability due to climate change, specifically reduced availability of fruit and vegetables, are estimated to result in an additional 529,000 deaths by 2050 (20). As well as increasing temperature due to climate changes being prevalence the diseases such like anemia, hypochondria, dehydration etc.

Climate change will likely affect the nutritional status of globally populations, but it will continue to have a disproportionate impact on poor and marginalized populations, widening existing equity gaps in nutrition and health outcomes. Climate change has the potential to increase the prevalence of under nutrition by affecting the immediate, underlying, and basic causes outlined in UNICEF's conceptual framework for maternal and child nutrition. Examples at each level include facilitating optimal conditions for infectious diseases; reducing household food security; and altering livelihoods, particularly of those in the agricultural sector. Nutritionally vulnerable populations, including pregnant and lactating women, infants, and small children, are likely to be the most affected by these trends; the International Food Policy Research Institute's IMPACT model predicts that under conditions with limited intervention to mitigate climate change, there will be an additional 4.8 million undernourished children by 2050. As well as due to increasing the temperature of sea water also its increasing range therefore many city can be sink under the water and create the serious problem of living.

Environmental inputs and food system processes:

Thus far most research on the relation between food systems and nutrition has been focused only on the agricultural production and consumer dietary intake. However, a host of other activities exist between the farm and the fork that affect nutrition and health, which some have referred to as the "missing middle" of the food supply chain (71). Issues such as food processing and packaging, post harvest loss along the supply chain, and food distribution mechanisms all have an important bearing on nutrition and health outcomes.

Most research on the impact of climate change on the nutrient content of crops has been focused on staple crops; to date, very few studies have examined how climate change may influence changes in the production and consumption of non-staple food groups (20, 72). More research is needed on how different kinds of crops particularly those that are nutrient-dense such as fruits, vegetables, cereals and legumes will fare in a +2°C world. Understanding how nutrient content may differ in food grown under various climate change conditions will be vitally important for policies and interventions designed to promote diet quality and reduce the prevalence of micro-nutrient deficiencies. Similarly, there is a need to better understand the relation between climate and food production more widely spread. For example, how is climate resilience in agriculture affected by the scale of food production, the extent of trade, or the amount of biodiversity? Main focus is on less grain production. it has been major effects on the people globally of many country, as well as cause of victim dead to hungry as a lack amount of food. In many country's children are increasing the prevalence of malnutrition. Significantly

increasing the food price due to less grain production therefore purchasing power also reduced. It's depend upon only climate changes where less range rain season, there are create such situation. Many poor countries peoples are living in this situation.

We need more research on policies and interventions that incentivize healthy and sustainable diet both from the view point of consumer choice and from the standpoint of agricultural and food supply chain practices.

The harmful impacts of our diets on the health:

On the earth are alarming and increasing. According to our new estimates, global food demand is now creating more than a third (35%) of all greenhouse emissions and using substantial and rising amounts of environmental resources. Compared to 2010, the environmental impacts of food demand increased by as much as 14%, with animal-source foods responsible for the majority of greenhouse gas emissions and land use. Northern American diets have the greatest environmental impact while African and Asian diets have the least. However, no region is on track to meet the set of Sustainable Development Goals aimed at limiting the health and environmental burdens related to diets and the food system. For example, all regions have diets that, if globally adopted, create impacts that are above sustainable levels if we want to limit global warming to less than 2 degree Celsius. Every region needs large-scale dietary changes to achieve healthy and sustainable diets that tackle malnutrition in all its forms while preserving earth health.

Food Consumption Diversity and its impact on health:

Indian cuisine varies widely across the country according to the region, culture and tradition, characterized by the use of different spices, vegetables, grains, fruits and a variety of animal source foods.

Analyzing all the foods that are consumed in the country is not feasible due to the prohibitive cost involved and thus it is essential to prioritize foods for compositional analysis. One method to set priorities is the 'key foods approach' which is defined as those foods that contribute upto 75% of the nutrients intake by the population. The method combines food consumption data with its nutrient composition, and ranking the foods by applying a scoring system to identify the key foods that contribute significantly to the diet in terms of their nutrients. Therefore, all foods analyzed were selected using the key foods principle for constructing the IFCT 2017.

Lack of progress means unacceptable levels of malnutrition persist. Worldwide, 149.2 million children under 5 years of age are stunted, 45.4 million are wasted and 38.9 million are overweight. Over 40% of all men and women (2.2 billion people) are now overweight or obese. The effects of the Covid-19 pandemic are knocking us further off course. An estimated additional 155 million people are being pushed into extreme poverty globally, as a result of the pandemic, and people who are obese or have other diet-related chronic diseases are more vulnerable to Covid-19. This certainly adds to the challenge of meeting global nutrition targets. The financial costs of addressing poor diets and malnutrition have risen while resources are falling, but the costs of inaction are far greater.

These additional costs would be much larger still if they also included nutrition-sensitive needs and meeting all global nutrition targets, including for obesity and diet-related NCDs. The cost of meeting the SDG 2 targets by 2030 would also be substantial: approximately US$39–50

billion annually to meet both nutrition-specific and nutrition-sensitive needs. At the same time, the total economic gains to society of investing in nutrition could reach US$5.7 trillion a year by 2030 and US$10.5 trillion a year by 2050. Nutrition for Growth (N4G) tracking highlights challenges in delivering commitments and measuring progress.

While there is positive progress towards realizing N4G[3] commitments made in 2013 and 2017, countries are struggling to meet financial and impact goals. We find from the 2020 reporting that over two thirds of donors and civil society organizations reported having reached or being on track to reach their financial commitments. The majority of donor (63%) and civil society (76%) non-financial commitment goals were also on track or had been reached. Only 42% of country financial commitment goals had been reached or were on course, while 41% of country impact commitment goals were on course, with none reported to have been met. Covid-19 has exacerbated challenges, with reporting that progress on 43% of country commitment goals has been severely or highly affected by the pandemic, primarily due to diversion of resources. It is clear that efforts to meet commitments must be intensified, particularly those relating to financing and impact by country stakeholders.

Three actions needed to speed up progress:

There needs to be a step-change in efforts and financial investments to end poor diets and malnutrition, and gain the high social and economic returns we know are possible.

Poor diets and malnutrition can and should be addressed holistically and sustainably to create a healthy future for all.

Better data, greater accountability and systematic monitoring are key to identifying the progress needed and ensuring we stay on track.

India is 'on course' to meet three targets for maternal, infant and young child nutrition (MIYCN)

No progress has been made towards achieving the target of reducing anaemia among women of reproductive age, with 53.0% of women aged 15 to 49 years now affected.

Meanwhile, there is insufficient data to assess the progress that India has made towards achieving the low birth weight target, nor is there adequate prevalence data.

India is 'on course' to meet the target for stunting, but 34.7% of children under 5 years of age are still affected, which is higher than the average for the Asia region (21.8%).

India has made no progress towards achieving the target for wasting, with 17.3% of children less than 5 years of age affected, which is higher than the average for the Asia region (8.9%).

The prevalence of overweight children under 5 years of age is 1.6% and India is 'on course' to prevent from increasing.

India has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. The country has shown no progress towards achieving the target for obesity, with an estimated 6.2% of adult (aged 18 years and over) women and 3.5% of adult men living with obesity. India's obesity prevalence is lower than the regional average of 10.3% for women and 7.5% for men. At the same time, diabetes is estimated to affect 9.0% of adult women and 10.2% of adult men.

Food lost and Waste:

Inedible portions include pits, cores, and some seeds and peels that are discarded at the consumer level, and consumer waste includes edible portions of food that are discarded for any

reason, including spoilage, blemishes, spillage, distaste for leftover food, and lack of knowledge about food selection strategies, food preparation, or storage options. The details of this procedure are described elsewhere and depicted in Supplemental its influences on the environment. Finding about the waste foods that in higher income group people has been more than lower income group.

Per-capita amount (grams) of food retail loss, inedible portions, consumer waste, and consumed food were estimated separately, and were summed to estimate Total Food Demand for each food group. The relationship between the amount of Total Food Demand (by loss/waste category and food group) and quintiles of diet quality (HEI-2015 and AHEI-2010) was assessed using simple linear regression models to test for trend, and additional models were adjusted for age (continuous) and sex (male/female). Diet quality estimates were energy adjusted using the density method, where food intake was standardized per 1000 kcal (HEI-2015) or per 1849 kcal (AHEI-2010), as discussed above. Standardized procedures and variables provided by NCHS were used to account for the multistage probability sampling design of NHANES. The relationship between the amount of agricultural resources (agricultural land, fertilizer nutrients, pesticides, and irrigation water) used to produce Total Food Demand and quintiles of diet quality (HEI-2015 and AHEI-2010) was assessed using simple linear regression models to test for trend. Statistical significance was set at $P < 0.05$ for all assessments. SAS 9.4 (SAS Institute; Cary, NC) was used to estimate population-ratio HEI-2015 scores using the modified code and macros provided by the National Cancer Institute (discussed above).

Environmental impacts of catering and in-house food consumption and impacts on sectoral and national levels:

Use your freezer. While there are plenty of benefits to eating fresh food, frozen foods can be just as nutritious. They also stay edible for much longer. A lot of seafood, for example, is frozen before it reaches your supermarket and then thawed and put on display. That means it will only stay fresh for a few days. By buying frozen seafood, you can extend the shelf life of the product considerably. Cooking and freezing food especially produce before it goes bad is a great way to avoid having to toss it.

Fight climate change from preventing food and vegetables waste:

If it is going to waste, we can use it naturally as a generic fertilizer in the farm it is effective use to increasing the product. We can avoid of bad impact of greenhouses. We can best use it also in farm i.e. in the farmhouse multipurpose vegetable and fruits production was to consumption of family or society. Preventing food waste is the most effective way to shrink its impact on the earth and planet. If we avoid producing food that we don't eat, we can save the land, water, and energy that would have been used to make it. And awareness is a good first step; according to Re-FED, educating consumers about food waste could prevent 7.41 million tons of greenhouse gas emissions.

Veggies and harbas you can re-grow with absolutely for safe health: If you like idea of high payoff and low effort, you can almost use this at-home garden requires zero soil, almost no maintenance, and won't cost you a dime. That's because many of the vegetables you eat will re-grow if you put their ends in water. Yes, the bits you normally toss in the trash can be easily transformed into more food. Here, farmer and plant specialists are to provide knowledge by us do this plan actually implement. From it's we can achieved a lot of nutritious essential micro-nutrients which is beneficial to increase the capacity of our body function and as well as boost in

the immunity power. Micro- minerals are the ones you need more of think potassium, calcium, and magnesium. Trace minerals are the ones you need smaller amounts of things like zinc, selenium, iron, copper, and fluoride. Minerals are elements that (in addition to making rocks) build your body parts and help your body carry out internal processes necessary to life. Minerals help your body do what it needs to do, from heart health to hormone production.

The following minerals are essential for human health which in riches quantity in herbal vegetables and fruits: Calcium, phosphorus, potassium, sodium, chloride, magnesium, iron, zinc, iodine, chromium, copper, fluoride, molybdenum, manganese, and selenium. The Main natural sources are being Extinct its reason growth of development and urbanization. It is dangerous for living microbial which is protecting always to the healthy environment. One third of the microbial will be extinct in the future such have on it of the research

Climate changes impact on biodiversity:

Globally due to climate changes the warm increasing. And the season has been also completely changed. Fastly increasing encroachment of the urbanization, for it largely being break the tree, and biodiversity extinct therefore in pollution also increase.Many city which are located at the Bank of the sea also will being under the sea water.

The World Health Organization (WHO) estimates that, in 2012, 12.6 million deaths globally, representing 23% of all deaths, were attributable to the environment (WHO, 2016). When accounting for premature mortality and disability, the fraction of the global burden of disease due to the environment was 22% (95% confidence interval (CI) 13–32%) (WHO, 2016). In children aged below 5 years, up to 26% (95% CI: 16–38%) of all deaths could be prevented if environmental risks were removed. Environmental factors might play a role in more than 80% of major diseases and injuries around the world and are among the biggest killers. Diseases with the largest environmental contribution in children under the age of 5 years include lower respiratory infections (32%), diarrhoeal diseases (22%), neonatal conditions (15%) and parasitic and vector-borne diseases (12%) (WHO, 2017). There are three important categories of infectious diseases sensitive to climate change: (i) water-borne diseases; (ii) food-borne diseases; and (iii) vector-borne diseases (Cissé et al., 2018). Human exposure to water-borne infections occurs by contact with contaminated drinking water, recreational water or food. Water-and food-borne diseases are linked to the ingestion of pathogens via contaminated water or food, while vector-borne diseases are linked to the infections transmitted by arthropods, such as mosquitoes. Climate change related health effects also present a huge inequity dimension, as the risks are linked to the environmental systems and the social conditions (McMichael, 2013).

Food-borne diseases In 2007, the World Health Organization (WHO) established the Food-borne Disease Burden Epidemiology Reference Group (FERG), in order to estimate the global burden of food-borne diseases (WHO, 2015c). The report estimated that 31 selected hazards with food-borne diseases resulted in over 600 million illnesses and 420,000 deaths worldwide. Moreover, it was estimated that the 31 selected hazards induced 33 million DALYs in 2010; and 40% of the food-borne disease burden was among children under 5 years of age. The highest burden per population of food-borne diseases was observed in Africa, and unsafe water used for the cleaning and processing of food was one of the main drivers. Food-borne diseases occur through the ingestion of foodstuffs (including water) contaminated with microorganisms or chemicals. The risks of contamination exist in the food chain, from food production to consumption ("farm to fork"), and involve the pollution of water, soil or air. The

estimation of food-borne disease burden is complicated because most of the hazards causing food-borne diseases are not transmitted solely by food (Hald et al., 2016)

Water-borne diseases; In LMICs, the burden of diarrhoeal diseases is estimated at 842,000 deaths per year, including 361,000 in children under the age of 5 years (WHO, 2015b). Water-borne disease outbreaks, particularly infectious intestinal diseases, have been attributed to various pathogens, as highlighted in Table 1 (e.g. bacteria, protozoa, viruses and parasites) and drinking water system characteristics (Bless et al., 2016; Ligon and Bartram, 2016). Lack of basic hygiene and sanitation and failing infrastructure also remain as two of the greatest challenges in the global fight against water-borne disease (Ford and Hamner, 2015). Climate change is likely to exacerbate in LMICs the risks for diarrhoeal diseases and other water-borne diseases in the future (IPCC, 2018).Water-borne disease outbreaks, particularly infectious intestinal diseases, have been attributed to various pathogens, bacteria, protozoa, viruses and parasites) and drinking water system characteristics (Bless et al., 2016; Ligon and Bartram, 2016). Lack of basic hygiene and sanitation and failing infrastructure also remain as two of the greatest challenges in the global fight against water-borne disease (Ford and Hamner, 2015).

Climate change and health challenges:

The IPCC's recent special report on 1.5°C states that human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8 °C–1.2°C (IPCC, 2018). Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate (high confidence). The consequent increased severity and number of extreme climatic conditions will be accompanied by changes in microbial communities and species interaction (Walker, 2018).

The impact of climate change on diarrheal disease is projected to be higher in Asia and Africa. In 2030, sub-Saharan Africa is projected to have the greatest burden of mortality impacts attributable to climate change, while in the 2050, it is likely to have shifted to Southeast Asia. The rationale of inadequate WASH conditions for children may lead to intestinal parasitic infections; intestinal parasitic infections may hamper children's nutritional status and benefits from school gardens, the research team implemented school gardens and integrated educational, nutritional and WASH with the assumption that these will reduce infectious diseases among children. Education and promotion of nutritional knowledge and dietary diversity for school children globally. Health parasitic treatments and or iron supplement of infected and anaemic school children (Nepal, Bhutan)

Conclusion:

These findings have implications for the development of sustainable dietary guidelines, which requires balancing population-level nutritional needs with the environmental impacts of food choices. Effect of inadequate diet consumption to convert into malnutrition and other related diseases. Environment effects were significant for all food groups as well as dominated for snacks, dairy and starches. These finding endorse the view of health professional that the home environment is the main determinant of human liking for energy-dense food implicated in excessive weight gain but suggest the parents are also correct by identifying innate differences in liking particularly for nutrient dense foods that parents and health educators try to encourage.

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Changing Perspective in Environment, Management, Humanities, Sciences and Technology

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Abstract :

In the past quarter century, number of changes in environment in the context of changing perspective in environment management, Humanities, Science and Technology also important role of government. environmental management and its relationship to human development are in a period of dramatic change. In this context societies are now beginning to have serious discussion about 'sustainable development', but there is still a great deal of confusion over what this means and how to achieve it.

Introduction:

The present paper fucus on how 'changing perspective in environment, management ,humanities ,science and technology 'in this title each and every concepts important role itself. In term of environment can be defined as a sum total of all the living elements and non-living elements and their effects that influence human life. which means each concept interrelated.

Key terms: Environment, Management, Humanities, Science, Technology, Meteorology, etc.

Methodology: Present paper depend upon secondary sources related to articles, research journals, website and research paper.

Objectives:

1. To study environment, management, humanities, science and technology.
2. To aware about concept of changing percpective of environment and its role.

"Environment management refers to the management of an orgnizations environment programs in a comprehensive systematic planned and documented manner. It includes the organizational structure, planning and resources for developing, implementing and maintaining policy for environmental protection". Recently, corporation have been confronted with a number of global environment challenges such as global warming, acid rain, waste management, pollution, prevention environment management supports sustainable development and also extend from local to global level.

In terms of science and technology also various changes occur such a concept meteorology means the science that studies the inter-relationships between the various components of the earth and climate is meteorology includes the study of storms, clouds, rainfall, thunder, lightning, etc. depending upon each other and human important role all perspectives as positive or negative
way.

Conclusion:

This paper discusses about changing perspective environment, management, humanities, science and technology.

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Studies on Fortification of Multigrain Noodles with Ginger Powder

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Abstract:

Macaroni products like noodles, pasta, spaghetti, vermicelli and other similar products are highly consumed in India. Noodles are made generally up of refined wheat flour or wheat flour (high gluten content) which is harmful to health. Noodles may be round, flat which are made from unleavened dough which are rolled flat and cut, stretched or extruded with machine or with hand and cut into long strips or strings. They can be further refrigerated for short term or dried and stored for future use. Noodles are usually cooked in boiling water, sometimes with cooking oil or salt added. Multigrain Noodles were made from Wheat Flour, oats flour, semolina flour and ginger powder through simple hand process. Cooking quality, nutritional values and sensory analysis were studied. Compared with Maida noodles, oats are a rich source of fibre (Beta-glucan), ginger contains gingerol which has various medicinal properties and semolina is a rich source of protein, folic acid, and is gluten free. Multigrain noodles formulation was developed to supplement growing children, adults, people fighting with diseases like obesity, diabetes, heart problems, etc.

Keywords: Multigrain noodles, Beta-glucan, gingerol, nutrition, ginger powder

1. Introduction:

Noodles are one of the most important staple foods consumed in many Asian countries. They are typically made from unleavened wheat dough by stretching, extruding, rolling and cutting them into various shapes (Niu & Hou, 2020). Noodles fortification as an effective public health intervention and improve its nutritional properties. Quality factors important for noodles are color, flavor, and texture, cooking quality, rehydration rates during final preparation, and the presence or absence of rancid taste after extended storage (Gulia *et al*., 2013) Instant noodles are widely consumed throughout the world and it is a fast-growing sector of the noodle industry. Noodles can be classified into various types like fresh raw noodles, dried noodle, parboiled noodle, frozen noodle, steamed noodle and instant noodle. Worldwide, China ranks first in the consumption of noodles followed by Indonesia, Japan, and Vietnam. Due to the increasing popularity of noodles, the introduction of noodles made from whole grains can be an effective way to promote high-fiber food consumption and increase health benefits for people throughout the world. At present, some types of commercial whole grain noodles are available

Wheat is one of the major cereal grains and a staple food for mankind. It is an important source of carbohydrates and the leading source of vegetal protein in human food. The demand for wheat has been increasing due to the unique viscoelastic properties of gluten proteins and the industrialization processes that facilitate the production of flour-based foods. When eaten as whole grain, wheat is a source of multiple nutrients and dietary fibre. Whole wheat products are some of the most important whole grain foods due to the high yield and consumption of wheat in the world. Oats are grown in temperate regions and can be planted either in autumn or in spring. Oats are normally crushed into oatmeal or ground into oat flour. Oatmeal is usually eaten as

porridge and can be used in baked goods such as oatcakes, oatmeal cookies and oat bread. Semolina is a popular type of flour. You'll find it in many common and often comforting foods: pasta, couscous, bulgur, noodles, and lots of desserts and breads. In some parts of South Asia, semolina is known as sooji. Developed noodles as a protein–fibre-rich complementary food might offer the substantial potential to overcome the nutritional deficiency among school children through their inclusion in Mid-day Meal scheme of Government of India. Moreover, these noodles are developed particularly for primary and upper primary school children that rely on the gluten-enriched diets such as Roti-sabji, Dal-roti, Dal-poori to fulfil their protein and energy requirements; therefore, gluten incorporation can be taken as an advantage to improve the final product quality without having any adverse effect on the targeted consumers. *(Rani et.al., 2019)*

Wheat is rich in carbohydrates especially in dietary fibre, fat, protein, vitamin and some minerals. Rice, rice is reaching in natural inflammatory and gluten-free grain, it improves nervous system health, it is a good source of energy, prevents obesity, rice can be used for skincare, rice flour is rich in calcium and it makes good food for bone health. Rice flour is rich in chlorine, calcium, niacin and sodium. Ginger powder helps to smooth a bad stomach, helps to reduce cancer risk, ginger powder contains protein, crude fibre, fat and ash, it also contains carotene and ascorbic acid *(Ingale et.al., 2019).*

2. Materials And Methods:

2.1 Ingredients- Wheat Flour, Oats Flour, semolina Flour, Ginger Powder, Water, Salt, oilwas purchased from the local market.

2.2 Equipment's Used-

Weighing Balance- Electronic weighing balance is used for weighing raw materials

Grinder- Oats, semolina and sorghum are converted into flour with help of high-speed grinders.

Sieve- A sieve with appropriate mesh size is used to separate out foreign materials from the flour.

Kneader- Different formulated flours are mixed and kneaded and tight dough is obtained.

Dough Roller- After aging, the dough is converted into sheet using roller to achieve uniform thickness.

Rolling pin- to press and flatten the dough

Refrigerator- Noodles are short-term stored in refrigerator for instant cooking and consumption. The temperature maintained is 4˚C.

2.3 Methodology For Preparation Of Noodles:

1. Selection of ingredients- Select good quality raw materials and then clean them. They include Wheat Flour, Oats Flour, Semolina Flour, Water, Salt, oil, etc.
2. Weighing- Weighing of ingredients is done according to the formulation done on weighing balance.
3. Grinding- Raw materials like oats, semolina is converted into flour by using grinder.
4. Sieving- High quality sieve of appropriate mesh sizeis used for removal of foreign materials
5. Kneading- The Multigrain flour (100g) are mixed are kneaded in a dough kneader until the texture of dough is rough.
6. Aging- The dough is placed under the muslin cloth for about 25 to 30 minutes. After resting the dough is slightly kneaded with sprinkling of little flour. This maturation of dough is done 2-3 times for about 15-20 minutes until the texture becomes soft.

7. Pressing- After 30 minutes the dough is pressed and flatten by use of rolling pin and again folded and kept under muslin cloth for 15 minutes at room temperature
8. Rolling- the dough is spread on a plane surface and rolled with the help of dough roller to achieve uniform thickness.
9. Folding- Noodles are prepared hand so the sheet is folded one over the other.
10. Cutting- Folded portion is cut into small size with the help of knife, or the noodles are cut with the help of measuring scale
11. Refrigeration- The noodles are separated in a bowl and little amount of flour is sprinkled. Then they are kept in refrigerator until further use at 4˚C or dried in tray drier at 70˚C

2.4 Cooking Quality Evaluation Of Noodles:

The cooking qualities of the dried noodles were evaluated with respect to cooking time, cooking loss and water uptake (Gatade and Sahoo, 2015).

1. **Cooking time**: Optimal cooking time was evaluated by observing the time of disappearance of the core of the noodle strand during cooking (every 20 sec) by squeezing the noodles between two transparent glass slides.
2. **Cooking loss**: The cooking loss was determined by measuring the amount of solid substance lost to cooking water. 10 gm sample of noodles was placed into 100 ml of boiling water in a 500 ml beaker. Cooking water was collected in a pre-weighed glass dish and was placed in a hot air oven at 105°C and evaporated to dryness. The dry residue was weighed and reported as a percentage.
3. **Water uptake**: The water uptake was calculated by getting the difference between weight of cooked noodles and weight of dried noodles. The cooked noodles were placed on filter paper for 5 min before weighing, to blot the excess adhered water.

2.5 Chemical Analysis Of Noodles:

1. **Moisture Content-** Moisture content of the multigrain noodles was determined using the hot air oven method (AOAC, 2000).
2. **Protein Content-** Crude protein was estimated using the micro Kjeldahl method (Pelican Equipment's)
3. **Fat Content-** Fat content was estimated using soxhoplus (Pelican equipment's).
4. **Crude Fibre Content-** Crude fibre was estimated using fibroplus (Pelican Equipment's)
5. **Ash Content-** The ash fraction contains all the mineral elements but it allows to nitrogen-free-extract (by difference) from dry matter. It is determined using Muffle furnace.
6. **Carbohydrate Content-** Carbohydrates are calculated on the basis of determination of the remaining four parameters.
7. **Iron Content-** Oats is a rich source ofIron. Spectrophotometric measurement of the Iron Content of multigrain noodles was introduced in accordance with the AOAC protocol.

2.6 Sensory Evaluation By Nine Point Hedonic Scale:

The sensory characteristics of Cookies were determined using a taste panel consisting of members from MES's Arts, Commerce and Science College, Sonai, Ahmednagar. The sensory characteristics of the products were evaluated by using nine-point hedonic scale. A nine-point hedonic scale was used for sensory evaluation of Multigrain noodles.

2.7 Statistical Analysis :

All analytical tests and experimental analyses were carried out in triplicates and expressed as mean values, coefficient of variance (CV) and standard deviation.

3.Result And Discussion:

3.1 Chemical analysis of Raw materials

Chemical properties were analysed to check the quality of raw materials. The nutritional composition of Sorghum flour, oats flour and wheat flour are mentioned below in **table no. 3.1** As sorghum is rich in protein content, oats in fibre content, it is analysed using various instruments to get idea about nutritional contents such as protein content, fat content, fibre content, Ash and carbohydrate. The major nutrient found in Oats is Fibre and Protein. The major nutrient found in Semolina is protein.

Sr. No.	Semolina Flour	Oats Flour	Wheat Flour
Protein	13 %	5 %	11 %
Fat	1.5 %	2 %	0.5 %
Fibre	6.3 %	12%	0.5 %
Ash	1.2 %	9 %	1.5 %
Carbohydrate	70 %	72 %	75 %

Table No. 3.1 Nutritional Analysis of Raw Materials

3.2 Chemical analysis and cooking quality of multigrain noodles

The information regarding chemical composition of multigrain noodles emerges from the **Table No.3.2 and Fig No. 3.2** and results found that moisture content was 6.99 %, total carbohydrate 70.56 %, protein 14.6 %, crude fat 3 %, crude fibre 5.02 %, ash 1.45 %. It could be visualized from the give result that noodles found rich source of carbohydrate and protein along with dietary fibre. As incorporated noodles are rich source of dietary fibres it encompasses various health benefits. Cooking time of incorporated noodles was 6.30 min which was slightly higher than control sample (6.03 min). The cooking loss was 1.25 g which was also quite more than control sample (1.2 g). Water uptake was also determined and founds 10.5 g which was also higher than control sample (10.2 g). The reason behind increase in this cooking quality parameter may be due to increase in protein concentration of noodles, which directly effects on textural and ultimately cooking quality of noodles

Sr. No.	Parameter	Value
1	Protein	14.6 %
2	Fat	3 %
3	Fibre	5.02 %
4	Carbohydrate	70.56 %
5	Ash	1.45 %
6	Moisture Content	6.99 %
7	Cooking Time	6.30
8	Cooking Loss	1.25g
9	Water Uptake	10.5g

Table No. 3.2 Parameters of formulated noodles

Fig No.3.2 Boiled Noodles

3.3 Formulation of Multigr

The ingredients like semolina, oats, wheat flour are the rich source of dietary fibre, minerals (potassium, magnesium), protein, Iron etc. The raw material is converted into flour using grinder

These formulations are made on the basis of few trails in making the dough and observing its colour, appearance, texture. The formulation N_3 (with 10:65:20:05 proportion) **(Fig No. 3.3)** was selected based on taste, colour and texture. The quantity of as shown in **Table No. 3.3**

Sr. No.	Wheat Flour	Semolina Flour	Oats Flour	Ginger Powder
N_0	100	00	00	00
N_1	10	45	40	05
N_2	10	55	30	05
N_3	10	65	20	05
N_4	10	75	10	05

Table No. 3.3 Formulation of Noodles

Fig No.3.3 N_3 Formulated Noodles

3.4 Sensory Evaluation Of Noodles:

The sensory characteristics of noodles was determined using a taste panel consisting of members from Department of MES's Arts, Commerce and Science College, Sonai, Ahmednagar. The sensory characteristics of the products were evaluated by semi-trained panel using nine-point hedonic scale. A nine-point hedonic scale was used for sensory evaluation of Noodles. The acceptability statements and their marks given in **Table No. 3.4**

Mean acceptability scores obtained by the sensory evaluation of Noodles with content of iron, protein, carbohydrate as a source of sorghum and oats are given in **table. No 3.4** Regarding the colour attributes the highest score 8.6 is obtained by N_3 followed by N_0, N_2, N_1 and N_4 where scores are 8.5, 8.0, 7.6 and 7.5. The texture attributes were found to be maximum in N_3 with score of 8.7 followed by N_0, N_4, N_1 and N_2 having score of 8.6, 7.8, 7.7 and 7.6. Regarding the flavour attributes the lowest for N_1, N_2, N_4 and N_0 samples with scores 7.2, 7.4, 7.5 and 8.3 compared to N_3 with the highest score of 8.4. The taste attributes have the highest score is 8.5 obtained by N_3 sample followed by N_0, N_2, N_1 and N_4 with scores of 8.4, 8.2, 7.1 and 7.0 respectively. The overall scores of N_3Noodles sample were found to be slightly higher 8.55 than the N_0 sample with the score of 8.45 and the lowest was obtained by N_1, N_4 and N_2 with score of 7.4, 7.45 and 7.8 in noodles samples.

Sample	Parameters				
	Colour	Texture	Flavour	Taste	Overall acceptability
N_0	8.5	8.6	8.3	8.4	8.45
N_1	7.6	7.7	7.2	7.1	7.4
N_2	8.0	7.6	7.4	8.2	7.8
N_3	8.6	8.7	8.4	8.5	8.55
N_4	7.5	7.8	7.5	7.0	7.45
Std. Dev.	0.50	0.52	0.55	0.73	0.54
Mean	8.04	8.08	7.76	7.84	7.93
CV%	6.21	6.43	7.0	9.3	6.8

Table No. 3.4 Sensory/Organoleptic Evaluation of Noodles

4.Conclusion :

Multigrain noodles were prepared using addition of semolina and oats. The organoleptic score of N_3sample was better than N_0, N_1, N_2, N_4 samples.Semolina and oats were found to increase the fibre, protein content and decrease amount of gluten of the formulated product

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Development of Ragi Bar by Incorporating Amaranth (Rajgira) and Banana

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Abstract:

Nutritious healthy ragi bar is ready to eat food product with high in energy value. these ragi bar is rich source of vitamins and minerals. Amaranth is rich nutrient cereal consumed since long time ago. Today, Amaranth keeps being included in human diet because of its nutraceutical value such as high-quality protein including several essential amino acids, unsaturated oils as omega-3 and omega-6,dietaryfiber, calcium, phenolic compound, vitamins and minerals. Banana is also good source of iron, which is incorporated in the ragi bar. Honey and jaggery play the role of good sweetening agent which is good for children's and diabetic patients also. Sesame seeds also added in bar which have many potential health benefits.Eleusine coracanais commonly known as ragi which isrich in proteins, fibers, minerals, and antioxidants.It is commonly consumed in the form of food such as roti,paratha, muddle,kheer,etc. Ragi also helps to control the blood sugar level. Ragi, amaranth, banana, honey, jaggery mix together, dough is prepared and boiled at 60-70˚ C for 5-10 minutes. The incorporation of amaranth and banana in ragi bar shows a positive result in terms of nutrient content, taste,colour, appearance and shows considerable changesin physicochemical properties of the ragi bar.

Key Words: -Ragi, Amaranth, banana, formulation, nutrition.

I.Introduction:

Edible ragi bar is concentrated food product with good nutritive value. These are high calorie food and are rich source of minerals and vitamins. It is made up of high calorie ingredients.[1] While the amaranth and banana pulp incorporated ragi bar have a good impact because of their nutrient content.Amaranth is rich nutrient cereal. Amaranth can be considered as a "super food" because it is a gluten-free pseudo cereal that besides being a relevant sources of vegetable protein, provide to the human diet, a balanced content of essential amino acids, significant amount of calcium, dietary fiber omega-3, omega-6, vitamins, minerals and antioxidants.[2,3] Bananas are among the most important food crops on the planet.They come from the family of plants called *Musa* that are native to Southeast Asia and grown in many of the warmer area of the world. Bananas are a healthy source of fiber, potassium, vitamin B6,vitamin C, and various antioxidants and phytonutrients. It contains a good amount of carbohydrate, fibers, vitamins and minerals. It contains anti- inflammatory compounds and antioxidant that regulate immune responses and significant decrease in the heart disease risk.[4] Finger millet is commonly known as Ragi. It helps to control the blood glucose level in diabetic patients.[5,6] Honey and jiggery is used as sweetening agent which have more nutritional content as compared to regular table sugar.Honey gets its sweetness from the monosaccharide's fructose and glucose, and has about the same relative sweetness as sucrose. [7,8] Sesame seeds also added in bar which have many potential health benefits and have been used in folk medicine for thousands of years.

They may protect against heart diseases, diabetic and arthritis.[10]The main purpose of study is to develop value added bar by incorporating amaranth and banana pulp in ragi bar. This combination of ingredients that increase the nutrient value of bar and also help the utilize the nutrient of amaranth as an easy way.

II.Materials And Methodology

Ragi flour, amaranth, banana, Jaggery, sesame seeds and honey are used to make the nutritious ragi bar. The all ingredients were purchased from local market and were taken to laboratory for processing. The entire process took place at Department of B.Voc food processing, ACS college Sonai, Tal-Newasa, Ahmednagar.

APreparation of ragi flour:

Eleusine coracana(Ragi) were purchased from the local market and cleaned it well to sure that no any soil particle or any other waste material in that. Ragi were grinded into a fine powder.[5,6]

Table.1. Nutritional content of *Eleusine coracana*(Ragi) per100 gm

Nutrient	Energy
Carbohydrate(g)	72.6
Fats(g)	1.5
Protein(g)	7.7
Iron (mg)	6.3
Fiber (g)	3.6
Minerals(g)	2.5
Calcium(mg)	348
Phosphorous(mg)	280

Fig.1. Ragi flour

B Preparation of amaranth flour:

Amaranth were purchased from the local market and cleaned it well. Amaranth were grinded into a fine powder. [2,3]

Table.2. Nutritional content of Amaranth per100 gm

Nutrient	Energy
Carbohydrate(g)	6.5
Fats(g)	0.5
Protein(g)	3.5
Iron (mg)	3.9
Fiber (g)	1.3
Calcium(mg)	267
Potassium(mg)	411

Fig.2. Amaranth

Fig.3. Amaranth flour

C Preparation of banana pulp:

Bananas were washed and remove the unwanted portions, cut into small pieces and mashed it properly.[4]

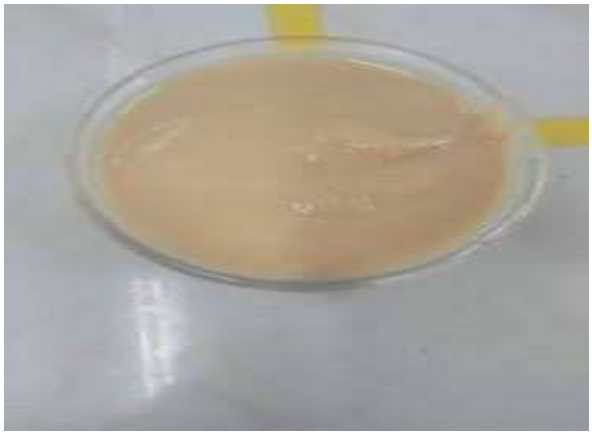

Fig.4. Banana pulp

D Preparation of bar:

Ragi flour was taken in a pan and dry roast it on medium heat.Also, dry roast the amaranth flour separately and allow cool it in properly. Mix the ragi flour and amaranth flour in

a pan after cooling. Add the banana pulp in the mixture and it is mix well until the required consistency is achieved. It is heated and added the grinded Jaggery and boiled at 60-70˚C for 5-10 minutes.Honey was added in the mixture for better taste and sensory property.Also, the sesame seeds are added in mixture. The mixture is mixed thoroughly and poured into aluminium trays which were smeared with ghee or butter. The trays are covered and then tried for 48 hours in room temperature. Finally,the bar was cut into different shapes using a cutter, pack into small polyethylene pouches and stored at room temperature.

Fig.5. Sesame seed

Table.3.Composition of ingredients

Ingredients	T1	T2	T3	T4	T5
Ragiflour(g)	100	90	80	70	60
Amaranth flour(g)	0	10	20	30	40
Banana Pulp(g)	0	10	20	30	40
Jaggery(g)	25	25	25	25	25
Sesame seed(g)	5	5	5	5	5
Honey(ml)	5	5	5	5	5

E Sensory evaluation :

The study of sensory evaluation was carried out by evaluating five major sensory attributes such as taste, appearance, texture, aroma and overall acceptability using nine-point hedonic scales. Twenty-five members including student and staffs from the department ware used for study.

F Biochemical physical analysis

The moisture content, crude protein, crude fiber, fat and ash contain of the bar were determined using various methods.[8]

Moisture content:To determine moisture content of the ragi bar by weighing a known amount of sample and tried in hot air oven at 105-125˚ C.

Ash content:To detect the ash content of the ragibar,aknown amount of sample was powdered and taken in a crucibleand then burnt in a muffle furnace. By using this method,the ash content of prepared bar was calculated.

Nutrientcontent: The protein analysis of the ragi bar were determined by Kjeldhal method. The sample are first digested and the released nitrogen is converted into protein content with a conversion factor of 6.28.

- To determine the carbohydrate content in prepared ragi bar the Anthrone method is used.[11]

- Fat content in the produced bar is determined using solvent extraction gravimetric method.
- To determine vitamin C content of the bar the2,6 dichloro indophenol method was used.

Physical Properties*:* The randomly five bar was selected and weight(g), thickness(cm) and diameter(cm) of selected bar were calculated. The spread ratio of the bar was obtained by dividing diameter(cm) of the bar by thickness(cm).

Shelf-life study: The prepared bar was packed and sealed in polyethylene pouches. The changes in water activity, sensory attributes such as colour, texture and overall acceptance were evaluated at an interval of one month upto 3 years.

III.Result And Discussion:

The incorporation of amaranth powder and banana pulp in ragi bar showed enhanced nutrition content, colour, texture and flavour.

The sensory evaluation of bar done and result are shown in Table 4. It is shown that bar have higher level of sensory properties in T4 Sample.

Table.4. Sensory evaluation of ragi bar enhanced with amaranth powder and banana pulp.

Samples	Appearance	Taste	Aroma	Texture	Overall acceptability
T1	7.10	6.95	8.01	7.50	8.00
T2	7.06	7.22	8.13	8.19	7.11
T3	7.16	7.56	7.05	8.07	8.04
T4	8.50	8.20	8.10	8.25	8.10
T5	8.10	8.07	7.18	7.24	7.41
Mean	7.58	7.6	7.6	7.85	7.73

The nutritional content of the prepared bar was determined using different methods and the results are shown in Table 5.This analysis showed that the ragi bar incorporated with amaranth powder and banana pulp have more much essential nutrients than the usual ragi bar(T1).

Table.5. Biochemical analysis of prepared bar

Parameters	T1	T2	T3	T4	T5
Moisture%	10.58	10.60	11.02	11.32	11.44
Protein%	12.14	14.28	16.97	18.48	20.65
Carbohydrate%	69.92	71.32	73.83	74.71	75.29
Fat%	2.21	2.36	3.62	3.99	4.41
Vitamin-C%	0	0.02	0.18	1.02	1.24
Ash%	1.56	1.98	2.33	2.74	3.42

IV.Conclusion:

The nutritional value of the ragi bar is considerably enhanced due to incorporation of amaranth powder and banana pulp, also changes in physiochemical properties of bar. The result show that with increasing addition of amaranth powder and banana pulp within the ragi bar recipes, increase the fat, protein and the dietary fiber in the bar. It is concluded from the study that amaranth powder and banana pulp are successfully incorporated in ragi bar to yield bar of rich nutrition and with sensory attributes.

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Biochemical Characterization of Lactic Acid Bacteria Isolated from Fruit Waste

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Abstract:

Waste to affluence is a common inclination in the world today. This work reports the utilization of fruit waste for production of lactic acid using acid bacteria. Peels of mango, orange, charry, peach and banana were used. The organisms used for fermentation were isolated from spoilt of mango, orange, charry, peach and banana and identified using biochemicaltools. These organisms were grown using different growth factors over a period of three days with initial pH of 6.0. Growth factors were then diverse in order to optimize the yield of lactic acid. A total of twenty-four LAB isolated from fruits waste samples on modified de Man, Rogosa and Sharp (MRS), catalase negative and Gram positive were considered as LAB.The isolates were identified with species of morphology and biochemical analysis It can be concluded that isolated LAB from different fruits sources have benefit consumers. Isolated was used for the production of lactic acidthe results of this study showed that lactic acid can be produced usingof mango, orange, charry, peach and bananawaste.

Key word: Lactic acid bacteria, lactic acid, fruit waste

Introduction :

Fruit based industry produces a large volume of solid and liquid waste. These poses increasing disposal and pollution problems (high BOD or COD) and represents loss of valuable biomass and nutrients (Mridul&Preethi, 2014). Disposal of wastes from fruit-canning industries has been a problem due to high transportation costs and limited availability of landfills, as these byproducts carry no commercial value, they are often discharged in places they ought not to be disposed (Pradeep*et al.,* 2014). This particularly occurs where there is a lack of legislation and their enforcement on waste disposal (Omojasolaet*al.*, 2009). These wastes directly affect environmental agencies and municipalities because food waste is a primary source of methane gas in landfills (Gunders, 2012). Reutilizing fruit-waste to develop new products has received much attention lately. Organic waste treatment processes (Purkayastha, 2012) and anaerobic digestion processes (Shin *et al.,* 2010; Dai *et al.,* 2013; Bernstadet*al.*, 2013) are two promising technologies used in this regard. Presently, the main use of such domestic food waste is the production of valuable compounds by the controlled break down of the waste by microorganisms (Rounsefellet al., 2013). Lactic acid has gained importance for its application in food, feed, chemical, pharmaceutical and beverage industries (Ray & Swain, 2011). Most important application of lactic acid is its use for the manufacture of biodegradable and biocompatible polylactate polymers (Khalaf, 2001). Microbial sources including many bacteria such as *Carnobacterium, Enterococcus, Lactobacillus,Lactococcus, Leuconostoc, Streptococcus, Clostridium* and *Weissella*have been reported to produce lactic acid (Bogaert&Coscach, 2000). Due to the importance of this organic acid, there are ongoing research efforts related to its

production (Hofvendahl& Hahn- Hägerdal, 2000). Variations in temperature, pH, carbon sources and nitrogen sources affect lactic acid production (Pavezzi*et al*., 2008; Jörissen*et al*., 2015). The present study was undertaken to screen out the potential LAB isolates producing bacteriocins from spoiled fruits.

Material And Methods:

Sample collection:

Spoiled fruit waste (mango, orange, charry, peach and banana), were collected from dump yard of a local market (Motibag, market), region of Gujarat, India. All the samples were transported to the Department of Microbiology, JunagadhagricultureUniversity, and under safe conditions, where further studies were performed.

Isolation of Lactic Acid Bacteria: -

The collected samples were subjected to tenfold normal saline serial dilution. The lactic acid bacteria were isolated on MRS (pH 6.8 ± 0.02) medium and incubated at 37*C for 24hrs. The plates were observed for appearance of colonies and number of colonies produced on each plate. The lactic acid bacteria were maintained freshly throughout the experimental work. Bacteria were purified by streak plate method on MRS agar and incubated at 370C for 24hrs and transferred to MRS agar slants and then maintained in refrigerator at 4*C till further analysis.

Identification of Isolated strains: -

The different pure cultures so obtained were characterized for their colony morphology and subjected to Gram staining, oxidase test, catalase test, carbohydrates fermentation test according to Holt *et al*. (7) Only Gram positive, non-motile, rod shaped bacteria, showing phenotypic characters similar to *Lactobacillus* species on MRS agar media were selected for further experiments. The isolated bacterial strains were maintained properly through regular sub-culturing on MRS media. The fresh cultures were used throughout the experiments. The identification of potent isolates up to species level was done based on the characteristics of *Lactobacillus* as described in Bergey's Manual of Systematic Bacteriology (Kandler, O. and N. Weis, eds. Regular Nonsporing Gram-Positive Rods. Bergey's Manual of Systematic Bacteriology. 2nd ed. Vol. IV.2005, Springer. 1208-1231.). The cultures were subjected to a battery of biochemical tests which included fermentation of different carbon sources, acid and gas production from glucose, catalase test, temperature tolerance, Salt tolerance test etc.

Antibiotic sensitivity test: -

The antibiotic susceptibility of isolated LAB was assessed using antibiotic discs diffusion method on MRS agar plates. Broth cultures of LAB was prepared using MRS and adjusted to 0.5 McFarland standards. The freshly grown overnight isolated *Lactobacillus Spp.* cultures were spread on MRS agar plates. The antibiotic discs were placed on the surface of MRS agar plates and the plates were incubated at 37*C for 24 to 48hrs. Antibiotic susceptibility pattern was assessed using, Amphicillin(AMP), Amikacin(AK), Chloromphenicol(C), Gentamcin(GEN), Streptomycin(S), Tetracyclin(TE), Kanamycin(K), Co-Trimoxazole(COT).

Antimicrobial test by Agar well diffusion Method: -

The agar well diffusion method was used to determine the antimicrobial property of the LAB isolates. The selected LAB isolates were inoculated from slants to fresh 250 ml MRS broth and incubated at 370C for 24-48 hrs. The culture broth of each isolate was centrifuged separately

at 10,000 × g for 30 minutes. The supernatant was collected after centrifugation and passed through 0.2 µm sterile syringe filter.

A 24 hr culture of the pathogens such as *E. coli, Pseudomonas, B. subtilis* and *S.typhi*grown at 370C was suspended in saline. A lawn of the indicator strain was made by spreading the cell suspension over the surface of nutrient agar plates with a sterile cotton swab. The plates were allowed to dry and a sterile cork borer of diameter (5 mm) was used to make uniform wells in the agar. Each well was filled with 50 µl culture free filtrate obtained from the LAB isolates. After incubation at 370C for 48 hrs, the plates were observed for a zone of inhibition (ZOI) around the well. Results were considered positive if the diameter (mm) of the ZOI was greater than 1mm.

Result And Discussion:

Isolation and identification of LAB: -

All the microbial colonies on MRS agar plates were morphologically characterized **(Table 1)** based on their colony characteristics obtained along with their Gram reaction and microscopic examination. Isolates showing phenotypic characters similar to Lactobacillus species on MRS agar mediaon the basis of above morphological and biochemical features were selected for further experiments. The isolate showing similar morphology and staining characteristic were followed by biochemical tests and sugar utilization tests **(Table 2, 3 and 4)** and some of them confirmed as *Lactobacillus spp.*

Isolated	Size(mm)	Color	Elevation	Cultural Characters	Cell Morph.	Gram Staining	Endospore Staining
MG1	1	CreamyWhite	Convex	Moist,Regular	CC	+Ve	-Ve
MG2	1-2	White	Convex	Moist,Regular	SR	+Ve	-Ve
MG3	1-2	CreamyWhite	Convex	Moist,Regular	Cc	+Ve	-Ve
OG1	1	Greywhite	Convex	Moist,Regular	Cc	+Ve	-Ve
OG2	1-2	Creamywhite	Convex	MoistRegular	Cc	+Ve	-Ve
OG3	1-2	Creamywhite	Convex	MoistRegular	Cc	+Ve	-Ve
OG4	1	CreamyWhite	Convex	Moist,Regular	CC	+Ve	-Ve
OG5	1	White	Convex	Moist,Regular	SR	+Ve	-Ve
OG6	1-2	CreamyWhite	Convex	Moist,Regular	Cc	+Ve	-Ve
PC1	1	Greywhite	Convex	Moist,Regular	Cc	+Ve	-Ve
PC2	1	Creamywhite	Convex	MoistRegular	Cc	+Ve	-Ve
PC3	1-2	Creamywhite	Convex	MoistRegular	Cc	+Ve	-Ve
PC4	1	CreamyWhite	Convex	Moist,Regular	CC	+Ve	-Ve
CH1	1-2	White	Convex	Moist,Regular	SR	+Ve	-Ve
CH2	1-2	CreamyWhite	Convex	Moist,Regular	Cc	+Ve	-Ve
CH3	1-2	Greywhite	Convex	Moist,Regular	Cc	+Ve	-Ve
CH4	1-2	Creamywhite	Convex	MoistRegular	Cc	+Ve	-Ve
BA1	1	Creamywhite	Convex	MoistRegular	Cc	+Ve	-Ve
BA2	1	CreamyWhite	Convex	MoistRegular	Cc	+Ve	-Ve
BA3	1	White	Convex	MoistRegular	Cc	+Ve	-Ve
BA4	1	CreamyWhite	Convex	MoistRegular	SR	+Ve	-Ve

Table1: -MorphologicalCharacteristicsofLactic AcidBacteria.
*SR:StraightRods;Cc: Cocci;+Ve:Postive;-Ve:Negative

Figure1: -

IsolationofPureCulturefromMRSPlate.

Figure2: - GramStainingofLAB.

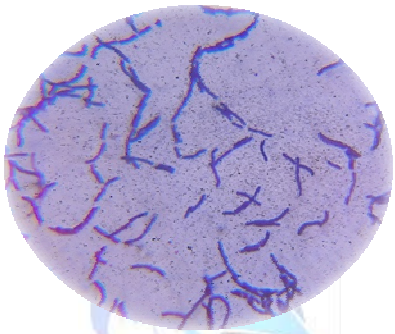


Table2: -BiochemicalCharacterizationTestofLactic AcidBacteria

Isolated	Catalase test	Oxidative test	Temperature test	NaCl tolerance test	Bile salt test
MG1	_-Ve	_-Ve	+	++	+
MG2	_-Ve	_-Ve	++	+	++
MG3	-Ve	-Ve	+	+++	++
OG1	_-Ve	_-Ve	++	++	++
OG2	_-Ve	_-Ve	+++	+	+++
OG3	_-Ve	_-Ve	++	++	++
OG4	-Ve	-Ve	+	+++	+
OG5	_-Ve	_-Ve	++	+	+
OG6	_-Ve	_-Ve	+++	+	+++
PC1	_-Ve	_-Ve	+++	++	+++
PC2	-Ve	-Ve	++	+	+
PC3	_-Ve	_-Ve	++	++	++
PC4	_-Ve	_-Ve	++	++	++
CH1	_-Ve	_-Ve	+	+	+
CH2	-Ve	-Ve	++	+	++
CH3	_-Ve	_-Ve	+++	++	+++
CH4	_-Ve	_-Ve	++	+++	++
BA1	_-Ve	_-Ve	++	+++	++
BA2	-Ve	-Ve	+++	+	+++
BA3	_-Ve	_-Ve	+	++	+

BA4	_-Ve	_-Ve	++	++	++

+ve: positive, -ve negative

Table3: -PhenotypiccharacterizationofLactic Acid BacteriabySugar Utilization

Isolated	Arabinose	Lactose	Glucose	Fructose	Galactose	Rhamnose	Maltose	Raffinose
MG1	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
MG2	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
MG3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
OG1	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
OG2	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
OG3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
OG4	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
OG5	+ve	+ve	-ve	+ve	+ve	+ve	+ve	+ve
OG6	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
PC1	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
PC2	+ve	+ve	+ve	+ve	+ve	+ve	-ve	+ve
PC3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
PC4	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
CH1	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
CH2	+ve	+ve	+ve	+ve	-ve	+ve	+ve	+ve
CH3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
CH4	+ve	+ve	+ve	-ve	+ve	+ve	+ve	+ve
BA1	-ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
BA2	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
BA3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
BA4	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve

+ve: positive, -ve negative

Table4: -GasProductionbyLactic AcidBacteriabySugarUtilization.

Isolated	Arabinose	Lactose	Glucose	Fructose	Galactose	Rhamnose	Maltose	Raffinose
MG1	+ve	+ve	+ve	+ve	-ve	+ve	+ve	+ve
MG2	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
MG3	-ve	+ve	+ve	+ve	+ve	+ve	-ve	+ve
OG1	+ve	+ve	+ve	+ve	+ve	+ve	+ve	-ve
OG2	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
OG3	+ve	-ve	+ve	+ve	+ve	+ve	+ve	+ve
OG4	+ve	+ve	-ve	+ve	+ve	+ve	+ve	+ve
OG5	+ve	+ve	-ve	+ve	+ve	+ve	+ve	+ve
OG6	-ve	+ve	+ve	-ve	+ve	+ve	+ve	+ve
PC1	+ve	+ve	+ve	+ve	-ve	+ve	+ve	+ve
PC2	+ve	+ve	+ve	+ve	+ve	+ve	-ve	+ve
PC3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	-ve
PC4	-ve	-ve	+ve	+ve	+ve	-ve	+ve	+ve
CH1	+ve	+ve	-ve	+ve	+ve	+ve	+ve	+ve
CH2	+ve	+ve	+ve	+ve	-ve	+ve	+ve	+ve
CH3	+ve	+ve	+ve	-ve	+ve	+ve	+ve	+ve
CH4	+ve	+ve	+ve	-ve	+ve	+ve	+ve	+ve
BA1	-ve	+ve	+ve	+ve	+ve	+ve	-ve	+ve
BA2	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
BA3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve

BA4	+ve	+ve	+ve	+ve	+ve	+ve	+ve	-ve

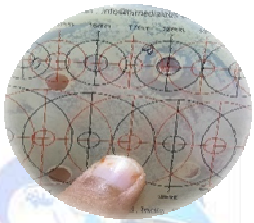
+ve: positive, -ve negative

Afterperformingallthetestsstrainslabeledaswereidentifiedas***Lactobacillusspp***respectivelyandthese strainswereusedinfurtherexperiments.

Determination of the antimicrobial activity of selected LAB by agar well diffusion Method:-

The agar well diffusion method was used to assess the antimicrobial activity of the selected LAB isolated from fruit waste. Their antimicrobial properties were tested against major food-borne pathogenic bacteria namely *E. coli, Pseudomonas, B. subtilis* and *S.typhi* were taken from MTCC. Results show that the spectrum of inhibition was different for the isolates tested. **figure3**gives the results for the antimicrobial activity of the isolates in terms of diameter of the zone of inhibition (ZOI). A diameter >1mm around the well was considered as a positive result. Among all the isolated *lactobacillus spp*. was found to be showing potent antimicrobial activity against most of the pathogenic organisms.

figure3: - Antimicrobial Activity of Lactic Acid Bacteria.



Antibiotic susceptibility Test: -

The overnight grown culture of isolates of the selected LAB isolated from fruit waste (*Lactobacillus spp*) were inoculated .Their growth were checked after 48hrs of incubation at 370C. **figure 4**shows that the isolates were resistance to Ampicillin (Amp). Some of the isolates showed resistance to other antibiotics. The isolates were found resistant to cell wall synthesis inhibitor i.e. Penicillin, Vancomycin and protein synthesis inhibitor Gentamicin, Streptomycin but sensitive to tetracycline at higher concentration 200µg/ml and above.

The results of antibiotic susceptibility test with streptomycin different from the observation made by Kim *et al* (8). Hoque*et al* (7) found that the *Lactobacillus* spp. is sensitive to Cd, E, Gen, B, C, E, S Amx, Te, Met, and resistant to trimethoprim (Tr), ampicillin (Amp). It is possibly because of β lactamase presence in the isolate which is known to cause antibiotic resistance towards penicillin and other cell wall synthesis inhibitory compounds. Similar results were also observed by Coppola *et al.* (9), Lira *et al.* (10), Caro *et al.* (11) and Hleba*et al* (12) where they examined antibiotic resistance of bacteria isolated from various food samples have argued that the results of antibiotic resistance vary from study to study.

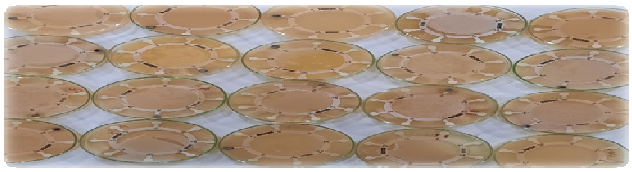


Figure-4 antibiotic susceptibility test

Conclusion:

The present study was aimed to isolate and characterize LAB bacteria from different fruit waste. Since there is substantial demand for natural food products which can be used for as probiotic food supplements to enrich nutritionally rich diet as well as cure to diseases these as they are very much diversified in gaining importance. Asthis probiotic impart beneficial properties without any genetic or molecular changes in the health of consumers which is an attractive solution for diseases management through the diet. In general, it is believed that Probiotics help keep up the balance between harmful and beneficial bacteria in the gut thus maintaining a healthy digestive system. The study is extremely promising, that underscores the important role of *Lactobacillus* strains.

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Development of Supplementary Protein Based Cake from Composite Flour

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Abstract:

Baking industry is considered as one of the major segments of food processing in India. Baked products are gaining popularity because of their availability, ready to eat convenience and reasonably good shelf life. Cake is one of the most common bakery products consumed by people in the world. Supplementation of foods is current because of increasing nutritional awareness consumers need to eat high quality and healthy foods – known as functional foods, which contain ingredients that provide additional health benefits beyond the basic nutritional requirements is therefore the trend is to produce specially bakery products need from whole grain flour and other functional ingredients known as health foods. Walnut seed flour has a good potential for use as a functional ingredient agent in bakery products because of its high water absorption capacity, solubility, bulk density and rapid viscosity characteristics. Ragi has best quality protein along with the presents of essential amino acids, vitamin A, Vitamin B and phosphorous. Green gram contains approximately 23.86-27% protein, 1.15%fat, 62.62%carbohydrates, 16.3% fiber, 6.60% total sugars, 9.05%water.This shows that the composite flour in rich in protein and fat and can serve as a protein supplement. The main objective of this research is to formulations of cakes prepared from three different proportions (T_1, T_2, T_3) of wheat, ragi, walnut, green gram flour are given in other ingredients like butter, milk, egg, baking powder, vennila essence were added to each of these formulations of cake preparation. The developed product was analysis of chemical, and sensory evaluation by nine point hedonic scale. In T_2 sample wheat 60%, ragi 20%, walnut 10%, green gram 10%, and nutritious cake has high increase carbohydrate compared T_0 sample it has carbohydrate 28%, protein 8.17%, fat 1.8%, fiber 2.37%, ash 1.56%. The result revealed that the sample T_2 which contain more acceptable in terms of chemical and sensory evaluation of developed product.

Key Words: Cake, walnut, green gram, wheat, ragi

Introduction:

Baking industry is considered as one of the major segments of food processing in India. Baked product are gaining popularity because of their availability, ready to eat convenience and reasonably good shelf life. (Vijay Kumar et al., 2013). Cake is the form of food that is usually sweet and often baked. It supplies body building protein fats and carbohydrates. Cake is normal prepared with refined wheat flour, sweetening agent (sugar). Binding agent, egg ,fat and vanaspati , liquid flavor and some form of leavening agent such as yeast or baking powder. (Dasai et al.,2010). Bakery products are widely consumed and are becoming a major component of the international food market (Kotsianis et al., 2002). Cake is one of the most common bakery products consumed by people in the world. Nowadays, cake manufacturers face a major problem of lipid oxidation this limits the shelf life of their products (Lean and Mohamed, 1999). Bakery products such as cakes particularly those with high lipid content tend to become rancid after prolonged storage owing to the oxidation of polyunsaturated fatty acids (Ray and Husain, 2002;

Smith et al., 2004). Foods containing higher content of polyunsaturated fatty acids are more prone to oxidation (van Aardt et al., 2004).

Supplementation of foods is current because of increasing nutritional awareness among consumers. Supplementation with legumes, cereals and pulses is one way to meet the needs for protein particularly baked foods. Recently, consumers awareness of the need to eat high quality and healthy foods – known as functional foods, which contain ingredients that provide additional health benefits beyond the basic nutritional requirements is therefore the trend is to produce specially bakery products need from whole grain flour and other functional ingredients known as health foods (Jideani and Onwnbali 2009).

Walnut flour has a high amount of protein and essential fatty acid which has a made it serve as a supplement or modifier for other food products. Finger millet (Ragi, Eleusinian coracana) is an important staple food in the eastern and central Africa as well as some parts of India [Majum et al.,2006]. It is rich in protein, iron, calcium, phosphorous, Fibre and vitamin content. The calcium content higher than all the foods grains.Ragi has best quality protein along with the presents of essential amino acids vitamin A, Vitamin B and phosphorous (Gopalan et al.,2004). Green gram contains approximately 23.86-27% protein, 1.15%fat, 62.62%carbohydrates, 16.3% fiber, 6.60% total sugars, 9.05%water. Composite flours have been used extensively in the production of baked goods. In facts several attempts have been made to produce cake from different type of composite flours. In countries where malnutrition poses a serious problem especially among children, composite flours which have better nutritional quality would be highly desirable.(L.C.okpala.,2013).

The development and consumption of such functional foods not only improves the nutritional status of the general population but also helps those suffering degenerative disease associated with today's changing life style and environment. The need for strategic development and use of inexpensive local resources in the production of popular foods such as cakes has been promoted by organization such as the food and agricultural organization (FAO).

This is similar to the earlier finding where protein content of snacks reduced with supplementation with starch based products for wheat flour. (M.O.Oluwamukomi,2011).The formulations of cakes prepared from different proportions of wheat, ragi, walnut, green gram flour are given in other ingredients like butter, milk, egg, baking powder ,vennila essence were added to each of these formulations of cake preparation. Cake samples were prepared by following the procedure. (Singh et al .,2006). The wheat flour, ragi flour, green gram, walnuts supplemented cakes were subjected to proximate analysis such as moisture, protein, fat, fiber and ash content. The principal parts of wheat flour are gluten and starch. Cakes are flour confections they are mostly prepared from wheat flour and other essential ingredients. The consumption of cakes prepared from wheat flour has become very popular is most developing countries of the tropics especially among children and adolescent. (M.A idowu et al.,1996). Walnut flour has a high amount of protein and essential fatty acid which has made it serve as a result of tack of several essential nutrients in the food products.

Cake flour is finely wheat flour made from soft wheat. It has very low protein content between 8% and 10% making it suitable for soft texture cakes the higher protein content of other flour could make the cake dough. Highly sifted cake flour may require different volume amounts in recipes than all purpose. Walnut seed flour has a good potential for use as a functional ingredient agent in bakery products because of its high water absorption capacity, solubility, bulk

density and rapid viscosity characteristics (Nide at.,2010). This shows that the flour in rich in protein and fat and can serve as a protein supplement. The oil from the walnut could serve as a protein supplement. The oil from the nut could serve as a source of energy for seedlings and for the formulation of wood varnish vulcanized oil. (Ajaiyeoba, 2006)

The current study was carried out to study the nutrition rich cake made from wheat flour fortified with powdered Ragi powdered, green gram powdered and walnut. Formulation and developed of nutritious cake product from local and readily available raw material have received a lot of attention in many developing countries due to malnutrition which has been known as a major problem especially to infants as a result of lack of several essential nutrients in the food product.

Materials And Methods:

Raw Materials:

The raw material (Wheat, Ragi, Walnut, Green gram) and minor ingredient (sugar,milk powder, GMS, Vanilla powder, Baking powder) which is used in this study was purchased from local market.

Method:

Preparation of composite flour:

Different composite flour sample were prepared by combining 100%, 80%, 60%, 40% wheat flour, 0%, 10%, 20%, 30% Ragi flour, 0%, 5%, 10%, 15% walnut flour and green gram flour respectively (table 1) showing blends of wheat flour, Ragi flour, walnut flour, and green gram flour used in composite flour formulation.

Sample Trial	Wheat Flour (%)	Ragi Flour (%)	Walnut Flour (%)	Green gram flour (%)
T1	80	10	5	5
T2	60	20	10	10
T3	40	30	15	15

Table No. 1. Composite flour formulation

Methodology:

Not only wheat flour but also other flour types have been investigating for developing cakes of lower cost and better quality in terms of consumer acceptance (Tanya singh et al., 2016). The detailed formulation as per mentioned Table No.1 for the preparation of flour like (wheat flour, ragi, walnut, green gram), eggs, butter, sugar, were the raw material was properly measured according to the ratio required in cake. The wheat, ragi, walnut, green gram were sieved through fine sieves to avoid the dirt and unwanted particles. Meanwhile the oven is preheated at 200^{o}C for 20 min. The weighed sugar and melted butter were beaten properly using beater for 10min. It was further processed by addition of weighed flour and baking powder and again proper beating was done for 10min. The batter obtained was poured in greased baking mould and even setting was done using spreader. After the setting of batter it was baked in preheated oven at 150-1800C for 20min.

Physicochemical Analysis:

Moisture, Fat, Protein, Ash, Fiber and were determined in cake.

Moisture content: Moisture content was determined using the method described in AOAC, 2005. 10 g sample was dried in hot air oven at 105ºC ±1ºC in pre-weight dishes till constant

weight. The dried sample was transferred to desiccators with dishes and cooled to room temperature. The dish was then weighed and moisture content in per cent was calculated from loss of weight.

Ash: 5g of ground sample was taken in a preweighed silica crucible and charred over the heater to make it smoke free. The crucible with the sample was ignited at 600ºC for 3 hours in a muffle furnace. When muffle furnace was slightly cooled, the crucible with ash was taken out, kept in desiccators to cool and constant weight was taken. The difference between the weight of the silica crucible as empty and with ash was the amount of total ash. The percent ash was calculated (AOAC , 2005)

Crude fat and crude protein: Crude fat and crude protein were determined according to the method given in AOAC (2005).

Crude fiber: Two gram of sample was put into 250 mL conical flask and 1.25% Sulfuric acid solution was added. The sample was heated about 30 min and was filtered using vacuum filter and washed until traces of acid was undetected using pH paper. The Whatman paper 5B which pore size 125 micrometer was placed in the Buchner flask. After that the acid extracted was transferred into 250 mL conical flask and 1.25% NaOH solution was added. Digest the contents for half an hour, filter and wash free of alkali using hot distilled water. The residue was transferred to crucibles, weighed, dried in oven overnight at 105ºC, and then placed in a mufflefurnace at 600 ºC for 3 hrs. The loss in weight after ignition represents the crude fiber in the sample (AOAC 2005).

Quality evaluation of prepared cakes

Crude protein, moisture content, fiber content, and external (outer appearance), total phenolic contents of the product were evaluated.

Evaluation Of Organoleptic Properties Of Prepared Cakes:

Four different formulation of cake flour (Table. 01) and prepared cake were subjected to evaluate sensory properties. Thus, Prepared cakes were served for 15 trained panelists and evaluated for external appearance, internal appearance, colour, aroma, taste, texture and overall acceptability using 5 point Hedonic scale (5-like extremely, 4-like moderately, 3-neither like nor dislike,2-dislike moderately, 1-dislike extremely). The selected best formula was tested for physicochemical characteristics and its storability of cake product.

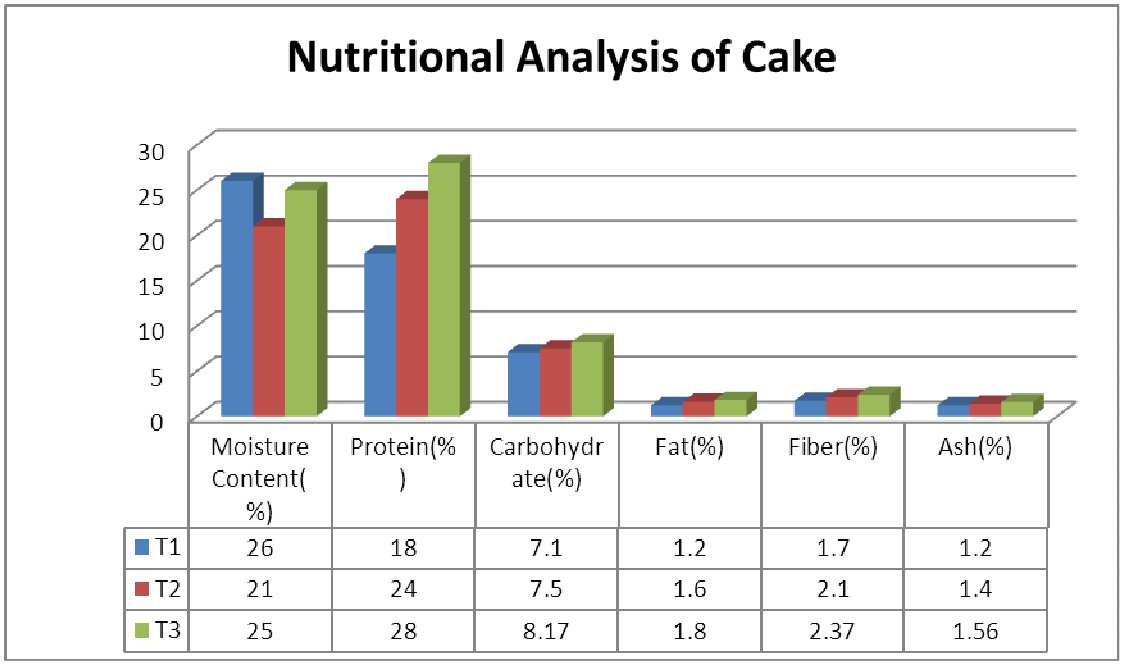
Result And Discussion:

Chemical Analysis Of Ready To Bake Cake:

The data obtained from the proximate analysis of three different flour formulated cake are given in the Table 02. Slight increase in moisture content was observed in all treatments. Moisture contents of different cake flour formulation were in the range of 9-11% and lowest moisture level was recorded by mixture (T2). The total protein, carbohydrate, fat, fiber and ash content of formulated sample T2 was higher value as compare to T1& T2.(Table No.2). Result revealed that sample formulation (T2) was higher acceptable result as per sensory evaluation panelist.

Nutritional Analysis Of Cake:

Composition	T1	T2	T3
Moisture Content(%)	26	21	25
Protein(%)	18	24	28
Carbohydrate(%)	7.1	7.5	8.17
Fat(%)	1.2	1.6	1.8
Fiber(%)	1.7	2.1	2.37
Ash(%)	1.2	1.4	1.56



	Moisture Content(%)	Protein(%)	Carbohydrate(%)	Fat(%)	Fiber(%)	Ash(%)
T1	26	18	7.1	1.2	1.7	1.2
T2	21	24	7.5	1.6	2.1	1.4
T3	25	28	8.17	1.8	2.37	1.56

Conclusion:

Supplementation of foods is current because of increasing nutritional awareness among consumers. Supplementation with legumes, cereals and pulses is one way to meet the needs for protein particularly baked foods. Recently, consumers' awareness of the need to eat high quality and healthy foods – known as functional foods, which contain ingredients that provide additional health benefits beyond the basic nutritional requirements are therefore the trend, is to produce specially bakery products need from whole grain flour and other functional ingredients known as health foods. So, main research focuses on the development of healthy cake in the incorporation of composite flour in three different proportions. The result conclude that sample T_2 contains wheat 60%, ragi 20%, walnut 10%, green gram 10%, and other ingredient was prepared nutritious cake has high increase carbohydrate compared T_0 sample it has carbohydrate 28%, protein 8.17%, fat 1.8%, fiber 2.37%, ash 1.56%. The result revealed that the sample T_2 which contain more acceptable in terms of chemical and sensory evaluation of developed product.

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Studies on Zooplankton Diversity in Bennetura Dam, Murum, Dist-Osmanabad (M.S.)

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Abstract :

Zooplankton study was carried out in Bennetura dam, Murum Dist-Osmanabad (M.S.) from February, 2021 to January, 2022. The Bennetura dam is situated in the heart of Murum city. During the studies total numbers of Zooplanktons were counted. The different species of Zooplankton were also identified. The Zooplankton in water body belongs to four main taxonomic groups such as Rotifers, Copepod, Ostracoda and Cladocera, out of which Rotifer was dominated. About 21 Zooplankton species were recorded out of which 12 Rotifera species, 3 Copepoda species, 2 Ostracoda species and 4 Cladocera species were found the Rotifera branchionar was dominated among Zooplankton in the Bennetura dam.

Keywards: Zooplanktons diversity, Seasonal population density, Bennetura dam, Murum

Introduction :

Zooplanktons are the most fascinating groups of micro-organisms found in aquatic body. The zooplankton in water body belongs to four main taxonomic groups such as Rotifers, Copepod, Ostracoda and Cladocera are dominant represented groups of crustacean in fresh water habitat. They are abundant in the shallow areas but only few species abundant in the open water. They play vital role as primary consumers. The occurrence and abundance of Zooplankton in a water body depends upon it, productivity which in turn is influenced by physic chemical parameters and the level of nutrients. Zooplankton, occupies an intermediate position in food web, many of them feed on algae and bacteria and in turn are fed by numerous invertebrates and fishes. The literature on zooplankton and biological indicators of water quality has been renewed by many workers such as Mahajan (1981), than and Seshagiri Rao (1981) and Arova (1987) have pointed out to rotifer species indicating clean, polluted and heavily polluted water. Zooplankton has been used as an indicator for monitoring the water quality tropic status and pollution level. The zooplanktons which play a role of converting phytoplankton in food suitable for fish and aquatic animals. They can also play an important role in indicating the presence or absence of certain species of fishes or in determining the population densities. Zooplankton has been a subject of study in India and several workers have worked in it, such as Ganpati (1943), Jyoti and Sehgal (1979), Sharma and Patanik (1985), Chandrashekar and Kodarkar (1996) Pulle (2000), Narsimha Rao and Jaya Raju (2001), Pawar and Madlapure (2002), Dhimdhime and Ambore (2003), Patil et. Al (2005) Madhusudhan et. Al. (2005).

The paper deals with studies on zooplankton diversity in Bennetura Dam, Murum qualitative and quantitative analysis of zooplankton diversity were carried out.

Table no. Monthly Variation in Zooplankton in Number Per list 2021-2022 at Station A

Sr. No	Components	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Total
1	**Rotifera**	7	10	9	12	14	5	2	6	7	10	8	8	98
2	**Copepoda**	5	6	10	8	4	2	1	3	6	8	10	10	73
3	**Ostvacodes**	5	4	4	2	1	6	12	7	10	6	6	4	67
4	**Cladocera**	4	4	5	3	2	8	10	4	10	8	6	5	69
	Total	21	24	28	25	21	21	25	20	33	32	30	27	307

Table no. Monthly Variation in Zooplankton in Number Per list 2021-2022 at Station B

Sr. No	Components	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Total
1	**Rotifera**	6	10	11	12	11	6	3	6	7	10	10	8	99
2	**Copepoda**	4	6	11	8	5	2	1	2	4	8	10	10	70
3	**Ostvacodes**	5	4	4	2	1	6	10	8	10	6	6	4	62
4	**Claducera**	4	4	3	2	1	8	12	4	10	8	5	5	66
	Total	19	24	28	24	18	22	25	20	31	32	31	27	297

Table no. Monthly Variation in Zooplankton in Number Per list 2021-2022 at Station C

Sr. No	Components	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Total
1	**Rotifera**	4	7	6	11	6	7	4	4	7	10	8	8	82
2	**Copepoda**	3	6	10	8	1	2	1	3	10	10	10	6	70
3	**Ostvacodes**	4	2	5	2	8	5	8	10	10	4	4	4	66
4	**Claducera**	8	2	4	1	2	4	4	4	4	10	10	10	63
	Total	19	17	15	22	17	18	17	21	31	34	32	28	281

Materials And Methods:

Water sample and zooplankton samples were collected from Bennetura dam, Murum water body for a period of one year. From February, 2021 to January, 2022, at selecting three stations. Station A, Station B, Station C. the plankton net of mesh size 30 mm was swept through subsurface and samples were transferred to 100 ml capacity plastic bottles. The samples were preserved using 4 % formalin solution, standard key and other literature was used for identification of different species Torapi (1980), APHA(1989), Pennak (1989). The number of planktons per litre was determined using Sedgwick Valter cell by taking 1 ml of approximately diluted samples and the observation was represented number of zooplankton per liter.

Result And Discussion :

The total number of Zooplankton and monthly average of Zooplankton number per litre were recorded in table and illustrated in the figure. I. it was noted that the total number of zooplanktons varied from 20 to 33 number per litre at station A, 18 to 32 number per litre at station B and 17 to 34 number per sites at station C during the year 2021-2022 i.e. Feb, 2021 to Jan, 2022 Kumar (1996) recovered zooplankton at mangev 17 to 137 per Liter in Ganga River in Bihar, M. Baburao (1997) found the domination of zooplankton over phytoplankton in Himayatnagas Lake Hyderabad. Pawar and Madlapure (2002) recorded 28 genera of zooplankton from Sirur dam near Mukhed in Nanded district. Sirsat and Ambore (2004) studies the zooplanktons form fresh water pond at Dharmapuri in Beed district, Maharashtra.

A. Rotifera :

The monthly average and total number of rotifers varied from 2 to 14 number per lit. at statin A, 3 to 12 number per lit. at station B and 4 to 11 number per lit. at Station C. Rotifera is one of the oldest group and a minor phylum of invertebrates are commonly termed as "Wheel" animalcules because of their characteristic wheel organ or corona that bears of their close resemblance to a pair of revolving wheels. The rotifers are being considered as the most important soft bodied invertebrates (Hulchinson), (1967). Most of the rotifers are primary consumers feeding on various sized phytoplankton's some of them feed on detritus element and bacteria, while few are raptorial predators (Edmondson) 1965. Rotifers constitute nutritious food item to fish.

B. Copepoda :

The monthly average and total number of copepods varied from 01 to 10 number per lit. at station A and 01 to 11 per lit. at station B and again 01 to 10 number per lit. at station C. Allan (1976) observed that there is inverse relationship between high population of rotifers and Cladocera low population of copepod during winter may be due to the feeding pressure of stocked fish on the latter and if copepod are removed than there is sudden increase in the population of rotifer and Cladocera. Usha Choubey 1997 found high density of copepods during October water temperature and availability of food organism effect the copepod population.

C. Ostracoda :

The monthly average and total number of ostracode varied from 01 to 12 number per lit. at station A, 01 to 10 number per lit. at station B and 01 to 11 at station C per lit. Ostracode species are bivalve and have shape like small seeds Ostracodes are green coloured species, like with algae while grey coloured species, live with ooze. The abundance of these provides good food for aquatic organisms. Water temp. and availability of food organisms may effect the ostracoda population. Tohapi, 1980 found the highest population of ostracoda during monsson. Might be due to abundance of fine detritus to which omnivorous organisms feed over during monsoon from they natural benthic habital and bacteria mould and algae as food. Ostracoda population was found to be maximum while other zooplanktons were minimum during monsoon may be due to dilution effect (Bais and Agarwal, 1995).

D. Cladocera :

The monthly average and total number of cladocera varied from 02 to 10 number per lit. at station A and 02 to 08 per lit. at station B and again 01 to 10 number per lit. at station C. The Cladocera compunents of zooplankton play important role in the benthic throphodynamic. Most of cladocerans are primary consumers and feed on microscopic algae and fine particulate matter in the detritus. Thus influencing cycling of matter and energy in the benthos. Usha Choubey, 1997 found the density of cladocerans is high in the month of June and low in December. Temperature and availability food may affect their numbers.

List of zooplankton species.

Rotifera :

Asplanchana sp, Asplanchana interme, Branchionas duragae, B. forficula, B. pallas, Angularis, B. calyciflorus, B. calyciflorus vandoreas, B. rubens, Filina borg, F. terminals, F.longiseta, Keratella bory, Keratella quadrata.

Copepoda : Argulus foliceous, Cyclops, Mesocyclops sps, Microcyclops Phyllodiopionus sps.

Cladocera : Alonarectangula vichavdi sars, Ceriodaphnia, Laticaudata, Leriodaphnia, Cornula, Moina, Moina brachiate juvine, Moina micrura.

Ostracoda : Cypris, stenocypris, strandesia.

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A Survey of Spiders Diversity in Three Agricultural Field Areas : The First Report of Tamil Nadu in India

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Abstract:

The present article deals with the fauna diversity of the spiders in Agricultural areas. A total of 19 species under 9 genera were recorded in Anichampalayam site-I (S-I), Nanjai Edayar site-II (S-II), and Pandamangalam site-III (S-III), Namakkal District, Tamil Nadu in India. Maximum 32% of spider species were recorded in Araneidae, followed by Tetragnathidae, Salticidae, Sparassidae, Oxyopidae, Clubionidae, Gnaphosidae, Hersiliidae and Lycosidae. A very high number of spider species was found in site III (504), followed by site II (404), and site I (376). An extensive survey for these spiders is required in almost 3 sites particularly in those where these jumping spiders are either not recorded. Despite the spiders are the most diverse group of predators and is crucial to the health of terrestrial ecosystems, none of the species recorded in India is listed in IUCN Red List.

Keywords: spider, diversity, agriculture field, species abundance, species richness.

1. Introduction:

Rice (Oryza sativa) is an essential food source for more than 50% of the world population with an annual yield of more than 700 tons roughly (Center Africa Rice, 2011; Seck et al., 2012). India, China, Thailand, Bangladesh, Philippines, Pakistan, Indonesia, USA and Vietnam are among the major rice producers (Mehmood et al., 2021). Oerke, 2006; Xie and Yang, 2018 and Savary et al., 2019 reported that from the past years, the productivity of rice at the global level is at risk due to different crop diseases and pest infestations. Insect pests of rice cause a loss of 200 million tons every year (Nasiruddin and Roy, 2012; Singh and Singh, 2017). Synthetic pesticides are extensively used to control the outbreak of pests (Karunamoorthi and Mohammed, 2012; Weng and Black, 2015). Their unnecessary use of pesticides causes negative impacts on human health, environment and agriculture production by rigorously damaging the flora and fauna (Houbraken et al., 2016; Rosic et al., 2020). John and Shaike (2015) reported that the natural balance between pests and predators has been greatly disturbed due to the careless use of pesticides which are accountable for the non-target killing of natural enemies.

Spiders are the natural predators present abundantly in the rice ecosystem and limit the population of other insect pests (Maloney et al., 2003; Thomson and Hoffmann, 2010; Radermacher et al., 2020). They are tremendous predators due to wasteful killing, high reproductive rate, functional and numerical response and their capacity to survive under conditions of food shortage (Nyffeler and Birkhofer, 2017; Michalko et al., 2019). Tyagi et al. (2019) testified that accurate identification of spiders is needed to differentiate the native spider fauna from the invasive ones by creating a barcode reference library. Different diagnostic characters like eye and epigynal patterns are used for species-level identification (Barrett and Hebert, 2005). Morphology based identification is quite difficult due to the unavailability of literature and time consumption (Ball and Armstrong, 2006). Robinson et al., 2009 and Hamilton

et al., 2011 investigated that the absence of clear distinguishing characters and sexual dimorphism dare the authenticity of phenological identification of spiders. So, there is a critical need to introduce quick, economical and undisputed approaches to investigate the spiders taxonomically (Hebert and Gregory, 2005; Fontaneto et al., 2009; Iftikhar et al., 2016).

The current study aimed to document the undescribed fauna of spiders from the Namakkal District of Tamil Nadu in India.

2. Materials And Methods:

2.1. Collection of spiders:

Live spiders were sampled from different agricultural fields across the Namakkal district including Anichampalayam site-I (S-I), Nanjai Edayar site-II (S-II) and Pandamangalam site-III (S-III), Tamil Nadu, India. The sample collection was done from 2019 to 2020 during the rabi season using different sampling techniques like visual search and sweep netting (Robinson et al., 2009; Tyagi et al., 2019).

2.2. Sampling sites:

Three sampling sites were used for the study namely S-I (Latitude- 11.1006° N; Longitude- 78.0213° E), S-II (11.0980° N; 78.0345° E) and S-III (11.1028° N; 78.9653° E). There were minor variations in the agronomic practices at all sampling sites. These sampling sites were monoculture rice fields surrounded by grassy strips/bunds (Fig. 1).

2.3. Storage and preservation:

Insects were collected in plastic jars (4×6 inches) containing 75% ethanol. Collected specimens were brought to the laboratory in the Department of Zoology, Kandaswami Kandar's College, Paramathi Veiur, Namakkal District of Tamil Nadu. After washing with alcohol spiders were transferred to clean glass vials (20 ml) with the help of forceps for morphological study containing Odd man's solution (70% ethanol, 15% glacial acetic acid and 15% glycerol).

2.4. Data analysis:

Calculations of spider diversity and dominance were based on adult individuals only. The collected data were subjected to Diversity Index (Species richness [S], Evenness and Shannon Index) by PAST statistical software. To find out the relationships between spiders and different abiotic and biotic factors, correlation analysis was performed. Because the data were not normally distributed (Kolmogorov-Smimov test), Spearman's rank correlation method requires at least seven pairs of observations (Fowler et al., 1998), only the most abundant spider species were included in the analysis. The relationships were analyzed between individual spider species or spider diversity indices and different vegetation and non-vegetation variables. The statistical significance of the correlation analysis was checked by comparing coefficient rS with the obtained p value. PCA was performed by Palaeontological Statistics (PAST) version 3.06

3. Results and Discussion:

3.1. Percentage composition of spider groups:

In the present investigation, 1079 spiders were identified from the selected agriculture area and they are representing 19 species that belong to 9 families. Out of the total catch, 148 spiders were immature and identified up to the genus level due to the unavailability of keys for juvenile identification. However, the remaining 1136 specimens were mature. Several diversity indices were used in the present study to measure the spider species diversity. The percentage composition of spider diversity in the agriculture field was calculated, maximum of 32% of

spider species were recorded in Araneidae, followed by Tetragnathidae (16%), Salticidae (11%), Sparassidae (11%), Oxyopidae (10%), Clubionidae (5%), Gnaphosidae (5%), Hersiliidae (5%) and Lycosidae (5%) and they were shown in Fig. 2. Site III showed total species of 504, followed by site II 404 species and site I 376 species in the total number of species 1284 (Table 1).

Araneidae family was found to be the 6 species such as A. catenulata (Fig. 4a), A. anasuja (Fig. 4b), A. picta (Fig. 4c), A. ventricosus (Fig. 4d), A. diadematus (Fig. 4e) and N. crucifera (Fig. 4f) abundant followed by Tetragnathidae family 3 species (T. elongate, T. guatemalensis and T. laboriosa) (Fig. 5 a, b, c), Salticidae family 2 species (T. dimidiata, T. elegans) (Fig. 6a, b) and Sparassidae family 2 species (H. venatoria, O. millet) (Fig. 7a, b), Oxyopidae family 2 species (P. viridans, O. macilentus) (Fig. 8a, b), Clubionidae family (C. terrestris) (Fig. 9), Gnaphosidae family (S. montanus) (Fig. 10), Hersiliidae family (H. caudate) (Fig. 11) and Lycosidae family (H. aspersa) (Fig. 12).

3.2. Ecological Indices (Diversity indices):

In the present investigation, various diversity index parameter was studied for the spider diversity which was noted in the 3 different agriculture sites. According to the observation, Richness varies from 16 to 18, True Diversity ranges from 12. 5 to 14, Shannon Entropy observed from 2.6268 to 2.7382 and Simpson Dominance range from 7.20% to 8.00%. During this study, compared to all the study areas a maximum species richness was observed in Site III (Table 2).

3.3. Dominance Plot and Group average in the study area:

The percentage dominance of the spider community was plotted based on their rank individually and cumulatively. The highest number of species was found in site III at this Pandamangalam (Fig. 3).

3.4. The principal component analysis (PCA):

In the present investigation, the principal component analysis was employed to study variables of spider diversity among selected agriculture sites and the results were represented using a biplot. In the present study, species variables were developed using three principal components. The result showed the influence of different spider species diversity with three selected study sites (Site I, II and III). Angular distance and length of the arrows indicated the positive and negative correlation with the variables assemblage. Figure demonstrated that site III influences greater diversity of spiders than Site I and II (Fig. 13 and 14).

4. Discussion:

Generally, spiders are considered ingenious predators and they can regulate the huge number of pests and they play a major role in the paddy field pest management. Few works related to spider diversity in paddy plantations were recorded including Pathak and Saha (1998); Ambalagan and Narayanasamy (1999); Bambaradeniya and Edirisinghe (2001); Bambaradeniya et al. (2004); Patel et al. (2004); Vijaykumar (2004). During the current study we compared the authenticity identification of spiders from three village sites, Namakkal district of Tamil Nadu in India with eye patterns approaches reference library for spider fauna of Tamil Nadu, India.

The result obtained from the present investigation was confirmed that paddy crops served as a reservoir for the spider species. About 1079 spiders were identified from the selected agriculture area and they are representing 19 species that belong to 9 families. Ash faq et al. (2019) reported nearly 38 distinguished morphospecies of spiders. One of the difficultly faced

during this study was the accuracy of the morphological examination. Nearly 148 spiders were immature and identification key was not available for those spiders and deprivation of diagnostic characters of juvenile spiders could be the possible reasons for the present less accuracy of morphological evaluation. Another important factor that plays a role in spider diversity was habitat complexity and this reason was also stated in many research findings (Dobel et al., 1990; Gunnarsson, 1990). Paddy field ecosystems were generally very simple and relatively few substrates were required for web building and hunting and added to it the complexity of increased time as the plants grow and this could be a reason spider species abundance in the present study. According to Stokmane and Spungis (2014), diversity indices suggested that the grass-dwelling spider community consists of few abundant species and numerous rare species In another study, Ambalgan and Narayanasamy (1999) concluded that both spider abundance and richness is linked to the various phase of rice growth. Spungis (2005) was the one reported Latvia spider species in the year 2004 and this was followed by Cera et al., (2010). In the present study, Araneidae was noted as a dominant family in the selected study area and this was correlated with the finding of Manju et al. (2005) and Shegokar (2012). According to the observation of Tiwari and Singh (2021), only 3 species of spiders are distributed widely; Dendrolycosa gitae (11 Indian states, 1 Union territory), Nilus albocinctus (8 Indian states, 1 Union Territories), and Perenethis venusta L. (8 Indian states). In another study, family of Araneidae constituting 4 species from 3 genera in Mannavan Shola Forest, in Kerala. The increased spider population belongs to Araneidae and Tetragnathidae (orb-web spiders) could be due to mixed vegetation of the forest, which provides enough space to build webs of different sizes and protection from predators (Sudhikumar et al., 2005). Further, vegetation structure has been hypothesized to influence spiders diversity, but this impact may present in Specific subgroups or guilds within spiders (Rodrigues et al., 2014). Nevertheless, there were quite a lot of associations between spiders and individual plant species. The DCA showed quite a similar pattern-some of the individual plant species were fairly important for spider communities. These reports partly support research by other authors (Uetz, 1991; Pozzi et al., 1998; Jimenez-Valverde and Lobo, 2007; Hore and Uniyal, 2008) who have found that vegetation structure is one of the major habitats features explaining spider species composition.

In addition, Araneidae population showed consistent increasing trends among the populations of immature and adults from January to August (Tahir et al., 2009). In Estonia, the investigation surveyed different mire types (including fens, transitional mires and bogs) but these data are quite old materials that were collected by a sweep net from 1947 to 1976 (Vilbaste, 1980). A total of 32 species were discovered from a limited area of Pune University (Wankhade et al., 2012), and out of the 252 genera from the Indian region (Manju et al., 2005), 38 genera are observed in Sellappampatty village. Similar spider genera were recorded in the other Indian spider studies viz., 33 genera in Andaman and Nicobar Islands, 41 genera in Sikkim, 47 genera in Calcutta, 40 genera and 51 species in Mangalavanam, Kerala, India (Tikader, 1977; Tikader et al., 1981; Sebastian et al., 2005).

5. Conclusion:

Further study will focus on some other sampling periods and growing seasons to evaluate the spider diversity of Tamil Nadu. In addition, our sampling method was restricted only to eyes patterns of spiders, other collection methods are required to be used in future studies to obtain a more complex overview of the spider fauna of the studied habitats. The present study may be

considered more like an eyes pattern in morphological studies, and the topic deserves future investigations because there is still a lot to learn about spider fauna.

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Table 1. Check list of spider species in three different sites of Namakkal district during 2020 to 2021

Family	Species	Site I	Site II	Site III	Total
		No. of *Sp.*	No. of *Sp.*	No. of *Sp.*	
	Argiope catenulate	+ (14)	+++ (53)	++ (32)	99
Araneidae	*Argiope anasuja*	++ (20)	++ (24)	+++ (49)	93
	Argiope picta	+++ (46)	+++ (41)	+++ (40)	127
	Araneus ventricosus	+++ (42)	++ (23)	+++ (45)	110
	Araneus diadematus	++ (27)	++ (30)	++ + (52)	109
	Neoscona crucifera	++ (23)	+++ (41)	++ (27)	91
Clubionidae	*Clubiona terrestris*	++ (18)	+ (6)	++ (16)	40
Gnaphosidae	*Sergiolus montanus*	+ (8)	-	+++ (41)	49
Hersiliidae	*Hersilia caudate*	+ (5)	++ (18)	+ (8)	31
Lycosidae	*Hogna aspersa*	++ (36)	+ (13)	++ (32)	81
Oxyopidae	*Peucetia viridans*	+ (9)	++ (16)	++ (17)	42
	Oxyopes macilentus	++ (16)	+++ (36)	-	52
Salticidae	*Telamonia dimidiata*	+++ (45)	-	+ (10)	55
	Telamonia elegans	++ (21)	-	+++ (48)	69
Sparassidae	*Heteropoda venatoria*	-	+++ (37)	++ (15)	52
	Olios millet	-	++ (18)	++ (16)	34
	Tetragnatha elongata	++ (13)	+++ (31)	+ (10)	54
Tetragnathidae	*Tetragnatha guatemalensis*	+ (6)	+ (8)	+++ (36)	50
	Tetragnatha laboriosa	++ (27)	+ (9)	+ (10)	46
					1284

+++ = highly presence, ++ = normal presence, + = low presence, - = absence,

Table 2. Diversity index of spider diversity

Index	Site 1	Site 2	Site 3	Total
Number of Classes *N*	19	19	19	19
Richness *R*	17	16	18	19
Berger Parker Index *pi*max	13.30 %	13.10 %	10.30 %	9.90%
Shannon Entropy[1)] *H* (nat)	2.6727	2.6268	2.7382	2.8597
Shannon Entropy[1)] *H* (bit)	3.8559	3.7897	3.9504	4.1256
Number Eq. ^1D (True Diversity)	14.5	13.8	15.5	17.5
Shannon Equitability *H*/ln*N*	90.80 %	89.20 %	93.00 %	97.10 %
Simpson Dominance *SD*	7.80%	8.00%	7.20%	6.20%
SD (unbiased - finite samples)	7.50%	7.80%	7.00%	6.10%
True Diversity ^2D (Order 2)	12.8	12.5	14	16.2
Gini-Simpson Index 1-*SD*	92.20 %	92.00 %	92.80 %	93.80 %
Gini-Simpson Equitability	**97.30 %**	**97.10 %**	**98.00 %**	99.00 %

Fig. 1. Selected Study Area for Spiders diversity

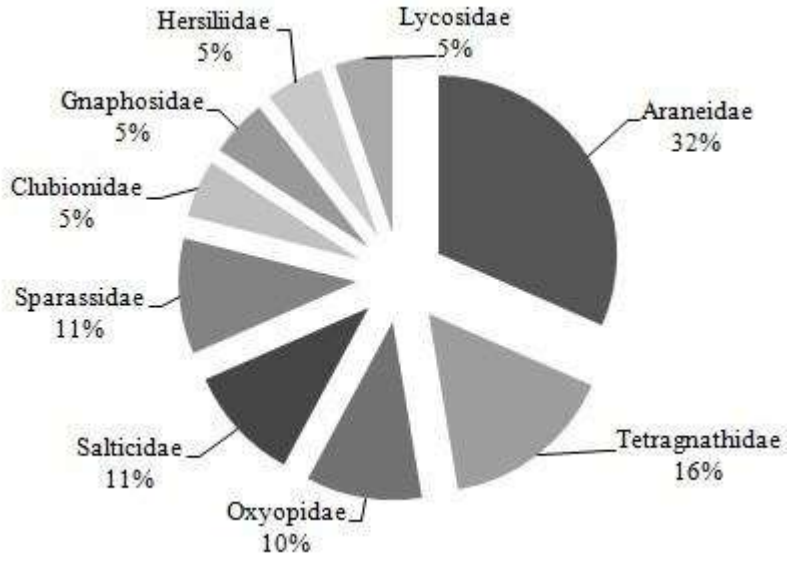

Fig. 2. Percentage composition of the different classes of Spiders – Pie chart

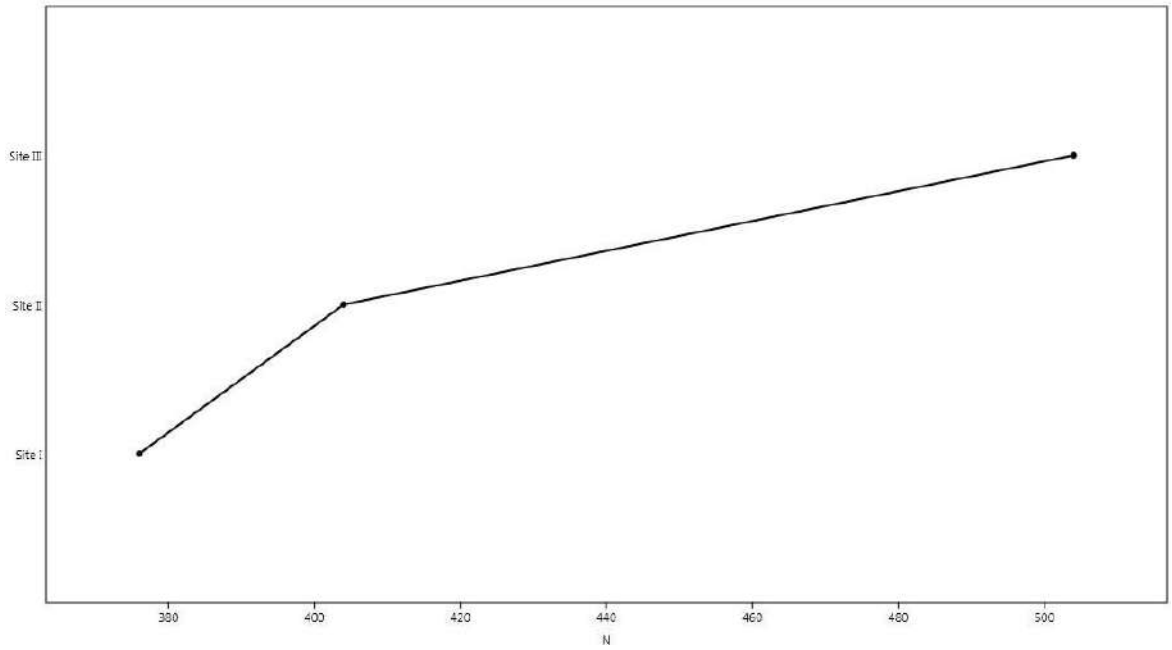

Fig. 3. Dominance Plot in all the selected study areas

Fig 4. Araneidae family A. catenulata (Fig. 4a), A. anasuja (Fig. 4b), A. picta (Fig. 4c), A. ventricosus (Fig. 4d), A. diadematus (Fig. 4e) and N. crucifera (Fig. 4f)

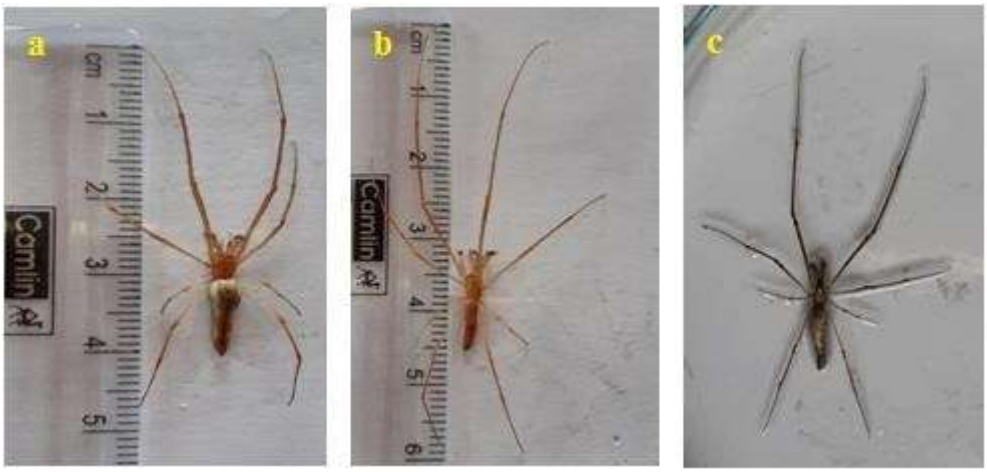

Fig 5. Tetragnathidae family - T. elongate (Fig 5a), T. guatemalensis (Fig 5b) and T. laboriosa (Fig 5c)

Fig. 6.Salticidae family T. dimidiate (Fig 6a), T. elegans (Fig 6b)

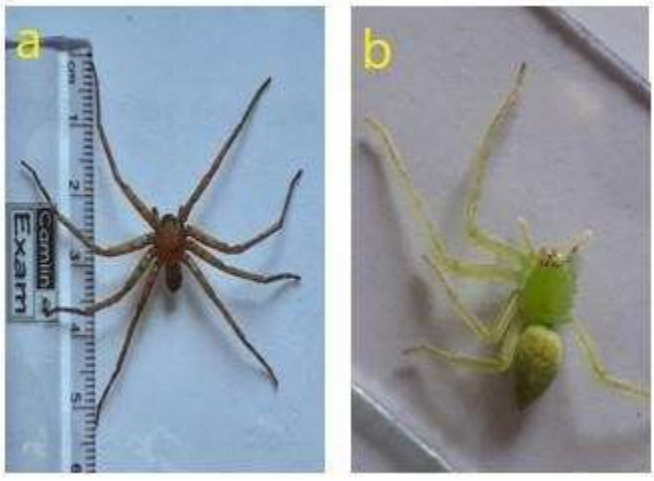

Fig. 7.Sparassidae family H. venatoria (Fig 7a), O. millet (Fig 7b)

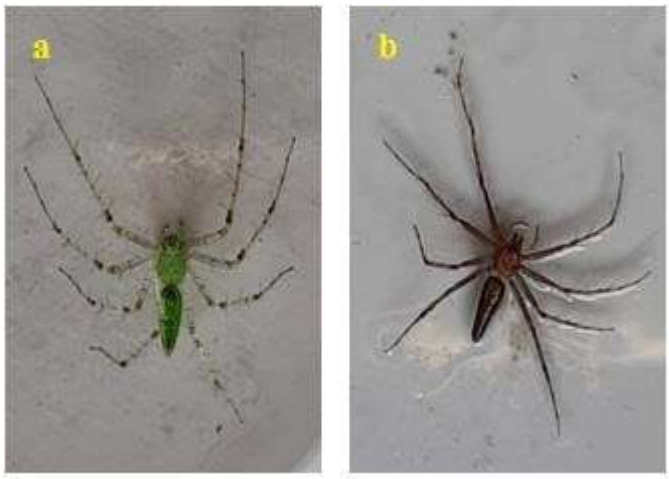

Fig. 8.Oxyopidae family *P. viridans* (Fig 8a), *O. macilentus* (Fig 8b)

Fig. 9. Clubionidae family (C. terrestris)

Fig. 10. Gnaphosidae family (S. montanus)

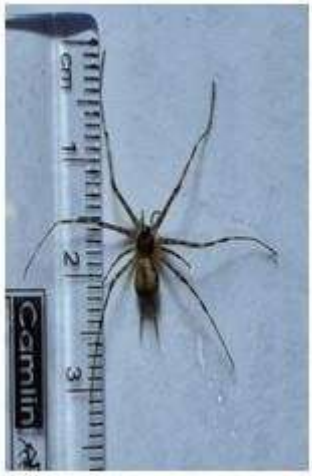

Fig. 11. Hersiliidae family (*H. caudate*)

Fig. 12. Lycosidae family (H. aspersa)

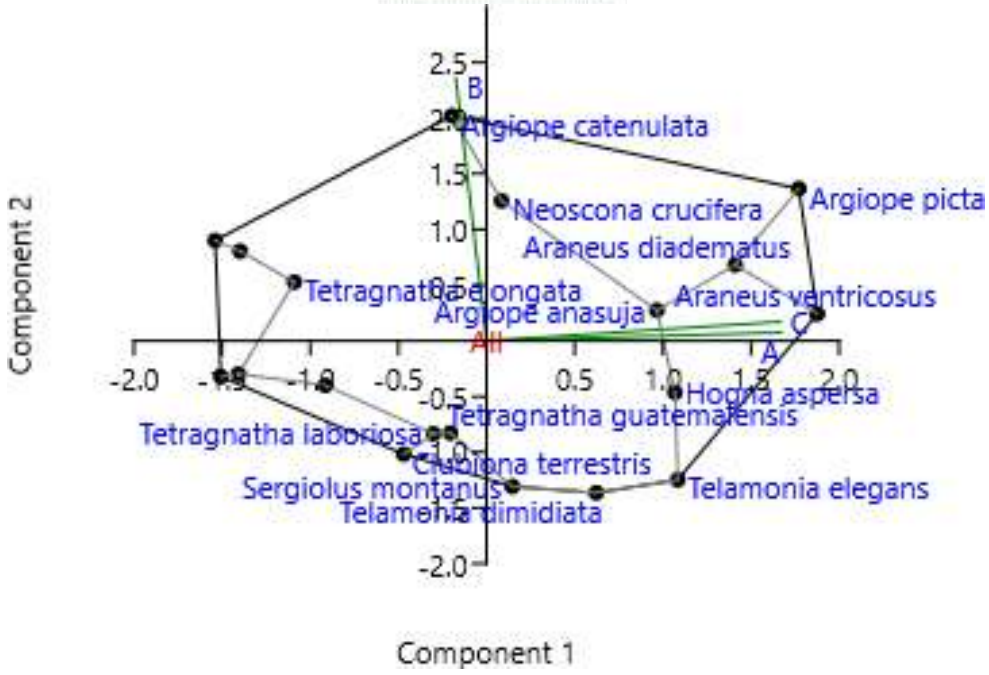

Fig. 13. The principal component plot of Sites I and II

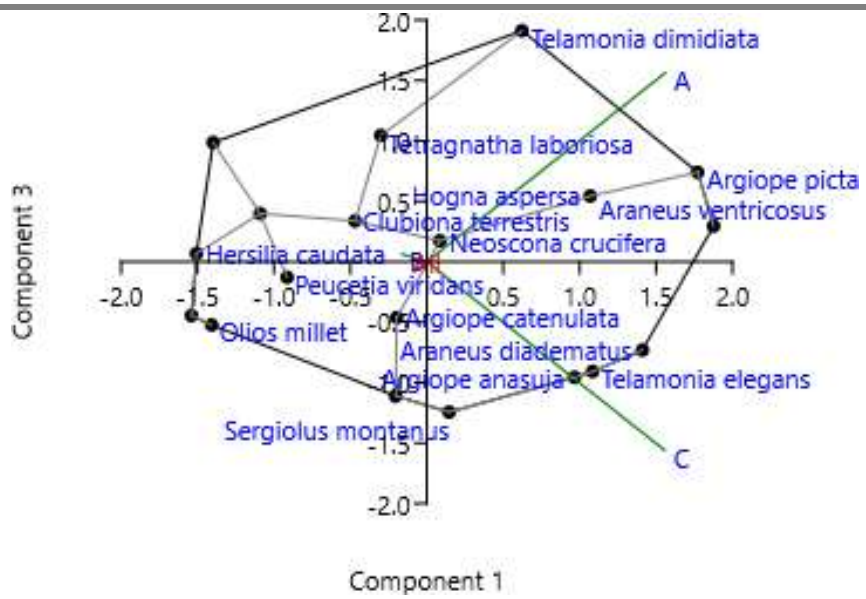

Fig. 14. The principal component plot of sites I and III

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Papaya Mealybug and its Management

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Abstract:

A survey was conducted in the village Baragaon Nandur, from Ahmednagar District, Maharashtra 413705, India. A total number of 2 Papaya farms were visited with each farms having more than 20 plants.The papaya mealy bug, Paracoccus marginatus Williams and Granara de willink (Hemiptera : Pseudococcidae), is recorded from the oriental region for the first time, where it was found in Indonesia (java) and India (Tamil Nadu) in 2008. Papaya mealybug is a polyphagous pest that damages many tropical crops. A native of central America, it spread to the Caribbean region and South America in the 1990s; since then it has been accidentally introduced to some islands in the Pacific region. The distribution, host range and characteristics of the mealybug are summarized. It's host range includes more than 60 species of plants including Papaya, Hibiscus, range in vegetables, fruits, flowers, ornamental crops and weeds. It includes agricultural and horticultural crops, trees in Tamil Nadu state of India during 2009-2010. In present investigation was conducted during the spring season. The plant was diagnosed the mealybug. During June-July period it was observed in Papaya plant. In Baragaon Nandur, Maharashtra 413705, India it was observed that white colour mealybug are spread all over the plant. The controlling of mealybugs the chemical controls method are more effective and fast method.

Keywords: Mealybug, Paracoccus marginatus, Baragaon nandur,polyphagus

Introduction:

Papaya mealy bug (Paracoccus marginatus) causes severe economic damage in cassava yield.[2] The mealy bugs are white to pink in colour and measure 3-4 mm in length. Adult females are oval and somewhat round, dark green to almost black in appearance. mature female lays eggs in an egg sac of white wax, usually clusters on the twigs, branches of the host plant.[8] Reasons faster spread of mealy bug – A white wax and flour- like substance around the body of the pest is the reason for not able to control this pest easily. This pest spread rapidly due to lack of natural enemies of these pests and it is a foreign originated insect. Also, reproduction of this mealy bug is 15 times a year. An insect lays between 500 and 600 eggs a year. The population is growing at a higher level, thus causing great damage.

They are found in colonies. It was causing the harm to the Papaya plant as well as hibiscus plant. It is small polyphagus sucking insect with pest status that attacks several genera

of host plants.[7] The infection of Papaya adversely affects on the plant growth and leaf yield as well as fruit quality.[9]

The Papaya mealybug feeds on the sap of plants by inserting its stylets into the epidermis of the leaf, as well as into the fruit and stem. In doing so, it injects a toxic substances into the leaves. [6] The result is chlorosis, plant stunting, leaf deformation, early leaf and fruit drop, a heavy build-up of honeydew, and death. Papaya mealy bug has only been recorded feeding on areas of host plant that are above ground, namely the leaves and fruit.[4]Ecologically occurring predators of mealybugs include lady beetles, green and brown lacewings, spiders. Also keep ants out of mealybug- infested areas and plants because ants protects mealybugs from their natural enemies. [11]

Materials And Method:

A survey was conducted in the village Baragaon Nandur, Maharashtra 413705, India. A total number of 2 Papaya farms were visited with each farms having more than 20 plants. In present investigation was conducted during the spring season. The plant was diagnosed the mealy bug. During June-July period it was observed in Papaya plant white colour mealy bug are spread all over the plant. They are found in colonies.

Management:

a. **Chemical control-** A numbers of chemical are available to control mealybugs, although none are currently registered specifically for control of Papaya mealybug.[3] Active ingredients in registered pesticide formulations include Acephate, Carbaryl, Chlorpyrifos, Diazinon, Dimethoate, Malathion. It also including soap water& detergent spray effective to control the mealy bug.[10]

Products to control mealy bugs on Papaya:

olecule	osage per litre of water	rade name
iomethaxom	5 gm	nant or Caper
imethoate	gm	afgor
upyradifurone	ml	vanto

Table 1.Sprays

olecule	osage per plant	rade name
artap Hydrochloride 4 % G	)-30 gm/Plant	aldan 4G
% Granular formulation of Carbofuran	5-50 gm/Plant	uradan 3G

Table 2.To apply under the infested tree on the soil

b. **Cultural and Mechanical Control:**

- Sticky bands or a band of insecticide or alkathene sheet applied to around the trunk of papaya plants.
- These method is useful for to preventing movement of crawlers and ants. The already present ant colonies are destroyed.
- To proper sanitize farm equipment before using uninfected crops and sanitize the equipment tools use 1% bleach solution or high pressure water to clean the tools.
- When infection of papaya mealybugs are less they may be picked off by the hand.
- To avoid flood irrigation to prevent spread the mealybug to other plants.[12]

Result And Discussion:

Investigation conducted at spring season. The white mealy bugs are observed in period of June- July at Baragaon Nandur, Maharashtra 413705. The controlling of Papaya mealy bugs are used the three methods I.e. chemical control, Cultural and Mechanical controls. In a chemical controls includes the active ingredients pesticides i.e. Acephate, Carbaryl, Chlorpyrifos, Diazinon, Dimethoate, Malathion, etc are spread. In a cultural and mechanical controls also used many methods i.e.sticky band, destroy colony, hand picking, etc. [1] When the infestation are more than the chemical control is more suitable as compare to cultural and mechanical method. The chemical control are very fast and more effective method and less damage to crops. The cultural and mechanical method are slow and less effective. It prevents only to spread the mealybugs to other host plant.[5]

Figure: 1 Papaya fruit infestation and damage caused by the Papaya mealy bug, Paracoccus marginatus Williams and Granara de Willink

Figure :2 Papaya leaf deformation caused by the Papaya mealy bug, Paracoccus marginatus Williams and Granara de Willink.

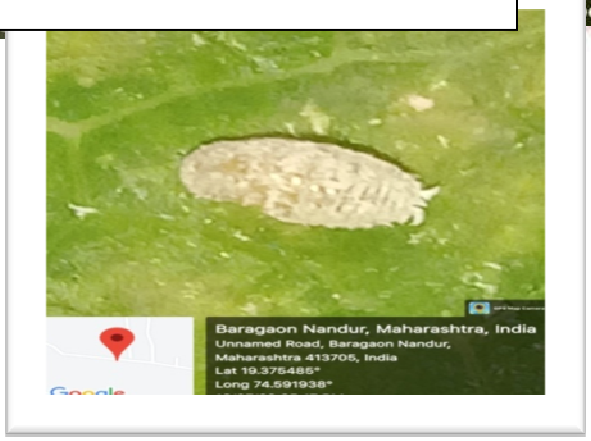

Figure 3: Nymphs and adults of Paracoccus marginatus

Figure 4: After treatment with chemical, Mechanical & Cultural method

Conclusion:

The present research paper investigates the papaya mealybugs at spring season period of June- July. It was observed that white colour mealybug are spread over the plant of papaya. The controlling of mealybugs was done using three methods. Out of them the chemical control method is very effective method as compared to cultural and mechanical method.

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Effects of Air Pollution on Human Health : A Geographical Analysis

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Abstract:-

Pollution occurs when contaminants are introduced into the natural environment, causing negative changes. Anything introduced into the atmosphere by humans that has a negative impact on the environment is considered air pollution. When chemicals or biological matter that can harm humans or other living things are released into the atmosphere, it is known as air pollution. Carbon dioxide, carbon monoxide, sulphur dioxide, and small particles pollute the air as a result of the combustion of various materials, particularly coal. These pollutants harm people by causing illness, but they also harm the environment by contributing to global warming. The lungs are the most affected by the major air pollutants. The eyes, nose, and throat are irritated by sulphur dioxide. When breathed, it can lead to serious lung conditions such asthma, bronchitis, emphysema, and lung cancer. Nitrogen dioxide causes emphysema by damaging lung tissue and restricting airways. It also causes the development of ozone, which may eat holes in lung tissue, exacerbate asthma, and put patients at risk for respiratory illness. Carbon monoxide, which is odourless and undetectable, can cause heart and central nervous system damage, as well as headaches, dizziness, convulsions, and death.

Many contaminants are significant contributors to human illnesses. Air pollutants such as nitrogen oxide, sulphur dioxide, volatile organic compounds (VOCs), dioxins, and polycyclic aromatic hydrocarbons (PAHs) are all dangerous to people. When breathed in at high concentrations, carbon monoxide can cause immediate poisoning. Natural catastrophes and climate change caused by pollution have an impact on the geographic spread of many infectious illnesses.Only public awareness combined with a multidisciplinary approach by scientific specialists will be able to handle this problem; national and international organisations must address the threat's rise and suggest long-term remedies. The current article focuses on effects of air pollution on human heath in India.

Keywords : Air pollution, pollution, Pollutants, Human health, Carbon dioxide.

Introduction:-

Chemicals, particles, or biological substances that harm other living things like food crops or the environment are referred to as air pollutants. Air pollution also refers to the release of substances into the atmosphere that cause human discomfort, sickness, or death. In order for life to exist on Earth, the atmosphere, a dynamic natural gaseous system, must be maintained. Long acknowledged as a danger to human health, the stratospheric ozone hole is caused by air pollution. According to the 2008 Blacksmith Institute World's Worst Polluted Places study, indoor air pollution and poor urban air quality are two of the most dangerous toxic pollution issues in the world. Air pollution is the term for the noxious gases and tiny solid and liquid particles (particulates) in the air that are present in high enough quantities to pose a threat to human health. Transportation engines, the production of power and heat, industrial activities, and the burning of solid waste are the main contributors of air pollution. Nitrogen oxides, gaseous

hydrocarbons, carbon monoxide, as well as significant amounts of particulates, primarily lead, are the main pollutants produced by the burning of gasoline and other hydrocarbon fuels in cars, trucks, and jet aircraft. Nitrogen oxides and hydrocarbons react in the presence of sunshine to generate a second category of pollutants known as photochemical oxidants, which includes ozone and the eye-stinging peroxyacetyl nitrate (PAN). Nitrogen dioxide, a vile-smelling brown gas, is created when nitrogen oxides combine with oxygen in the air. In cities like Delhi, where traffic is the major source of air pollution, nitrogen dioxide gives the air a brown colour that combines with other pollutants and water vapour in the atmosphere to form brown smog.

Pollutants: An air pollutant is a material in the atmosphere that has the potential to harm both people and the environment. The three different types of pollutants are solid particles, liquid droplets, and gases. They might also be created by nature or by humans. Primary and secondary pollutants can both be categorised. Primary pollutants are often discharged directly from a process, such as sulphur dioxide produced from industries, carbon monoxide gas from car exhaust, or volcanic ash. Direct emissions of secondary pollutants do not occur. Instead, they develop in the air as a result of interactions between basic pollutants. One of the several secondary pollutants that contribute to photochemical smog is ground level ozone, which serves as an excellent illustration of a secondary pollutant. Some pollutants can be both primary and secondary, which means they can both be produced directly from other primary pollutants and discharged themselves.

Pollutant categories:

The burning of fossil fuels, which are used to produce energy and power vehicles, is mostly to blame for the change in the composition of the atmosphere. Numerous air pollutants have been identified, each with unique chemical make-ups, reaction characteristics, emission patterns, environmental permanence, capacity for long-distance or short-distance transport, and potential effects on human and/or animal health. However, they do have some things in common, and they fall into one of four categories:

1) Gaseous pollutants
2) Persistent organic pollutants
3) Heavy metals
4)Particulate Matter

Gaseous pollutants-

the principal cause of gaseous pollutants, which greatly alter the composition of the atmosphere, is the burning of fossil fuels. Nitrogen oxides are released as NO, which combines quickly with ozone or other airborne radicals to generate NO2. Mobile and stationary combustion sources are the principal anthropogenic sources of pollution. On the other hand, incomplete combustion results in the production of CO. The main source of it is also the road system. The so-called volatile organic compounds are a significant class of substances that fuel combustion, particularly processes for energy generation and road transportation, which are the main source of emissions (VOCs). This group of substances contains chemical species with an organic character, including benzene.Despite the fact that the majority of gaseous pollutants are breathed and primarily have an adverse effect on the respiratory system, they can also cause cancer and haematological issues (CO, benzene).

persistent organic pollutants-

a harmful class of chemicals is composed of persistent organic pollutants. They last in the environment for a very long time, and as they ascend the food chain, their impacts become more pronounced (bio-magnification). Pesticides, as well as dioxins, furans, and PCBs, are among them. When materials containing chlorine (such plastics) are burnt, incomplete combustion and other processes can produce dioxins. Dioxins are airborne pollutants that deposit on soil and water but do not pollute groundwater supplies because they are water insoluble.Most dioxins in plants come from air and dust or pesticides and enter the food chain.

Heavy metals-

basic metal elements including lead, mercury, cadmium, silver, nickel, vanadium, chromium, and manganese are examples of heavy metals. They may penetrate water and the human food supply and are naturally occurring parts of the earth's crust that cannot be damaged or degraded. They can also be carried by air. Additionally, they are released into the environment via a number of sources, such as industrial plants, waste water discharges, and combustion. Due to their propensity to bio-accumulate in the human body, most heavy metals are hazardous. When a chemical's concentration in a biological organism rises over time relative to its concentration in the environment, this is referred to as bio-accumulation.

Particulate matter the term "particulate matter" (PM) refers to a class of air pollutants made up of complex and variable combinations of particles floating in the air that we breathe. These particles range in size and composition and are created by a wide range of anthropogenic and natural processes (Poschl, 2005). Factories, power plants, waste incinerators, automobiles, construction activities, fires, and naturally occurring windblown dust are major causes of particle pollution. The size of the particles varies (PM2.5 and PM10 for aerodynamic diameter smaller than 2.5 mm and 10 mm, respectively), and different categories have been established: ultrafine particles with an aerodynamic diameter smaller than 0.1 mm, fine particles with an aerodynamic diameter between 1 mm and 1 millimetre, and coarse particles with an aerodynamic diameter greater than 1 mm.In terms of mortality as well as cardiovascular and pulmonary impacts, there is compelling evidence that ultra-fine and tiny particles are more dangerous than bigger ones (coarse particles).

Routes of exposure:-

Dermal contact is a very insignificant way for humans to be exposed to various air contaminants, with inhalation and ingestion being the main routes. Ingestion is frequently the main route of pollutant intake since air pollution greatly adds to the contamination of food and water (Thron, 1996). Pollutants may be absorbed through the gastrointestinal and respiratory tracts, and several hazardous chemicals can be discovered in the bloodstream and deposit in various tissues. Excretion helps with elimination to some extent.

Health effects:-

Sporadic air pollution occurrences, such as the famous London fog of 1952, and a number of short and long terms epidemiological studies looked at the consequences of changes in air quality on human health. According to (Brunekreef M. Kampa, E. Castanas / Environmental Pollution 151 (2008) 362e367 363 and Holgate, 2002), air pollution is linked to higher mortality and hospital admissions. The varying chemical makeup of air pollutants, the quantity and duration of exposure, and the fact that people are more likely to be exposed to pollutant mixes than single compounds can all have various effects on human health. The impacts on human health might vary from nausea to breathing difficulties to skin irritation to

cancer. They also include birth disorders, severe developmental delays in children, and decreased immune system function, which can lead to a variety of illnesses. Furthermore, there are a number of risk variables, including age, nutritional status, and predisposing diseases. Acute, chronic, non-cancerous, and malignant health impacts can be separated. The cardiovascular and breathing systems are the most impacted systems, according to epidemiological and animal model studies. However, the function of a variety of other organs can also be affected.

1) Effects of air pollutants on different organs and systems:-

Effects On Respiratory System:-

According to several studies, all kinds of air pollution can harm the airways when present in high concentrations. Long-term exposure to lower pollutant concentrations, on the other hand, has similar consequences. Increased levels of sulphur dioxide, nitrogen oxides and certain heavy metals such as arsenic, nickel, or vanadium are usually associated with symptoms such as nose and throat irritation, followed by bronchoconstriction and dyspnoea, especially in asthmatic individuals. Particulate particles that penetrate the alveolar epithelium, as well as ozone, cause lung inflammation (Ghio and Huang, 2004). Pollutant-induced inflammation will aggravate the condition of people with lung lesions or illnesses. Furthermore, air pollutants such nitrogen oxides make people more susceptible to respiratory diseases (Chauhan et al. 1998). Finally, prolonged exposure to ozone and certain heavy metals impairs lung function with the latter also causing asthma, emphysema, and lung cancer. Mice exposed to nitrogen dioxide also developed emphysema-like lesions (Wegmann et al., 2005).

Effects Oncardiovascular System:-

Carbon monoxide binds to haemoglobin, altering its structure and lowering its oxygen-transfer capacity (Badman and Jaffe, 1996). Reduced oxygen availability can influence the performance of several organs (particularly those that consume a lot of oxygen, such as the brain and heart), resulting in poor concentration, sluggish reflexes, and disorientation. Apart from airway inflammation, particulate matter causes systemic inflammatory changes that impact blood coagulation. Air pollution can clog (cardiac) blood arteries, causing angina or even myocardial infarction, by irritating the lungs and causing alterations in blood clotting.Heavy metal contamination (particularly mercury, nickel, and arsenic) has been linked to symptoms such as tachycardia, high blood pressure, and anaemia due to an inhibitory influence on haematopoiesis (Huang and Ghio, 2006). Finally, epidemiologic studies have connected dioxin exposure to an increased risk of death from ischemic heart disease, and heavy metals have been proven to raise triglyceride levels in mice.

Effects On Nervous System:-

Heavy metals (lead, mercury, and arsenic) and dioxins have the greatest impact on the neurological system. After exposure to arsenic, lead, or mercury, neurotoxicity has been documented, with symptoms including memory loss, sleep difficulties, rage, exhaustion, hand tremors, impaired vision, and slurred speech. Lead exposure, in particular, damages the dopamine system, glutamate system, and N-methyl-D-Aspartate (NMDA) receptor complex, all of which are involved in memory activities. Mercury is also linked to several types of brain tumours. Children's mental development is harmed by dioxins because they slow down nerve conduction velocity.

Effects On Urinary System:-

Heavy metals can cause kidney damage, which starts with tubular dysfunction and increased excretion of low molecular weight proteins, and continues to a lower glomerular

filtration rate (GFR). In addition, they increase the risk of stone formation or nephrocalcinosis and renal cancer (Boffetta et al., 1993; Vamvakas et al., 1993).

Effects On Digestive System:-

Dioxins cause liver cell damage (Kimbrough et al., 1977), as evidenced by an increase in the levels of certain enzymes in the blood, as well as gastrointestinal and liver cancer (Mandal, 2005).

2) Pregnancy And Exposure:-

It's also worth noting that air contaminants might have an impact on a growing foetus. Heavy metal exposure during pregnancy, particularly lead exposure, increases the chance of spontaneous abortion and stunted foetal development (pre-term delivery, low birth weight). There is also evidence that parental lead exposure causes prenatal abnormalities and lesions of the developing nervous system, producing significant impairment in the motor and cognitive functions of newborns. (Garza et al., 2006). Dioxins were also discovered to be passed from the mother to the foetus through the placenta. They function as endocrine disruptors, affecting the foetal nervous system's growth and development. (Wang et al., 2004). TCDD is a developmental toxin in all of the animals studied in this regard.

Conclusion:-

The detrimental impacts of several (air) contaminants on human health are discussed in this succinct summary. As demonstrated, severe dysfunctions of many organs are seen. The key finding is that, in light of people being exposed to a wider range of contaminants, dietary treatments high in foods derived from plants may protect against or lessen their effects on various organs. Numerous epidemiological studies on the positive impact of a Mediterranean-style diet on human health confirm this result.

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Psychological Well-Being of College Teachers in Relation to Their Professional Development

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Abstract:

The purpose of conducting this study was to find out the Psychological well-being of college teachers in relation to their professional development. A sample of 150 women college teachers (75humanities and 75 science stream) from Ludhiana district was selected through Stratified Random sampling technique. Psychological Well-being Scale developed by D.S. Sisodia and Pooja Choudhary (2019) and Professional Development scale by Butia (2014) was used for data collection. Mean, SD and t-test were used to compare the psychological well-being and professional development of humanities and science stream of women college teachers. The findings of the study revealed that i) there is no significant difference in the psychological well being of humanities and science women college teachers. ii) Significant difference was found in the professional development of humanities and science women college teachers. Humanities and science Stream of women college teachers were found to possess higher level of psychological well being as compared to professional development.

Keyword: Psychological well being, Professional development, College teachers

1. Introduction:

Education is the most powerful weapon which helps the pupils to become good human beings. The quality of citizens depend more upon the quality of their teachers as compare to their quality of education. Teacher's personality, character qualities, well–being, attitudes, teaching efficiencies and life style creating effective teaching learning situations and helps to contribute in society. The quality of education and the standard of achievement are inseparably inter-related with the quality of teachers. The success of the learner mainly depends on the ability of the teacher.

Teacher is the weapon for every contribution and invention. Our whole education system is controlled by teacher. The nation's well-being depends upon teacher's well-being. Teachers play the important role for transmission and spreading the knowledge and intellectual power in every human being.Naturally, they are the heart and soul of education system.The best teacher is not only imparts the whole educational modules allotted to him/her in the best and most efficient manner but also ensures the best possible academic performance and an effective development of the personalities of the learner's .

A teacher will be able to function effectively if he/she has a balanced personality and a sound mental state, thus well-being of teachers is important for their effective functioning. Ryff (1989) operationally defined psychological well-being as self-acceptance and personal growth. High psychological well-being is about feeling happy and doing well. High self- efficacy is related to high self-esteem, positive well-being and better physical condition, regulation of stress and recovery from diseases (Bandura, 1997; Bisschop, Knegsman, Beekman, &Deeg, 2004; Kuijer& de Ridder, 2003).

On the other hand, professional development practices for experienced teachers are generally viewed as part of the continuum of learning of teachers throughout their careers. Within the framework of professional development, teachers change, improve in the professional field, as well as change, improve, and complement their pedagogical competences and behaviour, and change as a person.

1.1 Psychological well-being

The term Well-being is mostly used for specific variety of goodness, Well-being requires cooperation between mind and body. It understands a sense of relief to reduce the pressures in person's life. Well-being is not only physical well-being rather it includes all aspects of a man. For example, living in good environment, being of worth for world, being able to cope with life, enjoying life, etc. Well-being is one of the most important goals which individuals as well as societies strive for. Well-being can be specified in two ways: first by specifying the „what" and second by spelling out the criteria of wellness. Psychological well-being includes individual's relationship with life goals, if he is aware of his potential, the quality of his relationship with others, and what he feels about his own life (Ryff and Keyes, 1995).

Psychological well-being takes an important part in personality and development theories both theoretically and practically. Psychological wellbeing, which guides clinical studies that will help advisors to make their advisees reach their goals, informs about the goals and purposes regarding psychology consulting.

(Myers et al., 2003) Well-being is a way of life. Especially in terms of life ideally inclined to health and wellness; unifying body, mind, and soul; individually full of purposeful attitude and aim to live life more fully; and a functional life in all social, personal, and environmental aspects

Carr (2004) defines subjective well-being as "a positive psychological state characterized by a high level of satisfaction with life, a high level of positive affect and low level of negative affect".

Huppert (2009), "Psychological well-being is about lives going well. It is the combination of feeling good and functioning effectively."

Psychological well-being is defined as "……a dynamic state, in which the individual is able to develop their potential, work productively and creatively, build strong and positive relationships with others and contribute to their community**"(Foresight Mental Capital and Well Being Project 2010)**

Psychological Well-being is an effort to be peaceful and enjoy life, connect to life, establish satisfying relationships with others, aim for a purpose and make life valuable. In addition, an individual's satisfaction with his /her life refers to having positive feelings about the future and continuing the life functionally **(Seligman, 2011).**

Marks (2012) explained well-being (as cited in Dodge, Daly, Huyton and Sanders, 2012) well-being is not a beach you go and lie on. It's a sort of dynamic dance and there's movement in that all the time and actually it's the functuality of that movement which actually is true levels of well-being.

The concept of well-being has a multidimensional constitution, it could be a representation of positive feelings, individuals experience as well as aspects of life characterized by optimal functioning and flourishing (Fredrickson and Losada, 2005). It has been asserted that it is practical to assume that the concept of health is comparable to the concept of well-being (Essen and Martensson, 2014).

Psychological well-being is attained by achieving a state of balance affected by both challenging and rewarding life events. Researchers also have found that the absence of distress doesn't necessarily indicate a person has high psychological well-being. People with high psychological well-being report feeling capable,well-supported, and satisfied with life. People with higher psychological well-being are more likely to live healthier and longer lives. They are also more likely to enjoy a better quality of life. Better psychological well-being also is associated with fewer social problems.

1.1.1 Six-factor Model of Psychological Well-being

The Six-factor Model of Psychological Well-being is a theory developed by Carol Ryff in 1989 which determines six factors which contribute to an individual's psychological well-being, contentment and happiness. The following are the factors of psychological well-being:

1. Self-acceptance
2. Personal growth
3. Purpose in life
4. Environmental mastery
5. Autonomy
6. Positive relations with others

1. Self-acceptance- Self-acceptance requires the maintenance of esteem for one's self while facing complex and sometimes unpleasant personal aspects of the self. In addition, individuals accumulate a past and have the capacity to recall and remember themselves through time.

2. Personal growth- Personal growth is the ability and desire to enhance existing skills and talents and to seek opportunities for further personal development. Healthy individuals are open to experience and have the capacity to identify challenges in a variety of circumstances.

3. Purpose in life- Purpose in life captures the adult's perception of having direction in life, even when the world offers none or provides unsatisfactory alternatives. Healthy individuals see their daily lives as fulfilling a direction and purpose and therefore they view their personal lives as meaningful.

4. Environmental mastery- Environmental mastery is the active engagement of the environment to mould it to meet one's needs and wants. Healthy individuals recognize personal needs and desires and permitted to take an active role in getting what they need from their environment.

5. Autonomy- Autonomy measures the degree to which people seek self-determination and personal authority in a society that at times requires obedience and compliance. However, healthy individuals seek to understand their own values and ideals.

6. Positive relations with others- consists of the ability to cultivate warm, intimate relationships with others. It also includes the presence of satisfying social contacts and relations.

1.1.2Role of teachers

Teachers' expectations determine the understanding of their own role, as the sense of efficiency in the work that teachers experience can also depend on how they see themselves as professionals.

Beijaard (1995) stated that a teacher's professional identity is composed of three factors: the subject they teach, their relationship with pupils, and their role or role conception. The latter is built in relation to the object and the relation with pupils and therefore cannot be considered independently of the other two factors.

1.1.3Importance of teachers well being

Psychological well-being consists of positive relationships with others, personal mastery, autonomy, a feeling of purpose and meaning in life, and personal growth and development. Teachers who feel heard and valued for their ideas, have opportunities to collaborate and feel supported by colleagues feel a greater sense of well-being within the workplace. Teachers who feel secure to explore innovative teaching practices are able to provide students with deeper learning experiences in ways that promote their curiosity and creativity.

- Teacher well-being help to ensure teachers can flourish, this can promote better classroom climates
- Teacher wellbeing enable high quality teaching that leads to success for students.
- Teacher wellbeing is also linked to student wellbeing.
- Teacher wellbeing is an important first step in wellbeing programs to promote student well-being.

Grenville-Cleave and Boniwell (2012) found that teachers rated their wellbeing significantly lower than other professional occupations such as health, social work, finance and human resources.

Acton and Glasgow (2015), teacher wellbeing is defined as "an individual sense of personal professional fulfilment, satisfaction, purposefulness and happiness, constructed in a collaborative process with colleagues and students".

1.2 Professional development

Professional development may be used in reference to a wide variety of specialized training, formal education, or advanced professional learning intended to help administrators, teachers, and other educators improve their professional knowledge, competence, skill, and effectiveness. Professional development as a way to generate changes in teaching practices and improve student achievement (Lawless & Pellegrino, 2007).*It* refers to instructors developing and improving their skills to better meet the needs of their students. It is the set of tools, resources, and training sessions for educators to improve their teaching quality and effectiveness. Professional development covers a variety of topics and addresses a number of issues present in a particular school or district. The activities in which teachers participate will vary depending on personal preference, personal interests, and professional history (Day, 1999).

Researches in the area of Professional development revealed that teachers were satisfied with the professional development activities that they attended (Michael Bosley 2004) and *valued professional development experiences for improvement of teaching strategies (***Nugent,2007) resulting in development of positive** attitudes (Parua, 2012 ; Henning and Mitchell, 2002).

Guskey (2003) concluded that professional development, which aids in deepening a teacher's understanding of the content and how students learn the specific content, are critical components of successful professional development. A change in classroom practices is related to professional development activities which include opportunities for active learning (Birman et al., 2000).

Causton-Theoharis and Theoharis (2008) documented how student learning improved after policies, procedures, curriculum, and instruction were shifted to support all learners. The noted challenge for teacher professional development is to provide the opportunity for teachers to deepen their understanding of the learning process and continuously develop instructional approaches that support learning.

1.2.1 The Relationship between Psychological Well-Being and professional development.

Psychological well-being is the first step in protecting teacher's mental health and providing them an environment that helps flourish their professional development. It is also crucial for good teacher–student interactions, which in turn, may affect student self-efficacy, social abilities and with also with mental health. *Professional development* is the set of tools, resources, and training sessions for educators to improve their teaching quality and effectiveness. These resources allow instructors to further their knowledge in their subject area and allows for mentorship and the opportunity to learn new teaching techniques. The goal of professional development is to keep you up-to-date on current trends as well as help you develop new skills for the purpose of advancement in the field. Those who take part in workshops or leadership sessions develop and enhance specialized skills including technical, quantitative and analytical skills.

Turner, Barling, and Zacharatos (2002) concluded that there is a positive correlation between supportive relations in schools and the well-being of teachers. The well-being of a teacher will be positively affected if he/she has positive interactions with students and is able to fulfil the students' basic needs for care and attention (Spilt et al., 2011). Furthermore, teachers who have a positive cultural impression of their work environments and of their own profession have fewer mental health concerns **(Bentea, 2015; Wong & Zhang,2014).**

2. Literature Review:

2.1 Studies related to Psychological Well Being:

Razia (2016) assessed the level of emotional intelligence and well-being of pupil teachers. For the purpose of conducting the study, sample comprising 120 pupil teachers (B Ed students) was selected from the department of Education of Aligarh Muslim University and two private colleges in Aligarh. It was found that male and female pupil teachers were similar in their emotional intelligence but difference exists in relation to well-being. The study further brought into light that emotional intelligence had positive and significant relationship with overall well-being of pupil teachers.

Zaki (2016) conducted a study of psychological well-being. This paper attempted to explain the promotion of awareness of psychological well-being in beginning teachers as well as in-service teachers for their optimal functioning in teaching. This paper also explains relationship between psychological well-being and self-determination theory which involves human motivation, very useful for effective teaching. In the end author suggests to facilitate psychological well-being of teachers in teacher education programs.

Gangadharan (2017) investigated the psychological well-being among teaching and nonteaching employees. The findings of the study revealed significant difference in the dimensions of autonomy, personal growth and purpose in life. The overall psychological well-being of teaching staff was higher than the non -teaching employees. On the whole, the present study concluded that, women in the teaching profession had the highest psychological well-being scores as compared to other women employees, in relation to their working conditions and nature of job.

Lamba& Som. (2020) conducted in this study on the psychological well-being and mental health problems in college teachers and school teachers. Samples of 160 school teachers were taken from Delhi NCR. The study reported that the male school teachers have a better psychological well-being and they have a less mental health problem which indicates that if an individual have

a less mental health problems then they have better psychological well-being and are more satisfied with their lives. These findings can be used in Indian context and thus essential steps can be taken to educate the people to make their lives better.

2.2 Studies related to Professional development:

Duta (2012) conducted research on 68 university teachers to determine their professional development methods necessary for continuous learning training. His research findings concluded that professional development of teachers enhances the quality of education by stressing pedagogical training of teachers. He further emphasized that excellent pedagogical training of teachers leads towards quality outputs in teaching- learning process.

Cabaroglu's (2014) study indicates to the positive relationship between teacher efficacies and professional development. The researcher reported on the study that investigated the impact of the participation in an action research on the English language teacher candidates in Turkey. The objective of the action research was to support teacher candidates to enhance 25 their instructional practice and to use an inquiry-based approach to learning. The results showed that the participants demonstrated growth in teaching efficacies, increased self-awareness, improved problem-solving skills and enhanced autonomous learning.

Macheng (2016) conducted research on junior secondary schools of Botswana. The research was conducted on fourteen (14) participants. The data was gathered by using survey questionnaires and interviews. The purpose of the research was to understand the importance of continuous professional development as a critical phenomenon to deal with the gaps in training of teachers from time and changes. The findings of the study indicated that lack of structures or programs in junior secondary schools facilitate teacher professional development and growth.

Kaur &Bhullar (2019) investigated the study is to develop an understanding of relationship between professional development and job satisfaction of teacher educators. A sample of 120 teacher educators from colleges of education with 50 teacher educators working in government and government aided colleges and 70 teacher educators working in private college was drawn from 12 randomly selected colleges of education of Punjab state. A significant positive relationship was found between professional development and job satisfaction of teacher educators working in both government and private sectors.

3.Justification of the study:

Teachers play an important part in the teaching – learning process. A teacher influences a student to a great extent. The challenges faced by a teacher in a globalized world are difficult to manage. It is essential that teachers have a balance between their life and work and therefore need to possess higher psychological well-being. The foundation of building a healthy and sound society is layered to greater extent by educating the youngsters of that society. Thus, teachers are the architects in building healthy nation. They do give the shape for growing individuals and prepare them to be useful to the society in various ways of life, thus teachers have been rendering a valuable service to the nation.

Psychological well-being is an important aspect for effective performance in any organization, as it determines the internal feelings to persuade the external actions. Low psychological well-being is obvious to effect any domain of our life may it be academic or work life. The best teacher is one who possesses good psychological well-being and who is fully satisfied with his/her occupation. Ryff (1989) operationally defined psychological well-being as

self-acceptance and personal growth. High psychological well-being is about feeling happy and doing well. High self- efficacy is related to high self-esteem, positive well-being and better physical condition, regulation of stress and recovery from diseases (Bandura, 1997; Bisschop, Knegsman, Beekman, &Deeg, 2004; Kuijer& de Ridder, 2003).

Progress of any nation depends largely on Psychological well-being of its students. All intellectual creative, educational, social and cultural advancement are possible if the individual of the nation do possess well-being. Due to advancement in every field, life of teachers has become more challenging, complicated and tough. If at all we expect the teachers to contribute significantly, it is essential that they should have higher work motivation, professionally developed, self-efficacy, commitment etc. The role of a teacher does not limit itself to imparting knowledge alone, but in broadening the national outlook enhancing a sense of efficacy and competency among the future citizens, and preparing individuals for the right type of profession.

3. Objectives

1. To study the Psychological well-being of humanities and science college teachers.
2. To study the Professional development of humanities and science college teachers.

4. Hypothesis

1. There exists no significant difference between Psychological well-being of humanities and science college teachers.
2. There exists no significant difference between Professional development of humanities and science college teachers.

6. Methodology

6.1 Method and Procedure

The descriptive method of educational analysis for the completion of the present paper is followed in the context of the study.

Sample

Representative samples of 150 women college teachers from Ludhiana district were chosen for the present analysis. Out of which, 75 Women college teachers from humanities stream and 75 Women College teachers from science stream.

6.2 Tools for data collection

1. Psychological Well-being Scale developed by D.S. Sisodia and PoojaChoudhary (2019).
2. Professional Development scale by Butia (2014).

Statistical Techniques

Mean, SD and t-test has been computed for analyzing the present data.

7. Result And Discussion:

The psychological well being scale was achieved on selected sample teachers and t- value was computed to measure professional development among women college teachers. The analysis of information is offered as per the hypothesis.

Hypothesis 1:-

There exists no significant difference between psychological well being of humanities and science women college teachers.

Table No.1.Psychological well being of humanities and science women college teachers.

Gender	N	Mean	S.D.	t-value	Level of significance
Humanities	75	97.74	8.59	1.045	Not significant at 0.01 & 0.05 level
Science	75	105.55	9.81		

The result is 1.045 less than the table value (2.58) at the 0.01 level and (1.96) at the 0.05 level of importance in table no. 1, the measured t-value. The outcome indicates that there is no significant between humanities and science women college teachers in psychological well being. Hence, at all stages of significance, the null hypothesis is accepted.

Hypothesis 2:-

There exists no significant difference between professional development of humanities and science women college teachers.

Table No.1.Professional development of humanities and science women college teachers.

Gender	N	Mean	S.D.	t-value	Level of significance
Humanities	75	242.11	34.53	4.789	Significant at 0.01 & 0.05 level
Science	75	211.17	32.34		

The consequence of the measured t- values in table no. 2 is 4.789 higher than the table value (2.58) at the level of 0.01 and (1.96) at the level of importance (0.05). The outcome reveals that there is a significant difference in the professional development of humanities and science women college teachers . Hence, at all degrees of importance, the null hypothesis is rejected.

Conclusion:

Progress of any nation depends largely on Psychological well-being of its students. All intellectual creative, educational, social and cultural advancement are possible if the individual of the nation do possess well-being. Due to advancement in every field, life of teachers has become more challenging, complicated and tough. If at all we expect the teachers to contribute significantly, it is essential that they should have higher work motivation, professionally developed, self-efficacy, commitment etc. Professional development is the means by which participants gain knowledge and acquire new skills. It refers to the continued training and education of an individual in regards to his or her career.

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Attitude Towards ICT of The Teachers of Higher Secondary School

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Abstract:

Information and communication technologies (ICT) have become one of the most significant aspects of human life, and they have had an impact on all facets of school operations, including administration, time management, the delivery of lessons, project work, evaluation, and the examination system, among others. It makes teaching-learning more interesting and goal oriented. It can significantly develop interest and curiosity among the learners. It can also save the time of teachers and students which is very important in this present time, considering time-management an important aspect of education as the efforts, time, and resources of the schools can be used effectively. In the current research, the attitudes of teachers in upper secondary schools in the Paschim Medinipur area about the use of ICT in education were examined.

Keywords: Attitude, Information and Communication Technology, Rural, Urban

Introduction:

'The ICT Policy in School Education seeks to prepare young to engage creatively in the creation, maintenance, and expansion of a knowledge society, resulting in overall socio-economic development of the country and worldwide competitiveness. The National Policy for ICT in School Education was published by the Ministry of Human Resource Development in 2009.

Information and communication technology (ICT) has been shown to have the ability to better institutional administration, increase student learning, and improve instruction. Recognizing the effects of new technologies on the workplace and daily life requires the use of information and communication technology as a tool for increasing students' understanding of instructors' instructions and as a catalyst for expanding access to excellent education in structured settings. The ICT Policy in School Education project is motivated by the enormous potential of ICT for expanding reach and raising educational standards. According to the National Centre for Technology in Education (NCTE-2000), ICT is an interdisciplinary field that focuses on giving students the resources they need to enhance and alter their learning experiences.

Since teachers are members of a recognised profession, deliberate efforts should be made to help them develop a positive attitude about their line of work. The way a teacher fulfils his professional obligations and plays his position might be used to gauge attitude. Positive attitude has been shown to make teaching more fulfilling and rewarding. In the classroom, a teacher has a significant influence on student conduct. While spending the majority of his time with his pupils, a teacher's attitudes, behaviours, emotions, preferences, and etiquette have a significant impact on the way that the students behave. The characteristics of the technology itself are one of the key elements influencing people's views regarding a new technology (Rogers, 1995). Rogers

highlighted the following key characteristics of technology: relative advantage, compatibility, complexity, observability, and trialibility. Therefore, a new technology will spread more widely if prospective users believe it offers an advantage over earlier breakthroughs, is consistent with current practises, is simple to comprehend and apply, exhibits visible outcomes, and can be tested in small doses before acceptance. Technology creates new opportunities for information gathering and knowledge manipulation. This covers the manipulation of media and instructional techniques as well as environmental management inasmuch as it affects learning. It supports data storage, e-learning, e-content creation, webcasting, timetable management testing, and other activities. The two types of contact that new technology increases are student-student and student-teacher interaction. Numerous studies have been conducted over the last 20 years to determine the value of technology in education. The ICT literate population is prioritised in the National Policy on Information and Communication Technology in School Education (2012) in order for all ICT resources to be employed in the teaching and learning process (Pan, 2014). In terms of expressing the information, ICT is essential. Slide, LCD, and OHP projectors are used. Here, knowledge may be shown graphically with the aid of voice and video, making it simple for students to understand. Additionally, the student enjoys watching the lesson and may not forget what they have learnt. While watching the lesson, the learner also remains more engaged. It saves time and allows for the straightforward representation of a lot of information. ICT paves the path for the efficient delivery of specific knowledge to the learner in a short amount of time. ICT is mostly used to keep classes interesting and help students comprehend (Prabhu, 2013). Technology and multimedia alter thought processes, which has a disastrous impact on the transition from memorization practise to problem solving.

It has been anticipated that integrating ICT into education would allow the new technology instruments to completely transform the outdated educational system (Albrini, 2006). Initiatives, projects, and consequences relating to the integration of information and communication technologies (ICT) into education during the last 20 years have encouraged teachers to acquire the essential knowledge and abilities for integrating ICT into their classroom. ICT is "not just the foundation of the Information Age, but also a key catalyst and instrument for inducing educational changes that transform our students into productive knowledge workers," according to Pelgrum (2001). ICT is essential to the educational systems of information societies. To ensure that both instructors and students acquire the information and abilities required in this digital era, the stakeholders in these nations' educational policies rethink and reconstruct their educational systems using new educational paradigms like constructivist theory. As a result, the majority of nations worldwide are concentrating on methods to incorporate ICT into learning and teaching in order to raise the calibre of education by placing an emphasis on competencies like critical thinking, decision-making, handling of dynamic situations, working as a member of a team, and effectively communicating (Anderson & Weert, 2002). By involving students in the process, new technologies are seen as a cognitive tool that has the ability to promote inquiry-based learning, reinforce conceptual learning, and develop active and creative learning. These technologies have the ability to alter the dynamics of the classroom and encourage innovative teaching methods if utilised wisely. The stakeholders in educational policy in today's information societies are redesigning and reconstructing their educational systems based on new educational paradigms like constructivist theory to ensure that both instructors and students get the knowledge and skills required in this digital era.

Objectives of the Study:

The major objectives of this study are:

- To study the differences between male and female higher secondary school teachers in their attitude towards the use of ICT in teaching learning process.
- To study the differences between urban and rural area higher secondary school teachers in their attitude towards use of ICT.
- To study the differences between government and private higher secondary school teachers in their attitude towards the use of ICT in teaching.
- To study the attitude of higher secondary school teacher towards the use of ICT on basis of teacher's age group.

Hypotheses of the Study:

In this study, the following null hypotheses were framed:

H01: There is no significant difference between the attitudes of male and female higher secondary school teachers towards the use of ICT.

H02: There is no significant difference between the attitudes of rural and urban higher secondary school teachers towards the use of ICT.

H03: There is no significant difference in the attitude of higher secondary teachers towards the use of ICT of Government and private school teachers.

H04: There is no significant difference in the attitude among higher secondary school teachers categorized on the basis of age.

Delimitation of the Study:

- The study was delimited to only one major variable i.e. teachers‟ attitude towards ICT only.
- The study was also delimited to 100 samples only.
- One of the major delimitation is, the data was collected from three government aided schools and two private schools only.
- The study was also delimited to Paschim Medinipur district, West Bengal, India demographic area only.

Methodology: Survey method is adopted for the present study.

Research Design:

This is a descriptive survey type field study on the attitude of higher secondary school teachers towards the uses of ICT from paschim Medinipur, West Bengal. Quantitative approach is used in this study as the assessments consists numerical analysis and measurements. Data is collected through self-made questionnaire.

Sample:

The sample consists of 100 teachers who teach at higher secondary level in Paschim Medinipur district was selected for the study.

Sampling Techniques:

In this study, probability sampling techniques, particularly random sampling is being used in order to collect the data.

Tools:

Tools are devices used to collect appropriate data for the study. Teachers are indicated to answer their level of attitude towards the use of ICT in teaching in a five point scale going from

strongly disagree, disagree, neutral, agree, and strongly agree. The ICT Questionnaire has 25 items covering the various dimensions of ICT usage in teaching.

Variable:

Major Variable:

Attitude towards the use of ICT.

Categorical Variable

- Gender
- Location of School
- Types of School
- Age level

Analysis and Interpretation:

The aim of the analysis is to find out the attitude of higher secondary school teachers towards use of ICT in teaching.

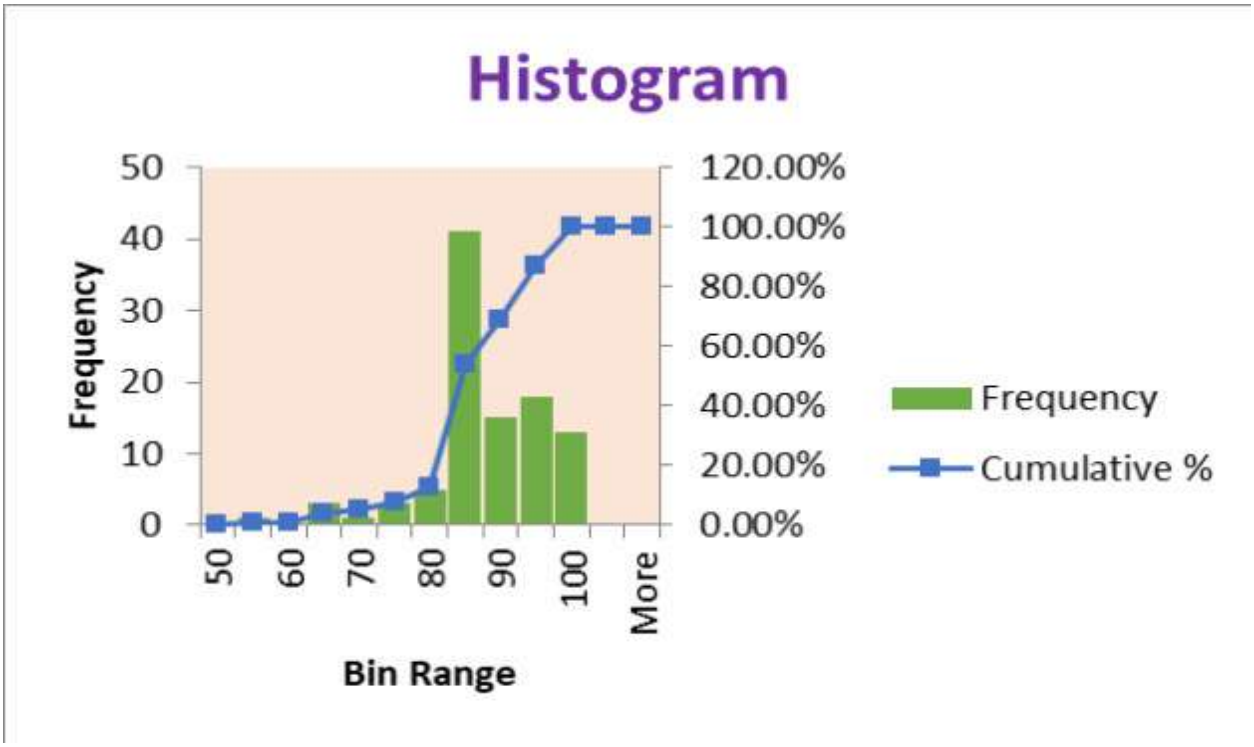

Fig:1 Histogram of collected data

From, **Fig.1**we found, attitude of school teachers towards the use of ICT, the nature of the Histogram is tends to like Normal Probability Curve (NPC). So we can use inferential statistics like Mean, Standard Deviation, t-test, ANOVA here for further analysis.

Table 1: Descriptive Statistics and t-test of the Attitude of Higher Secondary School Teachers towards the use of ICT with respect to gender:

Variable	N	Mean (M)	S.D	t-Value cal	'P' Value	Remarks	Hypothesis
Female	45	85.95	5.37	1.98	0.75	t-test significance at 0.05 level	**Ho1** is accepted
Male	55	85.43	9.64				

Figure 2: Mean and S.D. scores of Attitude of Higher Secondary School Teachers towards the Use of ICT According to Gender

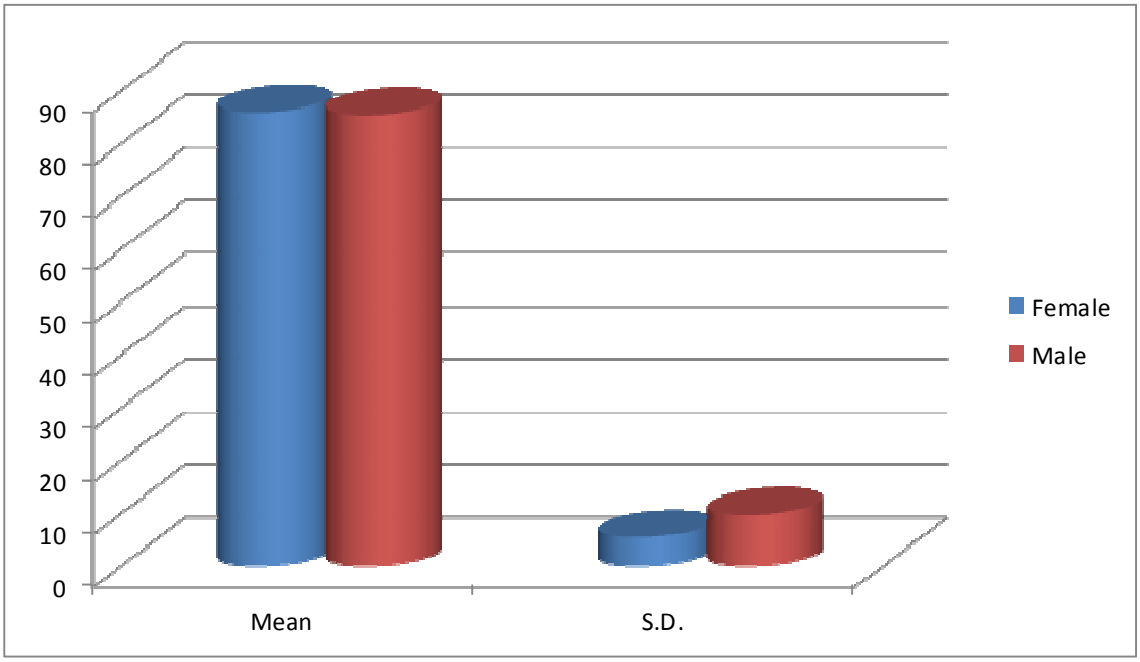

Fig. 2: Mean and Standard Deviation of attitude towards the use of ICT relation to Gender

From, **Fig. 2** it is observed that mean score of attitude towards the use of ICT of female higher secondary school teacher is (85.95) slightly higher than the mean score of attitude towards the use of ICT of male Higher secondary teacher (85.43).

From, **Table 1**, it reveals that P-value=0.75 (p>0.05) for the attitude toward the use of ICT between female and male higher secondary school teachers is higher than 0.05. It means that there is no significance difference between the attitude towards the use of ICT of male and female higher secondary school teachers. Thus, **Ho1** is accepted.

Table 2: Descriptive statistics and t-test of higher secondary school teachers' Attitude towards the use of ICT with respect to location of School:

Variable	N	Mean (N)	S.D	t-Value cal	'P' Value	Remarks	Hypothesis
Rural	46	85.09	8.25	1.98	0.54	t-test is not significant at 0.05 level	Ho2 is accepted
Urban	54	86.09	8.23				

Figure 3: Mean and S.D. Scores of Attitude of Higher Secondary School Teachers towards the Use of ICT According to Location

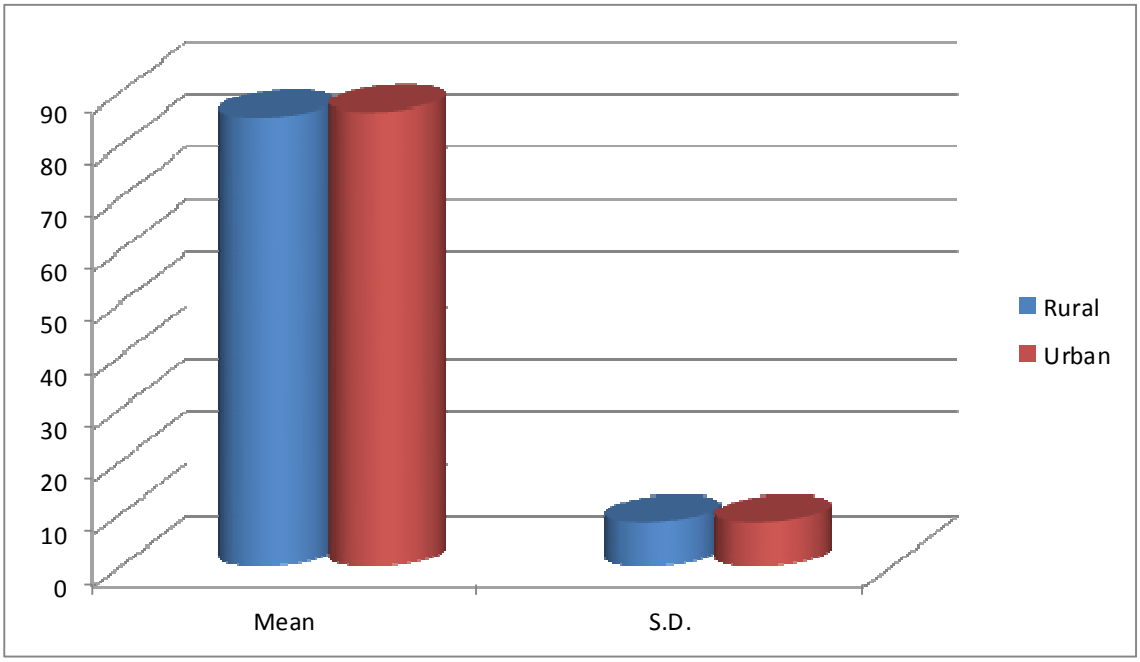

Fig. 3 Mean and standard deviation of Attitude toward the use of ICT in relation to location of School

From, **Fig. 3** we observed that the mean score of attitude towards the use of ICT of rural higher secondary school teachers (85.09) is less than the mean score of attitude towards the use of ICT of urban higher secondary school teachers (86.09). It may therefore be concluded that, the attitude of urban and rural teachers towards the use of ICT remains almost identical.

Table 2 reveals that p-value=0.54 (p>0.05) of attitude towards the use of ICT between rural and urban higher secondary school teachers which is more than 0.05. It means that there is no significance difference in attitude towards the use of ICT between rural and urban secondary school teachers. Thus, **Ho2** is accepted.

Table 3: Descriptive statistics and t-test of higher secondary school teachers' Attitude towards the use of ICT with respect to types of school:

Variable	N	Mean (M)	S.D	t-Value cal	'p' Value	Remarks	Hypothesis
Govt. School Teachers	81	84.97	9.04	1.98	0.233	t-test is not significant at0.05 level	Ho3 accepted
Private School Teachers	19	87.09	5.86				

Figure 4: Mean and S.D. Scores of Attitude of Higher Secondary Schools Teachers towards the Use of ICT According to Types of Schools

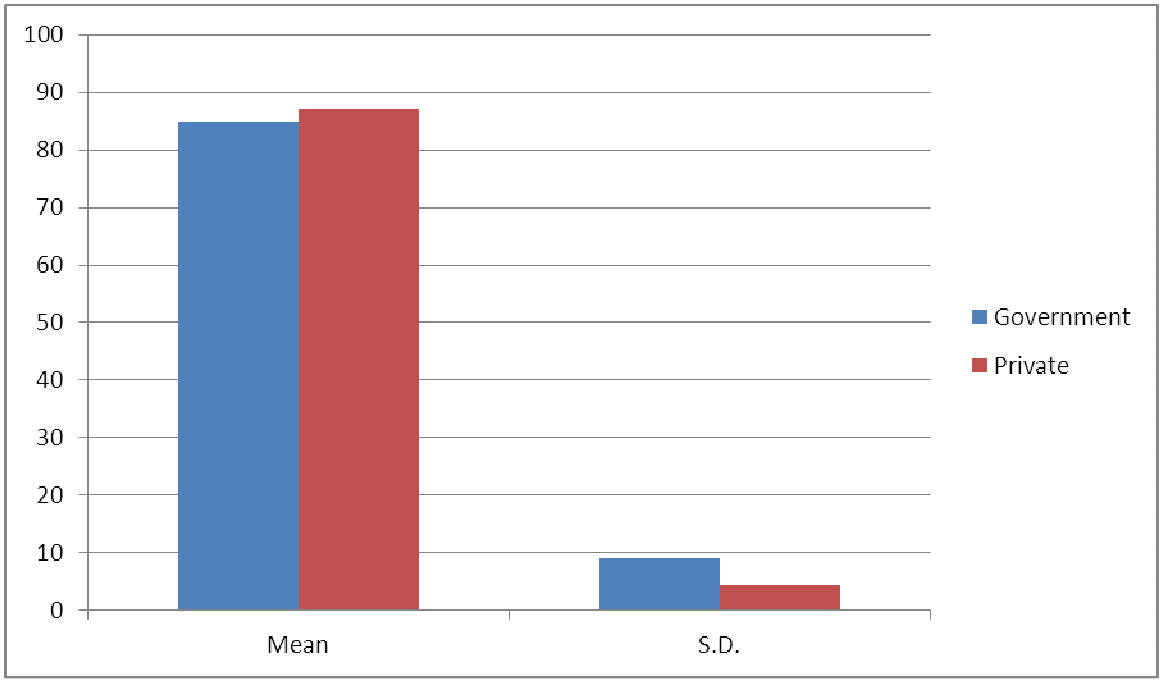

Fig. 4 Mean and Standard Deviation of Attitude toward the use of ICT in relation to types of school:

From, **Fig. 4** we observed that the mean score of attitude towards the use of ICT of rural higher secondary school teachers (85.09) is less than the mean score of attitude towards the use of ICT of urban higher secondary school teachers (86.09). It may therefore be concluded that, the attitude of urban and rural higher secondary school teachers towards the use of ICT remains almost identical.

From, **Table 3** reveals that p-value=0.233 (p>0.05) of attitude towards the use of ICT between govt. and private higher secondary school teachers‟ which is more than 0.05. It means that there is no significance difference in attitude towards the use of ICT between govt. and private school teachers. Thus, **Ho3** is accepted.

Table 4: Descriptive statistics and ANOVA single factor of higher secondary school teachers' Attitude towards the use of ICT among different Age groups:

Variable (Age group)	Mean	S.D	Degrees of Freedom	'P' Value	Remarks	Hypothesis
21-30years	87.25	6.00	99	0.34	'P' value not significant at 0.05significance level	Ho4 accepted
31-40Years	84.28	9.35				
41-50Years	84.36	10.56				
51-60years	87.63	4.84				

Figure 5: Mean and S.D. of Higher Secondary School Teachers Attitude towards the Use of ICT According to different age groups

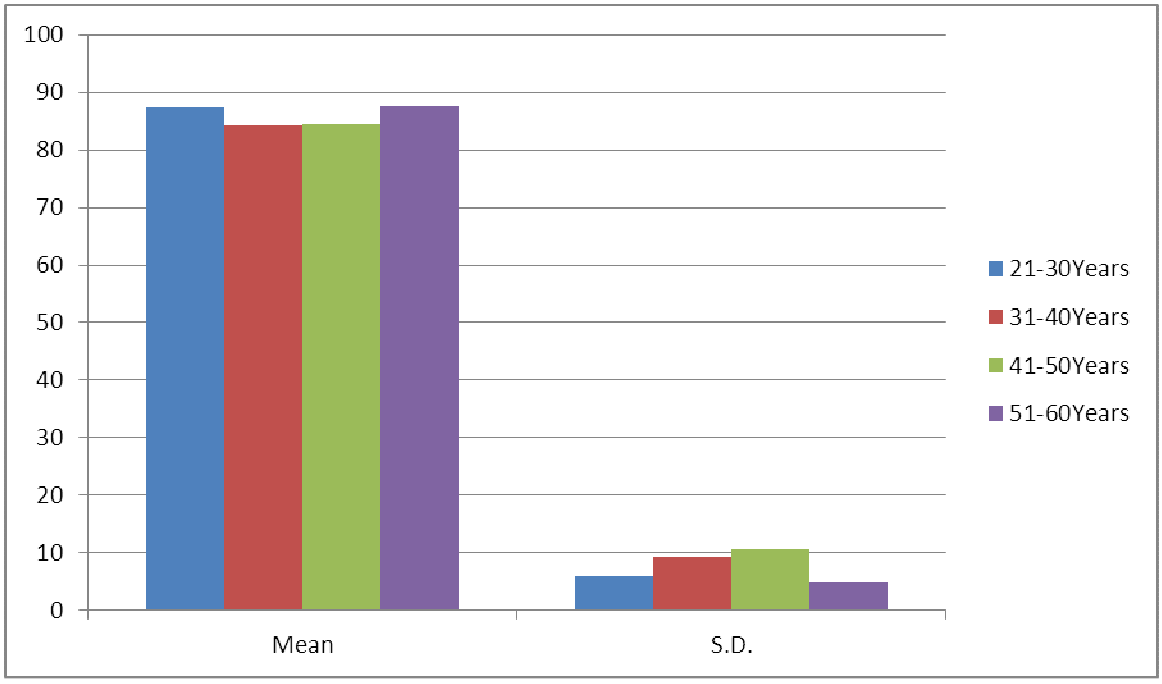

Fig. 5 Mean and standard deviation of teachers' attitude towards the use of ICT in relation to different age groups:

From, **Fig. 5** we observed that the mean score of attitude towards the use of ICT of 51-60 years age group teacher (87.63) is highest and the mean score of attitude towards the use of ICT of 31-40 years (84.28) is lowest among the four age groups of higher secondary school teachers. It may therefore be concluded that 51-60 years age group of higher secondary school teachers have more positive attitude towards the use of ICT in comparison to 31-40 years age group of higher secondary school teachers.

Table 4 reveals that p-value=0.34 (p>0.05) of teachers‟ attitude toward the use of ICT among different age groups (21-30 years, 31-40 years, 41-50 years and 51-60 years) of higher secondary school teachers which is more than 0.05. It means that there is no significance difference of teachers‟ attitude toward the use of ICT among different age groups of higher secondary school teachers. Thus, **Ho4** is accepted.

We learned from the data analysis that most instructors were supportive of the usage of ICT in the classroom. Gender has little impact on the attitudes of upper secondary school teachers on the use of ICT in the classroom since attitudes between male and female instructors stay essentially the same and are unaffected by gender.

It may be inferred that locality does not bring about a change in the attitude of teachers towards the use of ICT since the attitudes of rural and urban teachers continue to be practically same and there is no location difference in the attitudes of teachers towards the use of ICT.

types of schools (public, private, and aided) Instructors' attitudes were compared intelligently, and the results showed that there is no significant difference between the means of the two groups of teachers. The similarity in teachers' attitudes toward ICT may be due to their greater understanding of ICT, their desire to stay current on new developments, and the intense rivalry that exists between government/aided and private schools. According to the aforementioned

findings, private school instructors have a somewhat better attitude than government school teachers.

We may conclude from our current research that there are no significant differences in the attitudes of teachers who are categorized according to age groups about the usage of ICT. Teachers who fall into one of the four groups have a mostly consistent approach. It is abundantly obvious from the data that a teacher's age has no bearing on how they feel about using ICT.
Finally, it can be said that the majority of instructors in upper secondary schools had a favorable attitude toward using ICT. Therefore, it is important to raise instructors' awareness of the potential advantages of ICT integration. They should be given additional opportunities to improve their ICT abilities and encouraged to utilize ICT in the classroom.

Conclusions:

So, we can conclude that the attitude towards the use of ICT only depends on the human nature whether he or she shows positivity towards its uses and not depend on the persons‟ gender, experience, age or the person belongs from rural or urban area. Mainly adaptation of human being is the main factor of ICT uses.

Recommendations:

From our study, it manifested that major portion of the Higher secondary school teachers in Paschim Medinipur district had a positive attitude towards the use of ICT in their teaching skill. Teachers‟ attitude can also be enhancing by proper awareness of dynamic convenience of ICT integration. Hence, there should be taken more awareness programs for the teachers of ICT integration. It should encourage teachers to use ICT in classrooms and be provided with more opportunity to enhance their ICT skills.

Crucial factors like self-interest of teachers, attitude of school authority and sufficient training influenced teachers considerably in using ICT. So by taking proper awareness programs for the teachers and authority, ICT can be integrate successfully.

Though most of the schools in Paschim Medinipur had minimum ICT facilities, but lots of teachers and authority still did not know how to use the available facilities effectively. So it is very important to take proper training and supportive programme to impacting teachers to use ICT in their teaching skill. And finally we can suggest that throughout the country, there should be a definite and identical Govt. ICT policy for the Higher secondary school.

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Examining Undergraduate Students' Attitudes and Motivation in Learning English as A Foreign Language (EFL) At Socotra College : A Case Study

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Abstract:

The present research paper aims to investigate undergraduate students' attitudes and motivation toward learning English as a Foreign Language while studying at Hadrmout University's English Department College of Education Socotra.The objective of the current paper is to find out the undergraduate students' attitudes and motivation toward learning English as a F.L. studying in the English Department College of Education Socotra, Hadrmout University. To achieve the objective, the quantitative descriptive-analytical approach can be used to analyze the questionnaire that was answered by students of four levels. The researcher distributed 72 questionnaires, while 60 respondents were retrieved with a percentage of 83.3%, and 12 questionnaires were not responded to. Moreover, SPSS 23 used descriptive statistics and simple regression to analyze the research data and questions. The study found out the undergraduate students' attitudes toward learning English, as a F.L. studying in the English Department College of Education Socotra is high. As well as the results indicate that there is students' motivation toward learning English as a foreign language, with a high rate. There is a clear focus on the undergraduate students' motivation toward learning English as a foreign language lies in family. Thereby the research's outcome recommends that there should provide feedback, workshops, and training courses in English as a F.L. to raise awareness and the capabilities of the students' and teachers' attitudes and motivation in Socotra Island because of its direct impact on the students' attitudes and motivation.

Keywords: Attitude**;** Motivation;(F.L.) Foreign Language,etc.

1. Introduction:

It is known is that language considered the main medium of communication among people all over the world. To convey their emotions, experiences, attitudes, and interests, humans need a medium that is language. In this regard, English is one of the major languages that havewide-spreading globally. English has many forms of use as a native language, second language, and foreign language.

In the Arab world, English is being taught and learned as a F.L. Throughout the education system of the learning process,the subject of English is one of the compulsory courses in several countries' educational curricula.In Yemen, English is being taught and learned as a foreign language, so the students at different levels of education have points of view, attitudes, motivations, and drives that can lead them to study English properly.

In the present research article, much attention was drawn to analyzing and studying undergraduate students' attitudes and motivation in the Faculty of Education Socotra, Hadramout

University. The researcher has investigated the four levels of education in the English department at the faculty during the current academic year 2021/2022, the first semester. Though the researcher distributed 72 questionnaires, 60 respondents were retrieved with a percentage of 83.3%, and 12 questionnaires were not responded to. Further, SPSS 23 used descriptive statistics and simple regression to analyze the research data and questions.The study found out that the undergraduate students' attitudes toward learning English, as a F.L. studying in the English Department College of education Socotra is high. As well as the results indicate that there is students' motivation toward teaching English as a F.L, with high rate. Consequently, the study examined these issues carefully; revealed the reasons and challenges that stand behind these issues as well as found the results, and provided recommendations and further studies to overcome this dilemma.

1.1 Statement Of The Problem:

Motivation and attitudes of language learnersare considered a central area of research in the field of second language acquisition, and foreign language acquisition. Further, several researchers from various countries have investigated this topic in various contexts (ESL, EFL). However, limited Yemeni research has been conducted to look into these concerns among Yemeni students, particularly among EFL learners. So learning English as a foreign language is intrinsically tied to a desire to achieve a certain goal. Consequently, the attitudes and motivations of students to learn English differ dramatically from one student to another. Thus, the research problem can be formulated with the following questions:

1. What are the undergraduate students' attitudes toward learningEnglish as a F.L?
2. What are the undergraduate students' motivations for learningEnglish as a F.L?

1.2 Objectives Of The Study:

The objective of the research paper is to examine the undergraduate students' attitudes and motivation toward learning Englishas a F.L studying in the English Department College of education Socotra, HadramoutUniversity.

1.3 Significance Of The Study:

The research in the area of teaching in the field of foreign language learning has been linked to formal instruction in many recent studies. Attitudes and motivation, according to Margaret et al. (2003) and Dornyei (2003), are important factors. In the classroom, you can affect the average and progress of foreign/second language learning. Anderson (2001) asserts that the behaviors influenced by this social context are the most important determinants of formal language learning performance in the classroom. This research article highlights the attitudes and motivation of undergraduate students in learning Englishas a F.L in the English Department College of education Socotra.

1.4 Hypothesis Of The Study :

Based on the study problem, objectives as well as study questions, and in light of the research model, a hypothesis of the present research has been established to answer the research problem. The hypothesis has been formulated as the following:

1. There are no undergraduate students' attitudes toward learning Englishas a F.L.
2. There are no undergraduate students' motivations for learningEnglishas a F.L.

2. Theoretical Framework

Attitudes:

According to Likert, as stated by Gardner (1980), the term attitude refers to "an inference which is made on the basis of a complex of beliefs about the attitude object" (p. 267). Gardner showed up later and expanded on Likert's concept, identifying attitude as "the sum total of a man's instincts and feelings, prejudice or bias, preconceived notions, fears, threats, and convictions about any specified topic" (Gardner, 1980, p.267). When Gardner (1985) defined motivation, he included attitude as one of the most significant components. "The combination of effort plus desire to achieve the goal of learning the language plus favorable attitudes toward learning the language" (p. 10).

So Gardner (1985) asserted that a learner's level of success in the second language (L2) learning is inextricably linked to predictors of attitudes toward language. In other words, students with positive attitudes learn the target language more effectively than students with negative attitudes. Positive attitudes have the potential to accelerate the learning process. Gardner (1985) emphasized that a learner's belief or opinion shapes his or her evaluative response to certain referents, objects, persons, and situations. Based on the definitions mentioned above, it is clear that the structure of attitude mirrors the learner's "feelings," "beliefs," and "disposition."
Furthermore, the intensity or strength of an attitude differs from one learning situation to another. Though language attitude is an important concept because it plays a prominent role in language learning and teaching.Oller (1979) pretends that "Attitudes are merely one of the types of factors that give rise to motivation which eventually results in the attainment of proficiency in a second language"(p.138). Brown (1987) described the attitude as a construction formed early in childhood as a consequenceof one's interaction with both culture and his family and community's opinions toward that culture. Baker (1992) adds to the work of Likert, Gardner, and Brown by stating that attitude is "a hypothetical construct used to explain the direction and persistence of human behavior" (p. 10).

Wenden (1991) suggested a more comprehensive definition of the term 'Attitudes'.He confirms that attitude is made up consisting of three key components: cognitive, assistive, andbehavioral components. Individuals' views and ideas about a certain thing are referred to as the cognitive component, whilst their thoughts and emotions toward that thing are referred to as the evaluative component.Finally, the behavioral component relates to a person's attitude that causes them to behave in a certain way. From the perspective of Triandis (1971), that attitude is defined as "to think about," "to feel about," and "to react toward," implying that it is made up of three constituents: behavioral, cognitive, and effective. The first component, the cognitive component, is characterized by one's views on a social object or phenomenon.These beliefs may have been formed based on illogical thoughts, but those who hold this attitude believe it is a form of reality.Due to the experience that one has with a given state, the amount of these beliefs vary from one learner to the next (Triandis, 1971).In terms of the affective component, it refers to the learner's level of passionfor the language as a desirable or unpleasant, positive or unpleasant language. In terms of the behavioral component, the learner's readiness to act toward the attitude object has been defined.It can take two forms: either it expresses itself clearly in the learner's everyday conduct, or it expresses itself indirectly through verbal and nonverbal expressions. This aspect of attitude allows us to recognize the thoughts that learners have about a particular language.

Motivation:

Motivation, according to researchers, is a powerful engine that leads to success in learning as 2nd L, or F.L.In the study of a second or foreign language, motivation has been identified as an important topic of research. Researchers have had difficulty agreeing on the precise definition of motivation, though, as a result of the complexity of the concept (Dörnyei, 1998). In fact, according to Guilloteaux and Dörnyei (2008), all motivational definitions "attempt to explain nothing less than why humans behave and think as they do." (p. 55).

In terms of learning a 2nd L,Dörnyei, and Ott? (1998) can be defined motivation as "the dynamically changingcumulative arousal in a person that initiates, directs, coordinates, amplifies, terminates, andevaluates the cognitive and motor processes whereby initial wishes and desires are selected,prioritized, operationalized and (successfully or unsuccessfully) acted out" (p. 65).

Motivation is thought to be at least as important as language aptitude in determining second language achievement in second/foreign language learning. Danzka and Kapil (1991) believe that "Motivation is a psychological concept in human behavior that describes a predisposition to reward a particular behavior to satisfy a specific need" (p.61).

The significance of motivation in improving second/foreign language learning cannot be overstated. Different schools of thought have taken different approaches to the concept of motivation. For example, motivation is as Brown, (2000) referred to "very simply the anticipation of reward from a behaviouristic standpoint" (P.160). As we researchers defined Motivation refers to a person's desire and readiness to do something, and it is a key factor in how engaged and active they are in learning an (L2) or a (FL).

Research Methodology

The society of the study is the undergraduate students of the English department at Socotra College of education; that have been selected to represent the sample are four levels (first, second, third, and fourth).From each level, a random sample was selected. The targeted respondents in each level of the English department were the students per level. The total number of the sample selection stands at 72 (responses 60, no responses 7, and 5 not valid). The valid sample of this study is 60 responses - yielded (83.3%).The methodology that used in this study is the descriptive analytical approach to analyze a questionnaire Data analysis was performed using (SPSS 23) technique was used to analyze questionnaires and to detect the undergraduate students' attitudes and motivation toward learningEnglishasa F.L. The primary data was collected by using the questionnaire.

Data Analysis And Interpretation Of Results

The Characteristics Of The Study Sample

Table.1.the Characteristics of the Study Sample

NO	Variable	Category	Frequency	Percentage %
1	**Gender**	Male	20	33.3
		Female	40	66.7
		Total	**60**	**100%**
2	**Age**	20-25	59	98.3
		26-30	1	1.7
		Total	60	**100%**
3	**Level**	First Level	16	26.7
		Second Level	15	25.0
		Third Level	13	21.7
		Fourth Level	16	26.7
		Total	60	**100%**

Source: Researcher preparation based on the outputs of SPSS.

The age of the study sample was (98.3%) were 20-25 years and (1.7%) of respondents were 26-30 years. This indicates that a large part of the study sample has attitudes and motivation toward learning English as a foreign language. The percentage of the level students was 26.7% at the first and thefourth level, while 25 % at the second level and 21.7 % at the third level.This indicates that the study sample is distributed between the four levels, with a suitabilitypercentage.

1.5 The Undergraduate Students' Attitudes Toward Learning English As A Foreign Language

Table.2. the Result of the Undergraduate Students' Attitudes toward Learning Englishas *a F.L.*

No. QU	Items	Mean	St. deviation	Relative importance %	Rank	The degree rate
1	The English language is more useful than my first language	3.00	1.042	60	6	High
2	I think the English language is an easier language to learn	3.60	.942	72	5	High
3	In my country, people who speak English are more respected than those who do not.	2.87	1.321	57.4	7	High
4	I am interested to speak English very well	4.20	.659	84	2	Very High
5	I enjoyed learning English	4.37	.736	87.4	1	Very High
6	I like English films	3.65	.936	73	4	High
7	I feel excited when hearing English spoken	3.90	.933	78	3	High
The General Mean of the Students' Attitudes		**3.65**	**.469**	**73**	**1**	High

Source: Researcher preparation based on the outputs of SPSS.

Table (2) shows that the domain of the undergraduate students' attitudes toward learning English as a foreign language studying in the English department college of education Socotra, Hadrmout University is relatively high, within an arithmetical mean of 3.69, and a standard deviation of .469. The average of the paragraph that states, "I enjoyed learning English" is 4.37, and relative importance (87.4%) with a very high level of application. Followed by a paragraph that states, "I am interested to speak English very well." Within an average (4.20), very high application level and relative importance (84%) and standard deviation (.736) and (0.656), respectively. The results indicate that the undergraduate students' attitudes toward teaching English as a foreign language that studying in the English department,college of education Socotra is high and that the Department of College of education Socotra pays attention to this domain according to the undergraduate students' attitudes toward learning English as a foreign language. The results also indicated that the opinion of the study sample that people who speak English are not more respected than those who do not. Moreover, they agreed that the English language is not more useful than their first language; the reason it was getting a medium level of application.

1.6 The Undergraduatestudents' Motivation To Learn English As A Foreign Language

Table.3. the Result of the Undergraduate Students' Motivation to Learn English as a Foreign Language

No. QU	Items	Mean	St. deviation	Relative importance %	Rank	The degree rate
1	I study English because it will help me get a job easily	4.00	1.042	80	3	Very High
2	I learn English because I have a desire to know all aspects of English	3.55	1.032	71	8	High
3	I learn English because it is a university requirement	3.33	1.115	66.6	10	High
4	I learn English because I want to continue my Education	3.82	.930	76.4	6	High
5	My family tries to help me to learn English	4.17	.886	83.4	1	Very High
6	Studying English is important because it will allow me to be more at ease with people who speak English	4.02	1.172	80.4	2	Very High
7	English is not an important goal in my life	2.78	1.379	55.6	12	Medium
8	I learn English because it is an international language	4.00	.991	80	3	Very High
9	Learning the English language is important for my Personal development	3.92	1.169	78.4	4	High
10	I stud English because it will help me to travel to different countries without difficulties	3.90	1.130	78	5	High
11	I study English because I would like to make international business	3.17	1.092	63.4	11	High
12	I study English because it will widen my horizons	3.45	.999	69	9	High
13	I study English because it will enable me to get to know various cultures	3.73	.972	74.6	7	High
The General Mean of the Students' Motivation		**3.48**	**.331**	**69.6**	**2**	High

Source: Researcher preparation based on the outputs of SPSS.

Table (3) shows that the overall domain for the Students' Motivation is high, with an overall average of 3.48, and relative importance (69.6%). This means that most of the respondents have a high approval rate for this variable. It has a standard deviation obtained of 0.331, which indicates that there are consistency and harmony between the views of respondents on the paragraphs of the variable. The results indicate that the undergraduate students' motivation toward learning English as a F.L lies in family, it allows them to be more at ease with people who speak English, to get a job easily, and because it is an international language. In addition, the results indicate that the undergraduate students' have not motivation toward learningEnglish as a F.L lies in English is not an important goal in their life; they study English because they would not like to make international business, and they did not learn English because it is a university requirement.

2. Conclusion:

The current study concludedthat the undergraduate students' attitudes toward teaching English, as a F.L studying in the English Department College of Education Socotra is high, with

a rate of 73%. There is a clear focus on the undergraduate students' attitudes toward learning English as a foreign language because they are interested in speaking English fluently as well as their enjoyment in learning it. Moreover, the results indicate that there is students' motivation toward learning English as a foreign language, with a high rate. There is a clear focus on the undergraduate students' motivation toward learning English as a foreign language lies in family, it allows them to be more at ease with people who speak English, to get a job easily, and because it is an international language. The research recommends that the department college of education Socotra, Hadramout University should held language conferences, symposiums, lectures, provide feedback, workshops, and training courses in English as a foreign language to raise awareness and the capabilities of the students' and teachers' attitudes and motivation in Socotra because its direct impact on the students' attitudes and motivation.

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A Study of Indian Ethos in the Select Novels of Amish Tripathi

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Abstract:

The present research paper is a Theoretical, Analytical and Evaluative study of Indian Ethos with reference to theselected novels of Amish Tripathi. He is famous for the Shiva Trilogy which focuses on a man's journey and how his legend turned him into a God. After this successful trilogy he came with the another trilogy called Ramchandra Series which contains 1) Ram: Scion of Ikshvaku 2) Sita:Warrior of Mithila 3) Ravan:Enemy of Aryavarta.This Ramchandra Series explores the life of Ram,his band of brothers and his wife Sita, as they lead India out of the darkness of chaos and into the light. Amish believes that the Hindu gods were not mythical beings or a figment of rich imagination. According to him they were creatures of flesh and blood, like you and me and they achieved Godhood through their karma, their deeds. He also believes that their blood runs in our veins as they were our ancestors. Amish thinks that the words Vishnu and Mahadev are not individual names. They are in fact titles,given to persons who are the greatest of leaders, who become God-like.Amish Tripathi's novels are not only about captivating AdventuresMyth,History and use of symbols but also they touch the issues,Honesty,Goodwill,Sacrifice and above all family value

Key Words: representation, edutainment, morals, beliefs

Introduction :

Beforewe go through the Indian ethos, it is really important to understand what is ethos?Ethos can be simply defined as a set of beliefs, ideas,and philosophy. Ethos is all about social behavior and relationship of a person or group. The word ethos is derived from the Greek word,'ethikos' which means civilized, viewing honesttemperament, accustomed place, morality, showing moral character. Ethos is a Greek word meaning, 'character' that is used to describe the guiding beliefs, morals and ideals that characterize community, nation or ideology. The Greek also use this word to refer the power of music, to influence emotions feelings, thoughts, behaviors and even morals.

Cambridge Advanced Learner's Dictionary Defines ethos as a set of beliefs, ideas and others about social behavior and relationship of a person or group.Whereas Oxford Advanced Learner's Dictionary Defines ethos as the moral ideas and attitudes that belong to particular group of society. According to Oxford Concise English Dictionary ethos is the characteristic spirit of a culture or community as it is reflected in its attitudes and aspirations.

Oxford English Dictionary Defines ethos as a means of habitual character disposition and tendency of a set of people or race. In simple words, ethos stands for human society that embodies a certain culture or system based on human and other natural values of life.Inshort, ethos is the disposition of character or set of fundamental values particular to a specific person,

people, culture or movement. It is associated with the geographical locations, languages, race, religion and culture of a nation.

When it comes to Indian ethos, it is all about what can be termed as National Ethos. Indian ethos refers to the principles of self-management and governance of society, entity assisting by wisdom as revealed and brought food by great scriptures like Vedas, Upanishads as The Geeta, The Mahabharata, The Bible and The Quran. This wisdom evolved through the old practices of Indian history, philosophers and religious groups and It is now found to execute for self-management and good governance of a stormy society and business environment or even a politically divided world. Alexander the Great, Tsang Hi from the China, Abdul Razzak from Iran came to India and observes the exceptional importance of the Indian ethos in its social institutions, religious structures, moral framework and peculiarities of food ornaments and garments.

The Vedic culture is prominently reflected in Hinduism, the scriptures like Vedas and Upanishads as the Puranas and the Bhagavad-Gita have impressed life style of majority of the people in India. Due to intermingling of many cultures for centuries after centuries the
Indian society is identified as unity in diversity. It is the amalgamation of complex customs and traditions representing different religious identities, there are a multitude of beliefs and convictions, they are interlinked features of an integrated diverse society. The Indian Constitution celebrates tolerance towards various religious identities along with their linguistic differences. People living in India as a whole explore various cultures, languages and customs. Muslims, Sikhs, Jains, Christians and Zoroastrians also reside amicably in India exploring their own identities. Such complex structure of society, philosophy, religions and languages has led to the creation of Indian ethos. The crux of Indian ethos lies in its oral literature and legacy of folk lyrics. Stories have been transforming from generations to generations.Some of the oral literature was preserved in a written form in the languages like Pali, Pakrit and Sanskrit etc.Through this evaluative research work we will understand the articulation of the Indian Culture, Communication, Religious concepts, Family values, Moral values, Identity and most important of all Philosophy.

Rationale and Significance of the Study:

Since the research work attempts to study the Representation of Indian ethos as anarticulation of Culture, Communication, Religion,Identity and Philosophy.The purpose of human life as enshrined in the opposition as for the good of all.There was an apple philosophy behind this which stated that the whole world is one family one understanding, underlying Idea behind this may require scholarly rigor and erudition given the deep philosophical essence of the Vedic text, there are simplistic explanations that makes sense. Kabir the famous saint of India for instance can be read to get insightful fractions of Indian ethos in his simple and early style.Famous and often repeated quote of Kabir is,"saiitnadijiye, ja meinkutumbsamaye, main bhibhukhanarahoon, sadhu nabhukhajaaye" translating this in English becomes,' O God, give me that much so that I can take care of my family; I do not remain hungry, nor the person who comes to me for or alms.

In the Hindi popular title song of Bollywood hit of the 1950's,JisDesh Mein Ganga Bahtihai, this idea was beautifully and melodiously brought out, translating those lines in English becomes, 'We Indians love our guests more than ourselves and we do not crave for more, rather enjoy with little'. The Indian ethos has always valued Parmartha for the good of others. The

richness and the depth of this ethos is gradually being lost as we are becoming too preoccupied with self-interest under the influence of alien values and cultures that do not hold humanity on the same pedestal as Indian ethos. Indian ethos always been talked about and practiced as well.

Objectives:

1. To study Amish Tripathi's Ramchandra Series as a representation of Indian Ethos.
2. To examine Ramchandra Series as an articulation of Indian Culture.
3. To study Ramchandra Series as an articulation of Religion.
4. To examine Ramchandra Series as an articulation of Indian Tradition.
5. To study Ramchandra Series as an articulation of Indian Philosophy.
6. To understand the issues of unawareness about the ancient Indian Culture and Tradition.
7. To analyze the works in the light of educational, social and literary perspective.
8. To interpret the selected Novels as a modern take on the epic.
9. To present the need and importance of rethinking the epics as a need of time.
10. To explain how colonization of education system led to unawareness ofIndian heritage.

Hypothesis

- Amish Tripathi uses myth, history and symbols to present Indian Philosophy and Religion.
- Amish uses fantasy and imagination to execute Indian culture and Tradition.
- It has been seen that these novels are nothing but modern take on the epic Ramayana.
- It has been observed that studying of these novels can surely constitute the solid and enduring foundation of long and magnificent Indian culture and civilization.
- Ramchandra Series is an articulation of Indian ethos as Culture, Religion, Tradition and Philosophy.

Methodology of the research:

The analytical framework for the study undertaken in this research would be based on theorizations of ethos, features and aspects of Indian ethos, the need and importance of Indian ethos. This thesis would enquire that how the Indian ethos has been analyzed in Indian English literature. For the study of Indian ethos in Amish Tripathi's novels theoretical method would be used as original books would be the primary source of the Information about religious and cultural angelsfor the better understanding of the texts.

The methodology for this study will be Analytical, Evaluative, Interpretative and Theoretical. Library method will be supplemented for the understanding of the concept Indian ethos with online articles and books available related to this topic would be studied as well.

Scope and Limitations:

There is always scope for research in every genre of literature, so is in this topic as well. This proposed work offers an opportunity to the researcher for an interesting and unique investigation of Indian ethos as representation of culture, religion, identity and philosophy. These selected novels of Amish Tripathi are a modern take or representation of the epic Ramayana which not only deals with myth, history and philosophy but also honesty, morality, family values, culture, religion and sacrifice. With this topic there is scope to present the need and importance of Indian ethos in the age of globalization. This research can strengthen the positive view about learning our Indian heritage that leads to wisdom, liberalism, pluralism and

knowledge. It helps to understand the quality of writing any work of literature in modern style which can connect to the common people easily.

Talking about the limitation the study will only focus to Indian ethos with reference to the selected novels of Amish Tripathi. Indian ethos is a vast concept, so it is not possible to touch every aspect of it. Because of this the researcher would fix some rubrics like, Culture, Religion, Communication, Identity, Morality, Philosophy etc. So this study would be limited to these aspects only and not all.

Review Of Related Literature:

Indian Ethos employed by the scholar's, historians and anthropologist to illustrate the major principles that portray society, nation, community or philosophy. The Use of this word in rhetoric is closely associated with the Greekterminology used by Aristotle in his concept of three artistic proofs or modes of persuasion. Aristotle described three artistic proofs 1) Useful skills and practical wisdom 2) Virtue and goodwill and last but not least 3) Good will towards the audience.

According to TS Eliot ethos is the spirit which motivates ideas and customs. in 1940 he wrote the general methods of the people they have to govern determines the behavior of politicians (T.S. Eliot, P-25)Similarly the historian Orlando Figes wrote in 1996 that in Soviet Russia of the 1920 the ethos of the Communist party dominated every aspect of public life.

Indian writers who celebrate Indian ethos and trying to project through the novels like ram Mehta in Inside the Haveli and Kamala Markandaya in her novels.Amitav Ghosh, Shashi Tharoor and Amish Tripathi etc. are some of them.Perhaps the most well-known writer of mythology is Dr Devdutt Pattanaik who is famous for mixing traditional ideas with modern world.

His works are well researched and showing the age-old tales in new light for instance, Myth= Mithya,Jaya: An illustrated retelling of the Mahabharata and Sita: An illustrated retelling of the Ramayana. Kavita Kane is Indian women author who is a favorite among women readers. she wrote about the forgotten female characters of great Indian epics and retells the tales through the point of view of women for instance,Karna's wife: The outcast queen, Sita's sister;Menaka's choice and Lanka's princess etc. Chitra Banerjee Divya Kumari who is a professor of creative writing at university of Houston retells the story of the Mahabharata from Draupadi's point of view in her novel, 'A Palace of Illusions'.Ashok Banker is an Indian author and screenwriter,famous for crime thrillers, essays, literary criticism,fiction and mythological retellings.His works on Ramayana series contains eightvolumes,an imaginative retelling of the ancient Sanskrit epic poem. His Krishna series also contains eight parts and the Mahabharata series six parts which are quite famous.

Ethos in India, has a specific understanding and impact and territory covers different geographical areas, languages, culture, religion, tradition, society and philosophy.

Plan of Research: This work researcher wishes to divide into five chapters as below,

Chapter 1. Thiswould bean introduction to the Indian ethos, Meaning, Features,Need, History, Relevance,Principles Practiced by Indian Philosophers, Elements, Role of Indian Ethos in the age of globalization,rationale and Significance of the Study, hypothesis, aims and objectives, research methodology, review of related literature, scope and limitations of the study

Chapter 2. This chapter will be about the articulation of Indian ethos through which the researcher wishes to evaluate the novel Ram –Scion of Ikshvaku by Amish Tripathi. This is first

book on Ramchandra series published in the year 2015.As the title of the novel suggest it is from the point of view of Ram. It also refers to the Ram Rajya: The perfect world, but Perfection has a price and ram did pay that price. It has been observed that Ram loves his country, even when his countrymen torment him. He stands alone for the love. It has been seen that he and his brothers share the unbreakable bond which is missing totally in the age of globalization. Ram knows that his father's ways of ruling are not efficient, but as ideal son he refuses to rebel against Dashrath. Ram needs to regain back his interpreted name among his people. Ram stays idealistic, Bharat grows up to be practical and real, Sita's strong will, Lakshman's unconditional love and support for his elder brother Ram. Hanuman's selfless devotion.

Chapter 3. This chapter will be about the representation of Indian ethos through which the researcher wishes to evaluate the novel Seeta-Warrior of Mitthilaby Amish Tripathi. This is second book on Ramchandra series published in the year 2017. This book is from the perspective of Sita. Amish depicts Sita as a brave princess with beauty and brains. Sita is shown to be blessed with a multifaceted personality. She comes across as a mature girl. This novel showcases her governance skills and her caring relationship with her family is quite heartwarming. Hanuman and Jatayu are portrayed as brothers to Sita protecting her from every adversity that comes her way. This is the story of Sita who willingly follows her husband into exile and after being kidnapped by Raavan accepts rejection by her husband on her return. It was the idea of guru Vishwamitra to groom Sita into becoming the Vishnu,whose duty to lead country's Dharma.

Chapter 4. This chapter will be about rethinking of Indian ethos through which the researcher wishes to evaluate the novel Ravana: Enemy of Aryavartaby Amish Tripathi. This is Third book on Ramchandra series published in the year 2019. Through this novel Amish tries to present the biggest villain ever Raavan in totally different light. Raavan is the synonym to the word devil.Amish gives this character an edgy personality so as to make him an interesting project. Raavan is an intelligent, sharp as legend has it all. The bond he shares with all his brothers and specially with Kumbhakarna is the surprise package of the book. A picture of a well-intentioned, intelligent, brave warrior who seems to be in thrall to his complex elder brother.And this why readers quite liked the link to Kumbhakarna's legendary tendency to sleep the hours of the day away.

Chapter 5. This chapter discusses the conclusion arises from theprevious chapters and discusses the similarities and differences of these three books from the Ramchandra series by Amish Tripathi. It also talks about the limitation of the work providing some suggestions for further research.

Conclusion:

Thus, revisiting our Indian heritage with the study of Indian ethos in the select novels of Amish Tripathi is an enriching experience. The everlasting appeal of these treatises still influences to great extent of cultural life and behavior pattern of Indians. We are the only country That has such rich heritage which has been showcased in Amish Tripathi's novels.

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Cinematic Representations : Modes and Means

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Abstract-

The visual mode always offers choices that the written narrative may not. The multiple agencies of cinematic representations of gender masculine or feminine gain greater freedom in the choice of different outlooks. The camera eye, narrator, spoken dialogues, body language, facial expressions, the high, middle, and low light angle of the camera as well as the silence and spaces are to be called the multiple agencies or the modes of expressions. It is fascinating to critically discover the psychological relationship between a life on the screen and the actual life of one in society. Philosophical observation proves that a film always comprises several components within itself. We may list down several concepts which must be combined to form it (cinema/ film) e.g. perception, representation, signification, adaptation, evolution, identification, figuration, and interpretation. These all factors together complete to form the art called 'cinema.'

The present paper will focus on the technical modes which are used to make a film as a complete or sole object. The present research article will explain the role of the camera and different angles of Film/ Cinema interpretations. Certain keywords will be analyzed and discussed as per the need for discourse. Representation of social reality when comes from life to pages and from pages to screen, it goes through different techniques. As we will study critically the high, middle, front & back camera lights too to gain the proper effect of any theme. Every film is based on raw structure and that structure makes a solid framework for any level of the film. Under the title of films, we have to list down such commercial films, realistic films, and films based on psychology which are art or parallel films. Every cinematic presentation always prepares a discourse. That may be a discourse of social issues and gender realities etc.

Keywords- Perception, representation, signification, adaptation, evolution, identification figuration, and interpretation.

Introduction:

A heap of people is watching a film/ cinema in a theatre, but very few are concerned with a message. A little group of people has paid attention to the technicalities of film production. Very often 'the focused spectator' (of any film) is constructing and regenerating in their subconscious mind the diversified imaginative persona of someone. Most audiences feel very happy to watch the Actors and Actresses on the screen, for us they are role models and idols to be guided psychologically and emotionally. Recently the field of research in Literature or literary studies allows us to view things differently. It allows us to look for the unconscious reflection of social reality, the underline power structures, the frames which melt into each other, the repetitive narrative patterns, and the dialogues which use myth and history. It juxtaposes all techniques simultaneously by the way of the medium. There is no possible way that a compartment of literature can hold them aloof from the cinematic medium, especially when the film has never shown any hesitation in appropriating literature for its purpose.

Let us focus on the very first concept of cinematic art i.e. 'the perception'. The question arises in our mind that is 'what is perception?'

According to the dictionary, 'Perception', is the act or power of perceiving an object and point to recognise it through a combination of sensors. (**Kirkpatrick, 1991, page number 997**)

One can simply take the example of a book e.g. - the book in front of you is there on the table in reality. It has physical reality no doubt you can touch it, smell and behold it through your eyes. It means you can feel the book, going for reading the contents and contemplate it for a better understanding. You can hold the text in your hand and try to touch its cover. You were in process of objectification, the process of thinking. It means the book has become a symbol of presentation in your mind. If you are a thorough reading and you are reading a book line by line, you may be able to communicate your thoughts about the book to someone else. It means if the book is not physically present before you, but you are trying to perceive the book mentally and try to describe it in the manner in which you have perceived the interpretation of that book. It is one level of perception. Secondly, you may be asked by someone what did you learn from the book? Then you will communicate some lines from the book and try to formulate exactly what you feel about it. It is to be called another level of perception. According to Gesalt's theory, perception always implicates the advocacy of cultural attributes and the addition of a few social codes into visual life to create a semblance between a few incidents from the real and thecinematic portrayal of human life. It means people are always inclined to see the film as an integral part of everyday life.

Then 'Representation' is another medium of cinematic performances. The word, representation was first time used by the Greek philosopher Aristotle in his theory of Memesis. In the theory of Memesis, the performer tends to imitate, to copy the actual life in the contemporary society which belongs to a different class,culture, creed, etc. Now let's differentiate between the physical reality and the psychological one. Let's assume that the presence of a book is a physical reality which is something present in front of you, i.e. book. But if someone willask you,'what is a book?' Then in your mind, there would be an existence of a bookthat will take shape which is the psychological reality. The psychological reality and the perceived understanding of an object may vary from person to person. According to Christian Metz, a Film Theorist the concept of Representation in cinematic perception has its limitations. As per the search for mass audience representations, the cinematic perception tends to be rhetorical and melodramatic. Especially the dialogues which tend to use sign, footprints, symbols, myths, and inferences that are easily recognized and gains compatibility with a complete resonance.

The 'adaptation' is another medium of a cinematic representation of any context. The word adaptation suggests multiple interpretative styles of film adaptations. Seemingly it sounds enough simple but it is unfolding and somewhat complex meaning when we are seeking real-life examples in society. For example, Sigmund Freud explains many of his dreams such as suppose, if someone is planning to visit the YCMU, Headquarter in Nasik from his or her home town to collect the grade sheet of PG Diploma in Psychology. He or she has to plan the trip well in advance. When that person will reach there, he/ she will realize that several administrative procedures are yet to be completed toobtain the grade sheet and He will have to stay in Nasik for another day. What will come to his mind immediately that is interesting? 'Where would I stay and 'What would I eat'. It means the adjustments and readjustments need to manage several

times. It is to be called the phenomenon of adjusting oneself to one's immediate environment that is adaption.

In the world of cinema, such a similar process happens. We can mention any short story or fable or folk tale that is being adapted for a film. The story undergoes several changes through the process of adaptation, transformation, and translation which has become a necessary process to fit the matter in which it will be produced. Jean Mitry, a Film Theorist said, when a story from a different language is adapted, and modified as a plot (of the film), it has become a necessary aspect of filmmaking and it can be varied according to the language and culture in which film is being made. E.g. Sharad Chantra's Chattarjee's Bengali novel "Devdas" has been adapted into a film by the male director and the role of Paro and Chandramukhi is equally portrayed in comparison to Devdas that is they are portrayed as powerful gorgeous, emotionally vulnerable characters. Even Mahasheta Devi's text 'Ruddali' was adapted into a film in 1933 by a female director Kalpna Lajmi, as a female director with an impartial sincerity she did justice to the portrayal of the faithful profession as a mourner. Kalpana Lajmi has shown the powerful portrayal of a woman in commercial cinema.

Then 'Identification', the story of the sub-conscious mind popularised the medium of observation study to understand the cinematic form of art. Hugo Musterburg, a Film Theorist focuses on the proper communication of a spectator and a film producer. In order to understand any film as an art, it is important to study the dialogue of a producer/director with the spectator and see what they have in mind. The proper identification of a spectator with a film director processes the film towards success. E.g. the inter-caste marriages began to be shown in the 1930s and 1940s Films of Boll woodslike 'Achhut Kanya (1936) where we see a Brahmin boy and an untouchable girl get married on their own choice.

The last concept of cinematic representation is the 'interpretation'. 'Interpretation' is an indivisible part of film analysis is as it focuses on the context of a film. The interpretation always focus on the other new aspect which may not be immediately visible but when you watch a film, one must observe that every individual has his/her own way of thinking which is monitored by the norms of society in which it lives.

Merleau Ponty, a Film Theorist points towards the way of representation as the way a film portrays the scene of a food habit which suggests interpretations of different kinds depending upon its cultural context and social surrounding. Interpretation is called a basic technique to understand the film. It is interesting to know how the emotional movements of the film are shown through different cameraangles; sometimes the focus of a camera is on facial expressions particularly a deep angel shot at the time of death scene is shown from a high angel camera. Rape scenes of a woman have always been signified through symbolic musical background. The technique of interpretations works through the properties of the (actual) scene such as bird fluttering, thunderstorms, violent waves, and lighting on the rocks, and on the sea sides. The medium of representation and interpretation is the basic medium that can give proper justice to the response of the Spectator.

There are many ways to study and analyze the Film. Many Film Theorists projected semiotic and psychoanalytical modes of film studies. Let us focus on the semiotic and psychoanalytical angle of study.

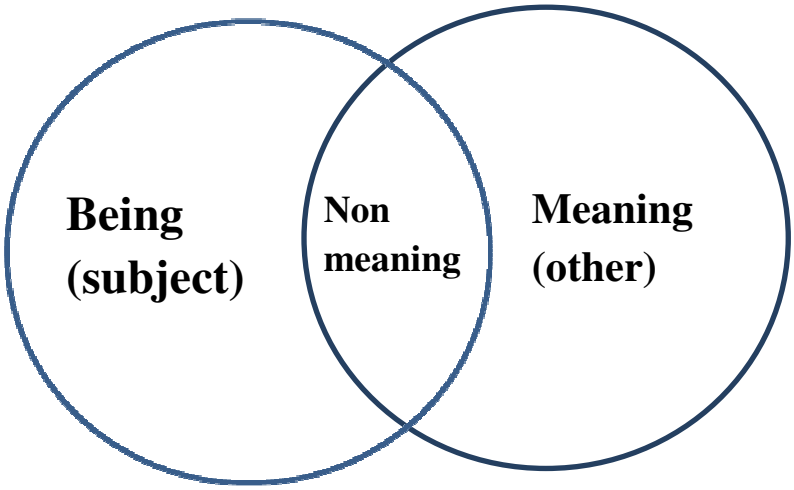
The semiotic theory is related to the theory of signs. As we know Ferdinand de Saussure is to be called the pioneer of Semiotic theory which creates a scientific base for the study of signs

in a language. We are familiar now with the concepts of perceptions, significations, and identification which can be examined from the semiotic perspective. In order to explain the semiotic angle of a cinematic study in performing art, it will be explained with an example of a tree. When someone pounced or 'uttered' the word 'tree', at once image of a tree appears in one's mind. Your single thought shape at the objectification of an image of a tree could be different from the image of a tree that someone thought of. Because we already read about it in a book, in a poem with an exemplification of an image of the tree one can access any example of any scene from any film where a song is being shown on the screen. You can observe that most of the time the Hero and the Heroine of any film go to a different location with different costumes, at an alternate shot which may be drastic from the preceding scene of the film. If someone listens to the song apart from the film, it will not be interesting. But if the same song is sung by a Hero, now you can see it has a meaning. If someone sings the same song somewhere, where it is not necessary for that particular context. If you like any particular song, you may repeat it until it will not be replaced by another song now if it. comes at the comparative level with other people who have watched that particular film with you, might not surely like that same song. So, there is a basic bottom-line difference between watching a film and listening to a song. So there will be a difference between two things watching a film and listening to a song. Such differences always createstereotypical images of Heroes and Heroines. Again you might like a particular Hero because of his dressing senses or because of a typical style of presentation.

Cinematic art always uses different semiotic forms to create meaning for the entire film or cinema. Cinematic art establishes certain techniques which may not suitable for the scenario of a particular society. Therefore certain films have to be defined as fixed parameters that indicate a utopian understanding of the life of a diversified cultural country like India. The semiotic approach of study drags our attention towards the domain of the particular parole because it studies the permissibility and impermissibility of that system. Sometimes films portray things as it is which might not be accepted by your society and culture. E.g. widow's remarriage in 'Kati Patang' (1970) and 'Prem Rog' (1982), the inter-religious marriage in, 'Bombay' (1995) or 'Pinjar' (2003), and pre-marital pregnancy shown in 'Aradhana'(1969) and 'Julie' (1975). The angle of semiotic study has been efficiently tackled in 'Amar Prem'(1972) and 'Ram Teri Ganga Maili' (1985) problem of prostitution has been intelligently shown in both above films by the technique of semiotic study.

The second mode to study is psychoanalytical. In psychoanalytical mode, the fundamental issues are thoroughly focused on from all angles of study. The study of Sigmund Freud, Jacques Lacan, Levi- Straus, Mitchell Foucault, Julia Kristeva, and others have prepared the strong grounds for the technical, psychological, and socio-linguistically study of films. Lacan has developed particular philosophy of meaning, through the theory of 'Vel of alienation. According to Jacques Lacan, Psychoanalytical Theory.Signifies the psychology of choosing one over the other which always resulted in deprivation. E. g. selection of money and life. If someone inclines to choose wealth instead of money life itself deprives them of something and similarly, if someone chooses life, deprivation of money will be in priority. Jacques Lacan elaborates on the mode of Semiotic and Psychoanalytical way of interpretation through the following Venn diagram. Where the meaning and the necessary essence of life are like the choice between money and life. Thus the individual has become nonmeaning. One can observe the difference; e. g. if

someone chooses the 'being as a subject' then the meaning of other objects becomes, non-meaning. **(Lapsley & Westlake, 1988. P. 72)**



Source: (Lapsley & Westlake, 1988. P. 72)

The above sources of being (subject), non-meaning, and meaning are shown to be adapted into cinematic art. It means when a subject utters something, that will convey proper meaning to everybody. It is observed that everyone doesn't interpret the word in the way someone inclines to utter it, and that becomes the nonmeaning of that utterance. We can take an example with the above reference suppose the Hero tells the heroine, 'I didn't expect this from you, and one might interpret the statement differently from someone else in the audience. Similarly, when someone tends to generalize certain gender issues, which you may have heard and tend to differ with generalizations. E. g., the issue of child trafficking might sound irrelevant to people who are not at all aware of the stark reality of life. Another example of a bitter truth of society i. e. the concept of marital rape sounds somewhat illogical and unbelievable to few one. There are many other problems and gender issues are yet to be discussed in our day-to-day life. Those social problems find objectification through cinematic art. One might say film always brings those shaded issues into the light and questions our beliefs through various interpretations based on cinematic art.

The above observations underline the two art forms i. e. the 'verbal' and 'visual' are not only parallel but both are interactive, interdependent, and reciprocal. The verbal and visual are the two diverse mediums that affect the reader and viewer's relationship which seems very complex. The disparities between the two at the same time focus on similar areas.

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Exploration and Projection of Nakedness of Socio-Political and Administrative System in *Article 15* Film : A Review

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Abstract:

Article 15 through the lights on Dalit stereotypes that are represented in the movie. The research paper discusses projection and exploration of nakedness of socio-political and administrative systems depicted in the movie, the research paper also lays emphasis on themes revolving around 'Brahminic Heroes', 'Dalit Victims and Dalit Protest Silenced' and 'Interlinkage of Gender and Caste Violence'. In the movie, Brahminic/ Savarna heroes are presented with certain visual cues and cultural markers. This includes certain privilege, fairness, well-dressed, confident, handsome, articulate and upper-class characters. AyanRanjan checks all these stereotypes. He is portrayed as an ideal for the audience and a saviour for his Dalit counterparts. However, his cultural cluelessness makes him caste-blind. He has achieved this privilege due to caste-hegemony which does not look at other spaces. The character is not just Brahminic but urban Brahminic. The movie depicts that caste space only exists in rural India which is clearly flawed. While the movie tries to interrogate it when Aditi hints to Ayan how even their mothers used to have separate sets of utensils for people from lower castes but it never addresses caste in urban spaces. Through analysis, we will discuss the depiction of a stereotypical Brahminic hero. Dalits are portrayed as dark-skinned, unhygienic, skinny, powerless characters who are dependent upon the social elites for justice. In the film, the Dalit community lives in the conditions of helplessness, abject poverty, performs filthy jobs and faces daily violence and social ostracization. Even the law enforcement is seen harassing them. Very little resistance by Dalits is shown. Even when it is.it is shut down through upper caste violence. This serves them to the cycle of voiceless subjects who do not have any agency. And once again an upper caste Brahmin man becomes a saviour.While Dalit community in general is shown to be victimized, the body of a Dalit women is depicted as a point of exploitation, sexual and economic. The movie portrays the bodies of young Dalit girls to be used for upper caste violence. The framing of a brutal gang rape and murder of two Dalit teenage girls who are later hanged on a tree just because they asked for a raise of Rs. 3 in the film expose the interlinkage of sexuality and gender with caste. Although, the movie gives a clear sense of closure to the case but in reality, the story remains unsolved.

Keywords: Film, Article 15, Casteism, Humiliation and Representation

Introduction:

Article 15 is a film directed by AnubhavSinha, released in 2019 that revolves around the evident caste discrimination that is witnessed in everyday life in many cities and villages of Uttar Pradesh. AyushmannKhurana plays AyanRanjan,, an upper class, urban, educated, entitled police officer who is fortified from, if not entirely well versed with the incongruous ground realities of

the country - to have little or be completelyignorant of caste based discrimination owing to their own privileged position in the profoundlyunfair world.

The film is named after Article 15 of the Constitution of India, which prohibits discrimination on the basis of religion, race, caste, sex or birthplace. While not based on one specific event, the film is inspired by multiple real-life cases involving crimes driven by caste-based discrimination, including the 2014 Badaun gang rape allegations and 2016 Una flogging incident.

Casteism is intertwined with the reservation. But there is another storyline that people miss. The issue of casteism and Brahmanicalcontrol. The film Article 15 brings to our notice the reality of the society we live in. A society that oversees the binary standards and falseness its members proliferate.

Set in rural Uttar Pradesh, India - Article 15 looks at the shuddering truth of casteism and its concerns. The film is roughly based upon the Badayun gang rape, which took the country by a storm. In this movie, two Dalit minors were brutally gang-raped and then hung from a tree in the same village they were from - for the world to see. This is allegedly done to instil fear in the hearts of those who belonged to the same caste as them.

The story begins with Ayan slipping into a Bob Dylan's song "How many roads must a man walk down before you call him a man?" and taking in the rural beauty of countryside India, moments after which he is made aware of the discrimination that the people of the village follow when his fellow officer tells him, "This is a Pasi village, they are from lower caste. They breed pigs. We don't drink the water they touch". It is soon witnessed that the caste system severely comes in the way of justice when Ayan investigates the disappearance of three girls from a small village, revealing a history of caste-based tyranny along the way.

Despite the fact thatobserving the discussions between AyanRanjan and two other officers (played by Manoj Pahwa and Kumud Mishra) we see the arrogant dismiss of caste talk, referring to the people as "these people", much to annoyance of Ayan as he demands, "Who are 'these' people?".Ayan's character makes us see that the stigma of caste and preconceptions is too deep-rooted in our lives to vanish with individual political correctness and the absence of biases of a few who are far removed from the 'wild west' as Ayan calls it.

Article 15 expresses the story of anenquiry into the rape and murder of two Dalit girls & a search for the third one. The film moves around the issue of the gangrape and how its origins lie deeply deep-rooted in Casteism and Brahmin Controlpredominant in the town.

From the outside, the rural administrative system in India appears well-established. Village panchayats and police offices are manageable and ears of the law for ideally anyone. But when you look deep inside the heart of this system, it is not as modest as we are made to believe. When AyanRanjan arrives at Laalgaon, he instantly notices the division between groups of people when his request for a bottle of water generates tension among the local police officers, because, according to them, the upper cast are not supposed to even touch the Dalits. India's history is a witness of countless such beliefs among the rural police. Some consider in the caste system; some are enforced to. Local villagers struggle to bind with the police and report anything.

we observe the sluggish nature of police. All want to stay in their own ease, and never move a force. That ends up resulting in FIRs not being filed and investigations just…abandoned. The poor in this country suffer especially. In the movie, we see Gaura and the villagers implore

the police to investigate the three missing girls. As usual, they are turned down. "It's always like this with them" they say, as they continue drinking their whisky. When two of the girls are found dead the next morning, it's already too late. The film takes this moment to force our protagonist to start taking some steps. Regrettably, at this point we face another mess in the rural police system. Political pressure. Most of the officers work only to file cases, and these files never see the light of day again, because someone forced them to shut it down. Villagers with connections high up exploit these connections, getting away with anything and everything. We see Manoj Pahwa's character Brahmadatt Singh absolutely tremble with fear when Ayan mentions that he wishes to speak to AnshuNaharia, local contractor and son of local minister RampalNaharia. Police wages are so scant in villages that most of the earnings for a police officer usually comes from looking the other way for powerful people in the village. And usually when an officer even remotely uneasiness these people, it ends up with the officer dead. That is what Brahmadatta was so fearful of. He felt if anything happens, Ayaan would promptly leave Laalgaon, but he and the other officers would feel the wrath of these politicians**.**

But even then, it's not just fear that drives Brahmadatt. He has a lust for power. He likes to be in control of his actions. He frantically tries to halt Ayan in his tracks, because he knows he is a part of the gang rape under investigation. When power is handed to people who are not worthy of it, they get gluttonous. In contrast, KishanJatav also tried to stop Ayan, but for a very different reason. Being a Dalit, he knew the lengths to which the higher castes in the village went, to ensure Dalits stay in and know their places. Bhramadatt and Jatav are two sides of the same coin. Their hopes and dreams are completely opposite, yet the pair walk the same path.

Article 15discloses every aspect of a system which has been influenced by a handful of people for periods. The faces change but the robe of power remains the same. In the film, the rapists include dominant local contractor AnshuNaharia, the Jat bodyguard of AyanNihal Singh and the local Brahmin SHO (policeman in charge of a police station). The entire administrative machinery is out to hush up the case and the father of the girls is framed in their murder but overall it's the system who is responsible for the gang-rape and murder of these two girls.

Exploration of Nakedness of Socio-Political System

Encouraged by the 2014's Badaungangrape and murder case, the film features AyushmannKhurrana as an honest IPS officer, who examines the rape and murder of two Dalit girls, both minor, who are found hanging on a tree in a fictional village of Lalgaon in Uttar Pradesh. The London-return officer is seen dealing with the strong presence of caste discrimination and societal differencesimpending over the village. At one point he even tells his partner Aditi that it's like 'The Wild West. The movie is meant to open the audience's eyes from what they have always been sheltered from. There is a scene where a man is lowered into a blocked manhole. He is then seen emerging with sludge all over him. Though the scene has no dialogues but it is powerful enough to make the viewers feel uncomfortable and showcase the division and hypocrisy in the society. The film also subtly indicates caste privilege when Ayan asks his fellows which caste they belong to. Ayan is constantly reminded that he should not interfere in the caste dynamics of the village and disturb the balance that holds the social hierarchy. Another interesting aspect is the portrayal of an alternative hero Nishad, who is a fugitive. His intelligence gets redirected to fight against the system. The short-lived character leads the audience thinking if the character's destiny would have been different if he was not born in ainferior caste family.

The representation of a Brahmanicalsavior and of a Dalit victim is clearly represented in 'Article 15' as well. The IPS officer, who earlier was unaware about caste discrimination becomes the rescuer for the Dalits. His dialogue "I will unmess it" further claims this, while Dalits, who have been instigating a persistentfightin contradiction of caste atrocities have little agency or proclamation. The movie does not place Dalit characters and their experience at the centre. It represents that Brahmins are the liberators and the Dalits community cannot fight for themselves. A brahmin saviour is seen as the one who solves the case, detains the criminals as well as finds the missing girls. While others are seen folding their hands in gratefulness. Dalit character are carved in such a way who are first torn apart first by the murder of girls and then by the false cases against the deceased girl's fathers.

In the film, Dalit women are presented in limited resisting capacities and lack agency. Dalit women are represented as victims at different concentrations in the film. Gaura, who is in search for her missing cousin or Doctor Malti Ram, who is initially stopped and cajoled into not releasing the exactpostmortem report of the bodies. Two Dalit girls- Shanu and Mamatha are viciouslygangraped and murdered and later hanged on a tree. These girls were beleaguered just because they demanded a hike of three rupees, in their daily wages. The frame where the bodies of two girls are seen hanging on a tree with a chilling background score depicts the horrific violence wreaked on Dalit women by superior caste men. It is a remarkable example of how rape is used as a weapon of vengeance to castigate and silence women when they dare to complaint. While Dalit women have been actively involved in anti-caste and anti-untouchability movement, the absence of Dalit women's voice from the narrative makes the viewer believe that they are mere victims and nothing more than that.

The film additionally inspects why fundamental revolutionists act the way they do, through Nishaad. He is part of a revolutionary group that resorts to brutal acts to be heard and to speed up the process of justice. Although looked at by law implementation with an angry eye, the audience quickly goes on to love him- witnessing his situation and viewing the world through his glasses. The story also discloses how political parties inconsiderately use people like Nishaad to fulfil their conspiratorialdrives.

Projection of Social systems in 'Article 15

The film mainly focuses on three themes- Construction of Brahminic Saviour; Representation of Dalit Identity and Caste and Patriarchy. Each theme aims to dissect how caste dictates everyday life in Indian society.

The concept of 'Brahmanical Saviour' which arises from the concept of 'White Saviour Complex' manifests that escaping poverty or ignorance can only happen through a saviour's intelligence. Caste which continues to be a stable structure in India has managed to survive over thousand years. Caste is not just a social stratification that underlies hierarchy, difference, endogamy and division of labour in Indian society. But, it also forms an ideology and practice supporting inequality and oppression. Low-caste social reformers like Mahatma Phule and Ambedkar were the first to introduce values of freedom, equality and fraternity. It was Ambedkar who enriched these in the Indian constitution. It is only recently that 'intellectual elites' have started to pay attention to the role of Dalit assertion. However, when people of privilege interact with a marginalized community much of the focus is on what one person can do to help those in need rather than what the Dalit community itself has been performing.

'Article 15' projects a world of 'Saviour' and 'Victim', where the generous Brahmin is trying to uplift the helpless Dalits. Dalit men are seen tied to a jeep and flogged in the street and then there is a sight of a bare bodied man emerging from the sewer. These are a few instances where Dalits are seen in a piteous sight but the audience is never allowed to enter into the subjectivity of the sufferer. There are a large number of Dalit characters in the film however, only three Dalit characters have substantial dialogues. The invisibility of these characters is ensured by subtracting their voices.

Conclusion:

It has been observed thatthe reformation and eradication of the discrimination based on caste is become political issue for the collection of votes which are reminiscedonly during the time of election and then nippilydisremembered.The film forces you re-shift and refocus on our perception of what is important. In India where the media is busy with animosity propaganda and low rated entertainment news to keep us busy in frolicsomestuffs, this film comes as a breath of fresh air. It is one of the foulest veracity checks of recent times. The ending of the filmprojects that the system of supremacy is built on blood, sweat, and blubbing of the oppressed. The film projects the upper caste people are supporting in the eradication of the casteism and gains the sympathy from the lower caste people as the upper caste people are the reformers or omniscient for them. But it may be happened as the there is no representation of the lower caste people in the film industry. The sufferings of the lower caste people can be represented very well by the protagonist from the lower caste people.

In short, the lower caste people are not born for the humiliation and comforts of the higher caste people. They are also human being. They should not be treated inhumanly. The film focuses on the social issues and while watching movie, we also become part of the same. We feel awkward at the end of the movie and forces us what has been done by us to eradicate the casteism. The constitution has given protection to the lower caste people with Article 15, but it is not implemented properly. Therefore, by representing the recent issues of the society, the film hascaptures our attention and create awareness among us. Thereby, the movie must be appreciated and extolled.

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India's Indigenous Banking System

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Abstract :

Indigenous banking is one of the oldest forms of banking that existed in India from the mediaeval period until the first half of the nineteenth century. The indigenous banking system is a monetary system in which local entities function as bankers by offering financial services such as loans and accepting deposits. It entails a private form and an individual performing fundamental banking operations such as accepting public deposits and lending money. Prior to the arrival of foreign banks and commercial banks, it was the only type of banking available in India. This further collapsed after the emergence of cooperative and commercial banks in the late 1990s.

The financial system of India is dominated by nationalized banks. The banking industry's success is undoubtedly more directly tied to the economy than any other sector. The objective of this paper is to examine all private loans and money transactions made up to the nineteenth century i.e. indigenous banking and weigh their benefits and drawbacks.

Keyword: Indigenous Banks, Banking System, Security, Hundis

Introduction:

Indigenous banking system falls under the purview of unorganized banking therefore there is no direct control of Government and law over indigenous banker.

Indigenous bankers are of three types-

1. Those whose main business is banking.
2. Those who combine their banking business with trading commission business and
3. Those who are mainly traders and commission agents but who do a little banking business also.

In India, a group of indigenous bankers known as Shroffs participated in fundamental banking operations. The actual number of such bankers is unknown since they are not registered under any company act or subject to any government regulation, but it is estimated that there are between 3 lakh and 4 lakh of them.

There are several communities in India who engage in indigenous banking, and they go by different names in different parts of the nation. Let's take a closer look at a couple of these financial communities:

1. The vaishya: Vaishya performs banking business in whole country and are consideredas prominent money lender.
2. The Jain's: Jain's among the richest community in India and at some places they arealso known as sravakas or saraogis.
3. The Kshatriyas : in Kshatriyas we have two banking class of Punjab Khatris and Arora.
4. The Multanis and Rehtis: The Multanis were from Sind and Rehtis also known as Bohras were from Gujrat.

5. The pathans: They came to India from afganistan for trade and performed money lending activities.
6. The Chettiars : The Chettiars also known as Nagarathas are well known indigenous bankers from southern India. Among all the Chettiars Nattukottai chettis are the most prominent bankers.
7. The marwaris : The marwaris who come from Marwar region of Rajputana are merchant and banker caste.
8. The Mahajans: The Mahajans belongs to Maharashtra.

Functions Of Indigenous Bankers:

The main job of an indigenous banker was to receive public deposits and provide loans. Hundis is the main feature of their function. Prior to the advent of the new modern monetary instrument, hundis were regarded as one of the most important and lucrative instruments for indigenous bankers.

There are two kinds of Hundis:

- Darshaniaur hundi or sight Hundi which is payable on demand and
- Muddati hundi which is payable after a certain period of time.

Indigenous bankers also provide Remittance services.

In numerous cases, documentation has been discovered that indigenous bankers also functioned as state financiers.

2. In the 14th century it is found that Multaniyas so help Delhi Kingdom with funding.
3. In the rain of Firoz Shah (1351 – 88), the bankers of sarsuti,Ninety kos (180 miles) from Delhi land to the state large sum of money which were used for payments to the army.
4. Soldiers at Delhi where paid by cash orders (itlaq) on outlying places, these were discounted in Delhi by financers who made a regular business of it, and earned a good income
5. Early days of East India company indigenous Bank we also found lending money for tradeand Commerce to the company.

During the reign of the East India Company, indigenous bankers also worked as a company agency raising donations and taxes from the inhabitants of the Bengal region.

The indigenous banking system in India declined as the British reign and dominance in India proceeded due to the introduction of new financial systems by the British.

As the British reign and dominance in India progressed the indigenous banking system in the country come to decline by the introduction of new financial system by British.

Shortcomings Comings Of Indigenous Banking System:

1. High rate of interest: indigenous bankers charge their customers a rate of interest that is far higher than the standard rate of interest. It also varies from individual to person. Interest rates might range from 2% to 5% each month.
2. Unregulated system: indigenous banking system is not regulated by reserve Bank of Indiaor any government or authorities which results in no record of their financial activities and as they are not registered under any law, the reserve Bank of India have made sincereefforts to bring this system under its win but have failed to achieve success. Policies were s suggested by The banking commission, 1972 in its report to bring this

under the control of commercial banks and encourage cooperation between them. The number of indigenous banker operating in the country is unknown.

3. Exploitation of customer: indigenous banker have no leash of law so they charge very highrate of interest to the customer which lead to the exploitation of people which majorly includes people from poor financial background and rural community. Few attempts were made by the government to improve the situation (e.g. The Maharashtra money -lending (regulation) act, 2014) but the results were not fruitful. This majorly has results in the suicide of the customers who are not able to pay their debt.
4. Improper banking function: indigenous bankers sometime combine and non-banking activities.
5. Low capital: the amount of capital invested in the business comes from the personal saving of the banker and their families. This amount is not sufficient for huge loans and other banking functions.
6. Unproductive loans: The loans distributed by indigenous banker are usually for unproductive activities as they do not pay attention to the purpose for which the loan is taken the sole purpose of lending is to earn revenue.

Relevance Of The Study:

The government's and RBI's financial inclusion policies have far-reaching consequences for India's banking industry. However, this sort of banking is still common in the country's rural and tribal areas. In India, the agricultural sector and small companies continue to rely on local bankers for funding.

Conclusion:

People continue to do business with indigenous bankers in the nation due to the ease with which funds can be obtained in a short period of time and the lack of legal requirements. Because the country's banks are insufficient to satisfy the needs of the current population, indigenous bankers play an important role in bridging the gap and delivering monies to the people.

It can be seen that this sort of banking cannot be abolished from the Indian financial system, but the government and the RBI may work together to make the country's unorganized banking systems more dependable. They were immensely popular with dealers, businesspeople, farmers, and regular people. By extending loans, issuing, purchasing, and selling hundis, and producing finance bills and trade bills, indigenous bankers provide financial and remittance services to traders and small enterprises.

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Effect of Private Sector Organizational Culture on Performance of Female Employees

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Abstract:

This article describes the definition and measurement of private sector organizational culture and its impact on employees' performance through the analysis of existing studies and empirical models related to organizational culture and performance. The results show the relationship and impact of organizationalculture on employee performance as a whole. However, the extent of this impact depends on the sub-elements of the organizational culture: change management, goal achievement, and so on. The relationship between organizational culture and innovation has been the subject of various studies in recent years. The numerous cultural variables studied have led to the fragmented notions of innovation culture. In addition, management practices require a foundational structure for deciding which culture to implement for innovation and assessing whether a particular culture is an effective and efficient coordination tool. The motive of this text is to discover the factors of organizational way of life in groups imposing innovation and to try to gift its model. After evaluation of huge literature, it's miles discovered that organizational way of life has deep effect at the sort of businesses process, personnel and its performance. This additionally describes the special dimensions of the way of life. When employees are engaged and share the same norms and values as organizations, they can increase performance to achieve the organization's overall goals. Managers and leaders are encouraged to develop a strong culture within the organization to improve overall employee and organizational performance.

Keywords-Impact, Organization Culture, Organization Performance, Employee Performance.

Introduction:

The culture of the workplace is a very powerful force, consciously and consciously nurtured and passed on to new employees. This is a common thread that brings your organization together. Cultural rules and traditions are very important to any organization and have a significant impact on employees and the organization as a whole. The culture of an organization is defined by the sharing of beliefs and values shared by all members of that organization. These shared beliefs, values, ethics, symbols, and actions guide employees in making decisions at the subconscious level. The organizational culture is widespread and powerful. For organizations, businesses, and businesses, it is a force of change or a clear obstacle to it. For employees, it's either the glue that connects people to the organization or the one that repels them. Today's organizations are increasingly faced with the challenge of changing their corporate culture to support the way they do their jobs. Organizational subculture performs a totally vital position in an organization. This is a recognized indicator that helps you understand the stability your organization is expressing in terms of incentives, encouragement, and satisfaction for your employees' work. However, organizations provide employees with a

strong, rigorous, flexible, supportive, and career-focused work environment to attract, manage, and retain a valuable and competent workforce. We are aware that we need to provide it. This is only possible with a good organizational culture that encourages such activities in the work environment. As the world changes rapidly, so do the ways businesses, investments, and organizations work. Therefore, organizations have revolutionized the traditional dictatorial structure and are now moving towards adopting more democratic norms, delegating responsibilities to lower levels and encouraging the participation of all sectors. Organizational culture, employee performance, and job satisfaction are interrelated, and in order for an organization to achieve its goals efficiently and effectively, organizational culture, and employee performance and job satisfaction. Great attention should be paid to other indicators of degree.Gender inequality is a phenomenon where individuals are differentiated on different grounds like recruitment, pay, policies, re-launching process, gender biasness, etc.

Many companies have put their efforts in the up-gradation of policies for promoting equality at work place. But none of these have changes the scenario, the facts that women still occupy a place where they are hired with low pay scale, no re-launching, less policies of promotion etc.Women are continuously pushing through these barriers and more of them are choosing the professions like technology and engineering. But all of their efforts are put in vein as they still get less recognition and awards they deserve.

Review Of Literature:

Employees are seen as part of an organization that are involved in the organization day-to-day actions to ensure that the organization continue to survive or exist (Abdullahi et al., 2020). Wambugu (2014) asserts that employees are an essential component of an organization and that the success of the organization depends on employee performance (EP). It cannot be overstated that workers are the main thrust of every organization since they manage any other factors that keeps it running. Employees must be proactive, responsive, hard-working and diligent to ensure that they are always completely ahead of their competitors (Ramly, 2018). Along with that, the overall performance of an organization is highly dependent on PE level through employee engagement (EE) (Ganyang, 2019). Therefore, EP can be considered as an activity in which an employee can effectively perform the task assigned to him with the proper use of available resources (Mkamburi and Kamaara, 2017). Various organizational researchers have studied the effect of demographic traits on person and organizational outcomes. There is adequate studies analyzing the impact of age and gender on person's process pleasure and organizational tradition. Gender problems can also additionally arise in HR policies, fee, merchandising, etc.

Gender discrimination in selection-making practices referring to HR problems arises from gender inequalities in broader organizational systems and practices, together with: HR policies, strategy, structure, management, organizational climate, and culture. Besides, the stages of sexism of selection makers' in corporations can also additionally have an effect on their possibility of creating gender-biased choices approximately HR practices (Stamarski, Hing, 2015). Agentic girls, who behave in an assertive, task-orientated fashion, are much less likable and much less hirable than similar agentic male candidates are (Heilman and Okimoto, 2007; Rudman and Phelan, 2008; Rudman et al., 2012). Besides, there's discrimination in opposition to pregnant females after they follow for jobs (Hebl et al., 2007; Morgan et al., 2013). Further, mothers are advocated for merchandising much less than females who aren't mother or males without or with children (Heilman and Okimoto, 2008).Women and specifically mothers are

probably held to stricter requirements withinside the administrative center as compared to guys (Correll et al., 2007).Women obtain fewer possibilities at paintings, as compared with men, ensuing of their under-illustration at better stages of control and management inside corporations (Eagly and Carli, 2007). Managers supply females fewer difficult roles and less education possibilities, as compared with males (King et al., 2012). Men are much more likely to accept key management assignments (e.g., De Pater et al., 2010). Men also are much more likely than females to be considered as powerful leaders while occupying roles which are described in masculine terms, together with withinside the military (Paustian-Underdahl, Walker, and Woehr, 2014) or in company management positions.

Women are barely much more likely than men to be visible as powerful leaders in female-ruled industries like training and social paintings (Paustian-Underdahl et al., 2014). Managers price females as having much less merchandising capability than males (Roth et al., 2012). Thus, males have a quicker ascent in organizational hierarchies than females (Blau and DeVaro, 2007).Other studies confirmed that women and men produced gaps in gender fee of their rankings of fairness(Auspurg, Hinz, and Sauer, 2017).

Cohen and Huffman (2007) of their have a look at advice that the presence of high-fame girl managers has a miles large effect on gender salary inequality. The merchandising of girls into control positions can also additionally gain all girls, however best if girl managers attain quite high-fame positions.

The have a look at of Plickert and Sterling (2017) suggests that paintings schedules drastically range via way of means of gender, parental position, and revel in of administrative center discrimination. Gender requirements of leaders limitation girls' get entry to better positions and the impact of gender will increase while there are marital relationships (Yang, Aldrich, 2014).

Research Objectives:

- To have a look at private quarter enterprise subculture.
- To have a look at the connection among organizational subculture and organizational performance.
- To study impact of organizational culture on female employees' performance.

Scope:

The main aim of the study is to find out the moderating effect of organization culture , gender perception and career satisfaction. The struggles and ways in which women have tackled their problems are often not very explicit.

Major Findings, And:

Thus, the major findings from the above study are discussed as follows:

1.In order to clear up gender inequality withinside the workplaces, the maximum green component to do can be the installment of written guidelines of gender equality promotions. These policies must ensure that men and women have equal rights and equal pay for the same work. Policies must ensure equality at all levels of human development: recruitment, hiring, training, promotion, compensation and reward.

2.These policies should make it possible to balance personal and professional lives of employees. Moreover, the maximum critical aspect is that those rules have to encompass the prohibition of

any form of harassment, in particular sexual harassment. And withinside the end, the rules have to have a system for reporting gender discrimination instances without effects or fear.

3.These types of policies are a good step towards solving many problems in workplaces. But the state should adopt a law, which will force organizations to set up such policies, as many organizations will not follow the necessary steps if it is not mandatory.

Some people will never encounter inequalities at work.

Gender inequality is directly related to economic development, social performance, national development, life standards etc. Recent studies have been discussed only when equal at work, which they can achieve:

- High economic growth
- Better business performance
- High reputation in global business
- Highly capable and qualified candidates
- GDP level increases

Suggestions:

Gender equality in the private organizations can be achieved through following ways:

- Equal pay for equal work: There should be no discrimination in the payment criteria for the work done by the employees i.e. men and women. The work done by both the genders is equal in all respects. The pay should depend on the type and job structure to promote transparency. Remuneration act must be considered to determine the proper pay structure.
- Appropriate training programs should be initiated within the organization: The organization should strive to promote equal development of employees regardless of gender. The organization should introduce an appropriate training program and seminars to update the knowledge of the organization's human resources. These leads to the growth of organization, human capital and economic growth of country.
- Re-launching of women staff: The organization must promote equality by giving equal opportunity to both the genders. This aims to encourage women to continue their quest for excellence. The organizations must launch come back programs which creates a balance at work place.
- Equal leadership roles for male and female staff: it has been commonly mistaken that men have more leadership qualities than women. Women also thrive to support oriented roles. This leads to create gender discrimination at work place.
- Appropriate schooling packages have to be initiated in the agency: The agency have to attempt to sell identical improvement of personnel irrespective of gender. The agency have to introduce the correct schooling application and seminars to replace the information of the agency`s human resources.
- Equal opportunity to get recruited for any position: In an organization all the genders must get equal opportunity to get recruited.

Conclusion:

Now it is high time, we should tear gender equality at workplace. One of the biggest reasons why women lack prestigious positions at workplace is lack of support after marriage professionally and domestically.

In an organization the mechanism should be sell to cope with gender equality. India currently is going through demanding situations of cultural diversity, social stereotypes and there may be a want to take collective moves toward the established order of parity in gender roles and ladies at workplace. Our countries women and girls are very much powerful community leaders so this gender inequality must be vanished for proper development of nation.

Directions For Future Research:

This study is based on private sector organizational culture and its impact on performance of female employees. A comparable examine may be performed for public sector organizational culture. The modern examine did now no longer recall the mixed impact of age and gender. Therefore, the findings of the examiner can best be generalized after an extra rigorous studies at the effect of organizational tradition values on employees' process satisfaction.

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Utilization and Availability of Resources in the VJTI Library

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Abstract:

The present research paper aims to investigate how students at Veermata Jijabai Technological Institute in Mumbai use library information resources. A descriptive survey method was used in this study, with a questionnaire used as a data collection tool. A questionnaire was distributed to 60 library users at random from the VJTI Library, and 52 copies are completed and returned. The frequency counts and simple percentages are used to analyze the research questionnaires. It was concluded that 'for the proficient and effective use of the library for teaching, learning, and research, the academic institution must provide a live library of updated library resources to meet the information needs of library users.' It was suggested that library or university administration implement library literacy education to teach users how to properly manage the library. This will entice more users who are unaware of the library's resources. Finally, Board Display Services should be sufficiently expanded to reflect the available resources to users, thus representing all library resources.

Keywords: Library Resources, VJTI Library, Availability, Awareness and Utilization

Introduction:

Library in general consists of a wide range of collections of books pertaining to different subjects. The resources mainly consist of books, magazines, and other resources including microforms, audio recordings, video recordings, electronic resources, etc. Library users visit the library to obtain sufficient, significant, and up-to-date information in print and non-printed forms for effective teaching, learning, and research that meets their information needs and enable them to make important decisions. However, they can obtain this information through research, which includes the search for new ideas, facts, and information through scientific and methodological research. Academic libraries are those established in colleges such as polytechnics, universities, and colleges of education, among others. Its primary function is to provide resources and information services to help the parent education and research program achieve its overall goals.

Academic libraries are those established in colleges such as polytechnics, universities, and colleges of education, among others. Its primary function is to provide resources and information services to help the parent education and research program achieve its overall goals.

Definition of Library Resources:

In general, the term "resource" refers to the source of supply. Library resources have been identified as materials that enable libraries to effectively provide resources to clients such as books and other media. It also includes everything required to provide the client with the requested information service. Books, manuscripts, periodicals, government publications, brochures, catalogs, reports, files, microfilm, microfiche, and microcards are examples of library resources, according to Kent and Lancour. The amount of time that library resources and services

are used in teaching, learning, and research is referred to as resource and information service use. Library statistics, which are compiled daily by library staff, generally reflect the extent to which library resources are used in university libraries.

Veermata Jijabai Technological Institute, Mumbai:

VJTI Mumbai (est. in 1887 as Victoria Jubilee Technical Institute) has pioneered India's Engineering education, research, and training ecosystem. Pre-independence, VJTI had been instrumental in driving industrial growth throughout united India. Post-independence, VJTI played a pivotal role in setting up IITs and RECs in India and strengthened the technical excellence of the country. In 1997, VJTI changed its name to Veermata Jijabai Technological Institute to honor the mother of Chhatrapati Shivaji Maharaj. Located in South Mumbai, the heart of Mumbai, VJTI is an autonomous institution owned by Maharashtra State Government. The institute offers programs in engineering and technology at the diploma, degree, post-graduate and doctoral levels. VJTI is known for its high-quality teaching, collaborative research, industry connections, and strong alumni network.

VJTI Mumbai is an autonomous institution owned by Govt. of Maharashtra and affiliated with Mumbai University. After autonomy (2004), VJTI has a separate Board of Governors, where the Chairman (Leading Industrialist) is nominated by Govt. of Maharashtra. Director is responsible for the overall administration of the institute along with the team of Dy. Director, Deans, HoDs, and Registrar. Diploma section is managed by Dean Diploma. The National Institutional Ranking Framework (NIRF) – approved by the Ministry of HRD, Govt. of India (Ministry of Education) – outlines a methodology to rank institutions across the country. The parameters broadly cover Teaching, Learning, and Resources – TLR (30% weightage), Research and Professional Practices – RP (30%), Graduation Outcomes – GO (20%), Outreach and Inclusivity – OI (10%), and Peer Perception – PR (10%). Currently, VJTI ranks 82nd in the Engineering Discipline.

The VJTI Library is the primary source of information for the community during its studies. The Library is divided into two levels. VJTI Library Resources are a valuable research resource for current VJTI students, faculty, staff, and researchers who have a valid VJTI ID CARD. Services vary according to staffing levels. Students with disabilities and/or specific learning difficulties can receive additional assistance.

Objectives:

1. To observe the awareness of Library resources by student and faculty community.
2. To know the frequency of users using resources among students.
3. To study the purpose of utilization of resources by the community.
4. To investigate the student's problems.
5. To ascertain the degree of satisfaction with Library resources.
6. To suggest ways to access the resources.
7. To broaden the community's access to these resources.

Scope And Methodology:

This research study employed a questionnaire-based survey method. For data analysis, the data is thoroughly checked and analyzed. The paper's scope is limited to engineering students from seven departments, and the study was limited to students from Veermata Jijabai Technological Institute in Mumbai. A questionnaire is distributed to 60 library users at random

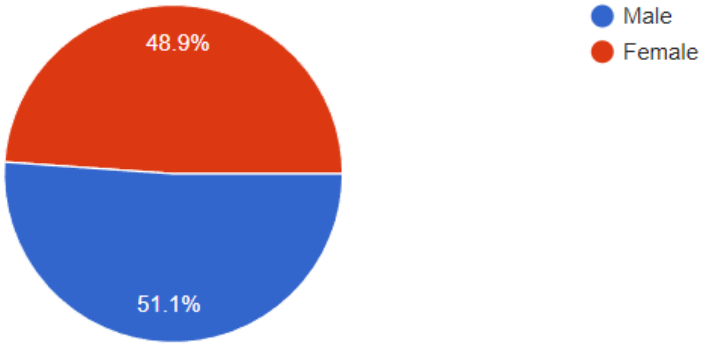
from the VJTI Library, and 52 copies are responded and returned. The frequency counts and simple percentages are used to analyze the research questionnaires.

Data Analysis And Results:

The study is conducted at the VJTI College campus in Mumbai during the period 2022. This study was undertaken to investigate the libraryinformation resources with special reference to library resources that are available in the central library used by the student community at Veermata Jijabai Technological Institute, Mumbai.

Table1: Gender-wise Respondents

Sr. No	Response	No. of respondents	%
1	Male	23	51.10
2	Female	22	48.90
Total		45	100

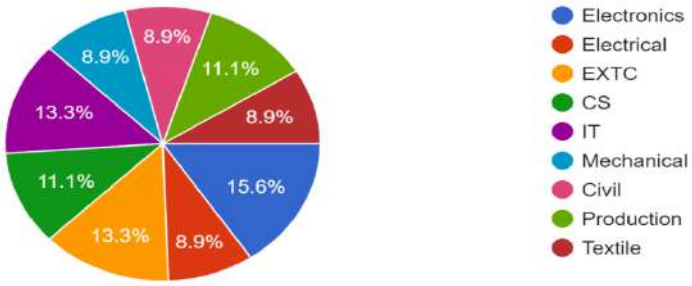


According to the above table (Table 1), the number of respondents was nearly equal, with 48.90% female respondents and 51.10% male respondents.

Table2: Distribution of Questionnaires

Sr. No	Departments	Questionnaire Distributed	%	Questionnaire Received	%
1	Electronics	10	15.6	7	7.77
2	Electrical	10	8.9	4	4.44
3	EXTC	10	13.3	6	6.67
4	CS	10	11.1	5	5.56
5	IT	10	13.3	6	6.67
6	Mechanical	10	8.9	4	4.44

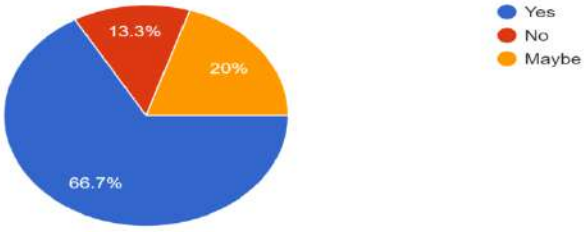
7	Civil	10	8.9	4	4.44
8	Production	10	11.1	5	5.56
9	Textile	10	8.9	4	4.44
Total		90	100	45	50



It is discovered that the majority of respondents 7 (15.6 percent) from the Electronics Branch are interested in filling the questionnaire, whereas only 4 (8.90 percent) from the branches Mechanical, Civil, Electrical, and Textile are interested, and 45 are returned duly filled in by the user's community, yielding an overall response rate of 50.00 percent.

Table3: Awareness about library resources

Sr. No	Description	No. of Respondents	%
1	Aware	30	66.7
2	Slightly Aware	9	20
3	Not Aware	6	13.3
Total		45	100



It is revealed that Table no. 3, clearly indicates that out of 45 respondents 66.70 % were well aware of library resources and it was followed by 20.00 % of respondents were slightly aware of it and only 13.30 % of respondents had no idea about the use of library resources.

Table4: Frequency of using library resources

Sr. No.	Frequency	No. of Respondents	%
1	Daily	8	17.8
2	Once in Two Days	6	15.6
3	Once in Week	10	22.2
4	Occasionally	13	28.9
5	Never	7	15.6
Total		45	100

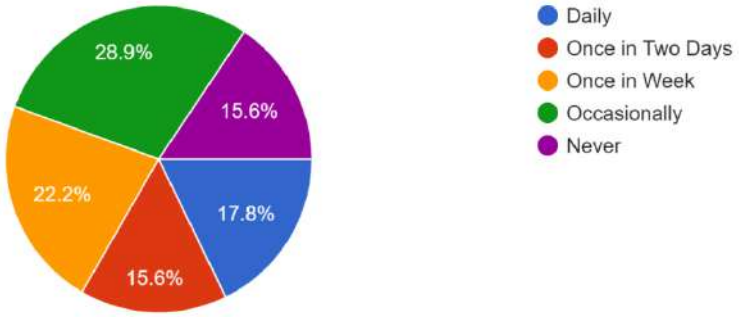
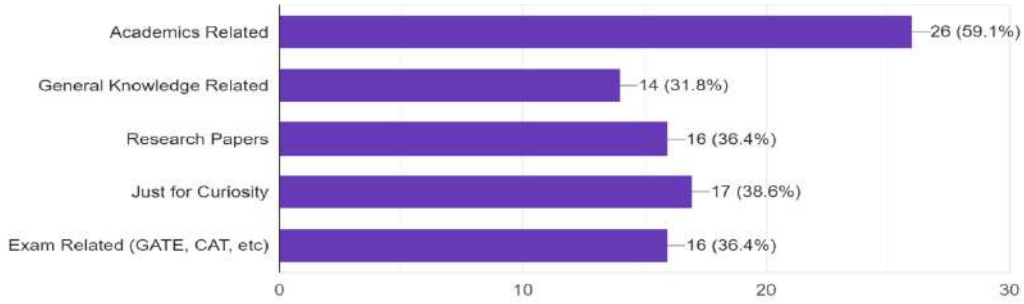


Table 4 shows that 28.90 percent of respondents use library resources occasionally, while 17.80 percent have never used any library resources.

Table5: Subjects for which you use these resources

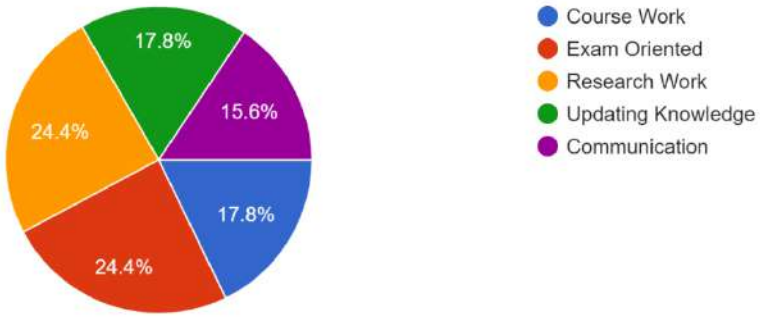
Sr. No.	Purpose	No. of Respondents	%
1	Academics Related	26	59.1
2	General Knowledge	14	31.8
3	Research Papers	16	36.4
4	Just for Curiosity	17	38.6
5	Exam Related (GATE, CAT, etc)	16	36.4
Total		86	



The graph above depicts the distribution of subjects for which respondents use library resources. It shows that the majority of respondents use the library for academic-related readings. It is followed by respondents who visit the library solely to learn new things about technology. The majority of respondents chose General Knowledge resources.

Table6: Purpose for using Library resources

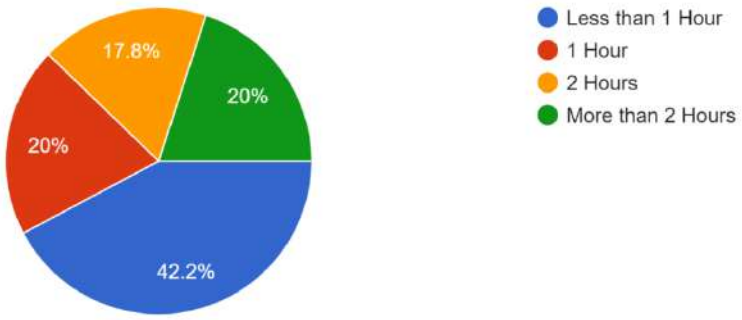
Sr. No.	Purpose	No. of Respondents	%
1	Course Work	8	17.8
2	Exam Oriented	11	24.4
3	Research Work	11	24.4
4	Updating Knowledge	8	17.8
5	Communication	7	15.6
Total		45	100



The pie chart above illustrates the reason for which these resources are used. We discovered that the majority of respondents used the library for exam preparation or research purposes. A significant number of respondents also use the library for Course Work, Soft Skills Development, and knowledge enhancement.

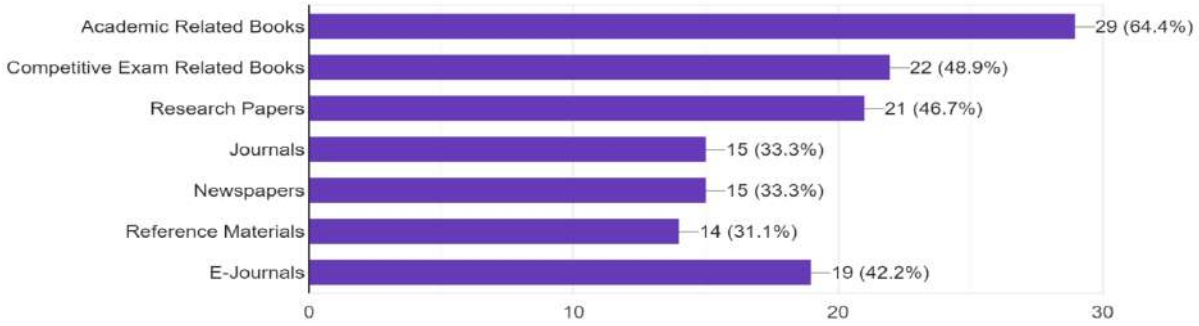
Table7: Time usually spent using library resources

Sr. No.	Purpose	No. of Respondents	%
1	Less than 1 Hour	19	42.2
2	1 Hour	9	20
3	2 Hours	8	17.8
4	More than 2 Hours	9	20
Total		45	100



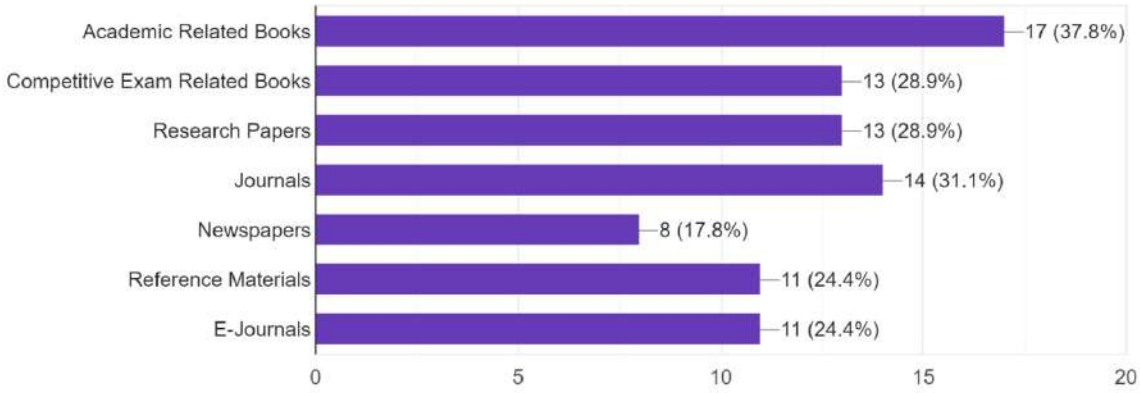
The graph above depicts the number of time users spends accessing library resources. We can conclude from this that the majority of respondents use library resources for less than an hour, while the minority uses library resources for more than two hours.

Awareness of Library Resources



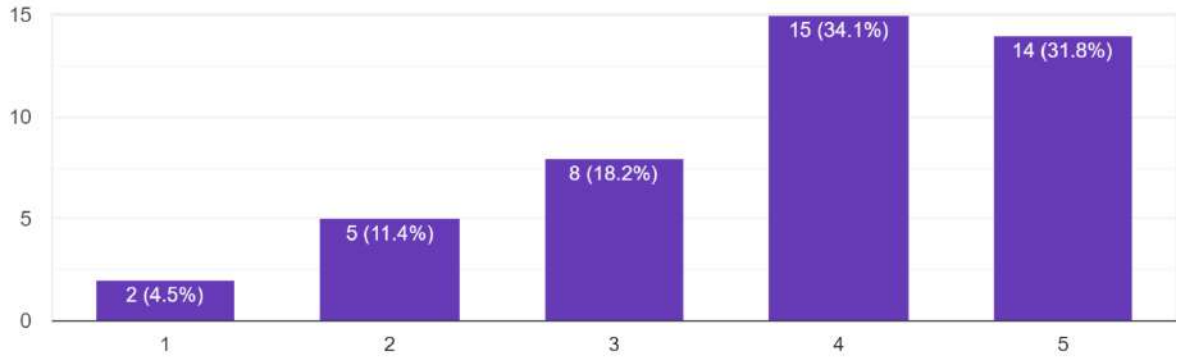
The bar chart above demonstrates the respondents' knowledge of various types of library resources. We can see that 64.40 percent of respondents are aware of the academic resources available in the library, whereas 31.10 percent are aware that the library resources also include Reference Materials.

Utilization of Library Resources



The bar chart above characterizes the respondents' use of various types of library resources. We can see that 37.80 percent of respondents use academic resources available in the library, while 17.80 percent use newspapers, which corresponds to the least amount of resources used by the respondents.

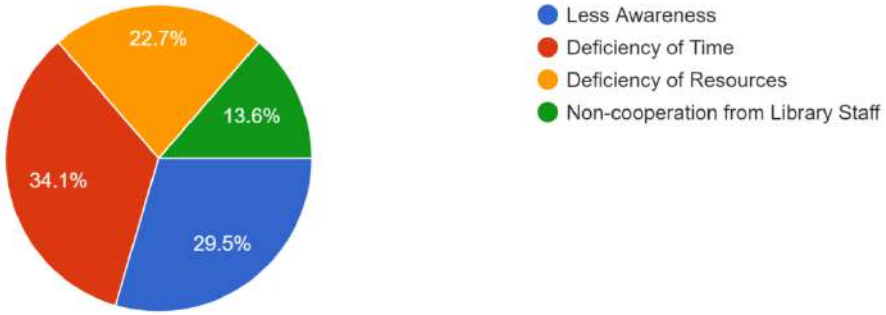
Satisfaction of the respondents



The above figure rates the satisfaction level of respondents on a scale of 1-5. The majority of respondents were well satisfied with the library resources.

Table8: Problems faced while accessing resources

Sr. No.	Problem	No. of Respondents	%
1	Less Awareness	13	29.5
2	Deficiency of Time	15	34.1
3	Deficiency of Resources	10	22.7
4	Non-cooperation from Library staff	6	13.6
Total		45	100



The chart above depicts the issues that respondents encountered while using library resources. It demonstrates that most respondents do not fully utilize the library's resources due to a lack of time. Some respondents also claim that the staff is not supportive.

Findings:

The number of respondents are nearly equal, with 48.90% female respondents and 51.10% male respondents. It is discovered that the majority of respondents 7 (15.6 percent) from the Electronics Branch are interested in filling the questionnaire, whereas only 4 (8.90 percent) from the branches Mechanical, Civil, Electrical, and Textile are interested, and 45 are returned duly filled in by the user's community. Out of 45 respondents, 66.70 % are well aware of library resources and it is followed by 20.00 % of respondents who are slightly aware of it and only 13.30 % of respondents have no idea about the use of library resources. The majority of 28.90 percent of respondents use library resources occasionally, while 17.80 percent have never used any library resources. The majority of respondents use the library for academic-related readings. It is followed by respondents who visit the library solely to learn new things about technology. The majority of respondents choose General Knowledge resources. The majority of respondents have used the library for exam preparation or research purposes. A significant number of respondents also use the library for Course Work, Soft Skills Development, and knowledge enhancement. The majority of respondents use library resources for less than an hour, while the minority uses library resources for more than two hours. The majority of 64.40 percent of respondents are aware of the academic resources available in the library, whereas 31.10 percent are aware that the library resources also include Reference Materials. The majority of 37.80 percent of respondents use academic resources available in the library, while 17.80 percent use newspapers, which corresponds to the least amount of resources used by the respondents. The Respondents seem to be satisfied with the overall experience. Most respondents do not fully utilize the library's resources due to a lack of time. Some respondents also claim that the staff is uncooperative. But overall it is observed that the most of the users are using library sources.

Conclusion:

Based on the study, the following three suggestions are made. Firstly, the awareness about the variety of resources available in the library should be given to all the faculty, staff and students. If possible the library should increase the number of working hours.

So that users get maximum utilization of this service. Secondly, the College must introduce a user education program about library resources. Finally, the library staff ought to create awareness and usage of resources and help the students in accessing them with ease. As a result, the findings indicate the usage and awareness of library resources that are available in the

Central Library. From the above study, the majority of the respondents are well aware of library resources and only a few respondents have no idea about the use of library resources. Many problems are facing the students even though the majority of respondents are fully satisfied with the accessibility of library resources.

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Survey of E-Resources in the University Library at Mahatma Phule Agricultural University Rahuri (M.S)

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Abstract:

This paper showsthe study of use of electronic information resources, its impact on the collection of print and electronic resources, and user awareness and issues where users are using these resources. The survey was organized in the academic year 2021-22 at Mahatma Phule Agricultural University Rahuri (M.S). A total of 108 professors, readers and librarian were selected and their responses were obtained with the help of questionnaires. The findings show that users were using e-resources; awareness of e- resources inspires users to make maximum use of such resources; and users are progressively using departments and homes to access information. This paper presents an overview of these resources, describes a few advantages and disadvantages and gives addresses of few web sites.

Keywords: Mahatma Phule Agricultural University, Electronic information resources, E-Resources.

1. Introduction:

After choosing a topic to complete the research, it is necessary to keep a record of a research by definitive its scope, objectives needs from a business point of view and research methodology etc. As the horizons of knowledge in human history began to expand, more reading material became available. The world books is an important creation of man. A library is needed to collect and manage written knowledge of such informative books.Perpetual any other man-made things or not external cultures becomes old and absolute and disappear. The age of darkness begins for a while but then new castes, tribes and their cultures emerge. The books of the world, however become the witnesses of all this and become external. The collection of written knowledge means the library is needed to manage and preserved it.

An electronic resource is defined as a resource which requires computer access or any electronic product that delivers a collection of data, be it referring to full text bases, electronic journals, image collections, other multimedia products and numerical, graphical or time based, as a commercially available title that has been published with an aim to being marketed. The value and use of information resources, particularly e-resources, have increased with the time. Therefore, there is essential to make study on the different condition of e-resources and the issues relating to the use of resources by users, more particularly by the faculty of academic institution. The present study is an attempt to analyses the use of e-resources by the faculty members, readers and librarian of Mahatma Phule Agricultural University and out the problems and constraints faced by the users in accessing the e-resources with some purposeful suggestions for its development.[1]

Need of E- resources:

E- resources enable the librarian to provide better service to the user community. The few considerable points are mentioned bellow;

1. To get access to an information source by the more than one users.
2. E- resources can be searched quickly.
3. These can be found easily by the users.
4. Amount of times spent on the E- resources use.
5. Know different types E-resources commonly used by respondents.
6. To collect, store, organize information in digital form.[6]

Types of E-resources:

Sr. No.	Types of E-resources	Description
1.	E- Book	E-books is the many formats competing for prime , including Adobe PDF, Microsoft reader and I pad
2.	E- Journal	An e-journal is very important part of every library collection. E-journals are one application of information technology.
3.	E- Newspaper	An E- Newspaper is also known as online newspaper or web newspaper that exists on the World Wide Web or internet.
4.	E- Magazines	An E-magazines is very important part of every library collection.
5.	Full text databases	Today's there are number of databases available on the network. They are either free or with charges.
6.	Reference database	These are many Dictionaries, Almanacs, and Encyclopaedias, which are available on internet in electronic format.
7.	Image collection	Due to adventure of E-images facility this type of database is developed.
8.	Multimedia products	These types of database are included images, video's , audios and text etc.
9.	E-Thesis	These database are contained with PhD thesis and dissertation published through e- format.
10.	E- clipping	The main objective of E-clipping is retrospective search and comprehensive analysis of new items.
11.	Statistical database	These database contain the numerical data useful for the mass community.

Research Objective:

The following objectives have been set for the present research and the research accordingly will be done.

1. Collecting information on E-resources in the library.
2. To get information about the use of E-resources in the library.
3. Obstacles to the availability and use of E-resources in the library to study.
4. Suggesting solutions related to E-resources. Research has been done in accordance with the above objectives.

Descriptive research methods:

Descriptive research methods are all the research in which a circumstance, a society, a social organization or a case in reviewed and described in the analysis. Descriptive research method has been used for the presented research. Descriptive research is related to fact-finding. An in depth study of the current state of a social phenomenon, work, undertaking or plan is done to objectively treat its pros and cons. Here are 4 features of descriptive research method.[7]

1. Objectively collected information.
2. Technique formula analysis of the collected information.
3. Medicines
4. A background of ambition that has benefited therapists.

Descriptive research methods include the three types of research described by Gopal, philosophy and library research. This research methods use a wide range of surveying information collection techniques. Often these are fact-finding surveys. Descriptive research methods are widely used in the social sciences.

Modification mechanism:

1. Questionnaire
2. Interview
3. Inspection
4. Survey
5. The Questionnaire technique is an important tool along with the observation, interviewing technique to get the information required for your social research work from the various information scattered around. Questionnaire is a pre-arranged list of questions. To study a specific problem, a series of questions were created to get information about the problem from the concerned called.[8]

2. Materials And Methods:

This study is based on questionnaire method. A structured questionnaire was designed to collect data from the faculty members, librarian, readers of Mahatma PhuleAgricultural University, Rahuri (M.S). A total of 108faculty members, librarian and readers were selected and their responses were obtained with the help of questionnaires.

3. Result And Discussion:

Analysis of Data:

Out of 150 questionnaire only 108 (72%) responded with the filled in questionnaire. The questionnairewere edited where necessary. Thus in all the cases the total number of respondents was 108. The data collected through the questionnaire was survey, classified and sequential for better understanding and accuracy. Certain factors like whether the data collected are correct or incorrect, statistically true or not etc. judged using some statistical methods.

1. Sex ratio

Sex ratio is the ratio of males and females in a population. The primary sex ratio is the ratio at the time of appreciation, secondary sex ratio is the ratio at time of birth, and tertiary sex ratio is the ratio of mature organisms.

Sr. No	Gender	No. of Respondents	Percentage
1.	Male	89	82.40
2.	Female	19	17.59
	Total	**108**	**100.00**

Table No. 1 Sex Ratio

2. Computer knowledge of faculty members and readers

Knowledge on computer has become necessity for all profession. Realizing this, the present study attempted to certain the Knowledge of computers of faculty members and readers. This study shows that all the respondents were computer educated, which is a healthy sign for any organization.[2]

Sr. No	Extend	No. of Respondents	Percentage
1.	Excellent	70	64.82
2.	Good	30	27.78
3.	Fair	04	3.70
4.	satisfactory	04	3.70
	Total	**108**	**100.00**

Table No. 2 Computer knowledge of faculty members and readers

3. Frequency of Internet use

Internet has become an important tool for teaching and research. Literature on all the fields of knowledge is available on internet, which is very useful for faculty members, librarian and readers to enrich their knowledge. [4]Regarding frequency of Internet use by the respondents table 3

Sr. No	Frequency	No. of Respondents	Percentage
1.	Daily	82	75.92
2.	Weekly	13	12.03
3.	Monthly	05	4.63
4.	As when required	08	7.42
	Total	**108**	**100.00**

Table No.3 Frequency of Internet use

4. Purpose of Internet use

Internet use has both advantages and disadvantages. Its depends upon the purpose of use. If it is properly used, it helps to increase knowledge and keeps oneself level of the latest developments.[3]

Sr. No	Purpose	No. of Respondents	Percentage
1.	E -mail/charting	78	40.21
2.	Entertainment	18	9.28
3.	Study and Research	98	50.52
	Total	**194**	**100.00**

Table No. 4 Purpose of Internet use

5. Awareness on E-resource

Electronic resources along with print resources have become an integral part of a library collection. Also, remarkable shifts of choice from print resources to E-resources have taken place by users for information. [5]But it is fact that use of E-resources is not satisfactory in most of the libraries, the main reason is the lack of awareness among the users. The present study attempts to highlight on this matter in the following tables.

Sr. No	Response	No. of Respondents	Percentage
1.	Yes	90	83.34
2.	No	18	16.66
	Total	**108**	**100.00**

Table No. 5 Awareness on E-resource

The result implies towards a positive sign regarding use of E-resources by faculty, readers and librarians of New Arts, Commerce and Science College Ahmednagar.

6. Types of E- resources frequently used

Sr. No	E-Resources	No. of Respondents	Percentage
1.	- database	90	31.25
2.	-journals	75	26.04
3.	-articles	40	13.89
4.	-books	20	6.95
5.	-magazine	25	8.68
6.	-these/dissertation	30	10.41
7.	ll	08	2.78
	otal	**288**	**100.00**

Table No. 6 Types of E- resources frequently used

7. Purpose of using E-resources

Sr. No	Purpose	No. of Respondents	Percentage
1.	udy of teaching	**90**	**48.12**
2.	esearch work	**50**	**26.73**
3.	aper writing for publication seminar/workshop	**25**	**13.36**
4.	resentation	**12**	**6.41**
5.	ll	**10**	**5.34**
	otal	**187**	**100.00**

Table No. 7 Purpose of using E-resources

8. Reasons of dissatisfaction on available E- resources

The study of investigates about the reason of dissatisfaction on available E-resources by the faculty, readers and librarian.

Sr. No	Reasons	No. of Respondents	Percentage
1.	frastructure is not good e-resources are not as per	60	55.56
2.	eed	23	21.29
3.	brary time is not suitable	16	14.81
4.	ooperative	09	8.34
	otal	**108**	**100.00**

Table No. 8 Reasons of dissatisfaction on available E- resources

9. Advantages of accessing E-resources

Reveals the multiple opinions regarding the advantages of accessing these resources.

Sr. No	Advantages	No. of Respondents	Percentage
1.	ess time in searching	88	32.84
2.	multaneous usage	22	8.21
3.	asy accessibility	89	33.21
4.	ownloading facility	50	18.66
5.	uthor can be directly through E-mail	19	7.09
	otal	**268**	**100.00**

Table No. 9 Advantages of accessing E-resources

4. Conclusion:

Thestudy reveals that the faculty, readers and librarian of Mahatma Phule Agricultural University, Rahuri are using the available e-resources satisfactorily. At the same time the library of New Arts, Commerce and Science College Ahmednagar is playing an important role in promotion, assistance and guidance in accessing the E-resources. The use of E-resources is helpful to ensure exhaustive and pointed information. The E- resources provide themselves various search options to the user and library manages. E- resources are useful for libraries as well as each and every users of the society. The developments in the information and Communication Technology services are available in the present made wonderful changes in the library operation.

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Need of E-Resources in Academic Libraries

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Abstract:

New technologies have always been of interest for libraries both for the potential of increasing the quality of service and for improving efficiency of operations. At present libraries of all kinds whether public, research academic or special libraries are overwhelmingly looking forward to adopt new technologies mostly use of e-resources due to its potential for cost savings in operations and the management of collections and Patrons. E- Resources are digital objects containing electronic representation of books, journals and other form of reading materials and they are converted into a digitized form in order to be read by a computer. Many Library resources are now available electronically and can be access via the web. You can get the information you want, when you need it, 24 hours a day, 7 days a week.

Keywords : Library Automation, E resources, Academic Library.

1. Introduction:

The development of computer and network technology is changing the education pattern and transforming the teaching and learning process from the traditional physical environment to the digital environment. Modern academic libraries, a conglomeration of printed books and journals as well as electronic resources (e- resources) where both forms of documents can be stored, retrieved and delivered as and when required. The library should have good number of Resources for teaching, learning and Research work. E- Resources offer creative possibilities for expanding access as well as changing learning, teaching and research work. Contents of EResources can be accessible, at any place regardless of time, to be read at personal computers. Ebooks would never to go out of print, and new editions can be easily created.

2. Library Automation:

The main purpose of library automation is to improve the efficiency of library and to provide optimum user services. To provide E-Resources to users, the automation of library is most important. The automated library system is always ready to handling large volumes of documents and of providing effective and timely information services to faculty, researchers and students in achieving their main goals.

The present Indian libraries are in transitional stage from traditional to modern. The Indian Library has moved from palm leaves, manuscripts etc. to CD-ROMs and digital books. Library Automation useful for:

• Faster communication and information retrieval, research results, new innovations are

communicated speedily to the end users, Dissemination of information in within less time, Email, data transfer etc

• Access to large amount of Information resources accurately, efficiently and with up to date Information at their places. Access to Electronic publications, Information on floppies, CDROMs excise easily possible.

• Identification and loans of the print and non-print materials are easily tackled through bar code technologies.

• Library operation such as – circulation, acquisition, serial control, cataloguing, documentation, information retrieval resources-sharing, library management, library budget and finance control.

• Provide networking and liaison with the other libraries which helps to the resources sharing among the library and information centers. Most of the integrated library automation systems are now providing web enabled online catalogue [Web OPAC].

3. E-Resources:

An E-Resource means electronic resource, which are available in electronic/digital form. The e-resources are very useful in academic libraries. This is most important part related to eresources. The quality has replaced the quantity of library collection during the present days. The quality has direct link with the types of library collection as it depends upon the requirement of the users. An e-database is an organized collection of large information, of a particular subject or various subject areas. The information of an e-database can be searched and retrieved electronically. Contents include journal articles, newspapers articles, books reviews and conference proceedings, etc. e-databases usually updated on a daily, weekly, monthly or quarterly, half yearly or yearly basis. Full text databases contain the whole content of an article such as citation information, text, illustrations, diagrams, charts and tables. Bibliographic databases only contain citation information of an article, such as author name, journal title, publication date and page numbers.

Types of E-Resources:

3.1 E- Books

E-book is a book-length publication in digital form, consisting of text, images, or both, readable on computers or other electronic devices, although sometimes defined as "an electronic version of a printed book"(WIKIPAEDIA, 2008). An electronic book is a text and image-based publication in digital form produced on published by and readable on computers, other digital devises. E-books are usually read on dedicated hardware devices known as e-Readers or e-book devices. E-books are very useful tool for academic teachers, students etc Many users now read the books on Mobile phone by use of e-book reader software. E-books are preferred by the users for their features like changeable font size, make citation, links to other relevant sites, searching, sending to other users etc. E-books can be transferred from library catalogue to users e-book readers for a fixed loan period and after which it is automatically taken back.

3.2 E-Journals

An electronic journal, provides research papers review articles, scholarly communication, issued periodically in electronic form by use automation. E-journals may be defined very broadly as any journals, magazine, e-zine, webzine, newsletters or any type of electronic serial publication, which is available over the internet. E-journals are mostly useful tool for researchers. E-journals have an impact not only on libraries but on authors and publishers too.

Hence, now-a-days majority of the users expect up to-date and timely information from library and information centers. Information from journals can easily, quickly, pin-pointedly and remotely be retrieved, provided the journals are available in electronic format. Academic and other special libraries cannot reject e-journals in their collections. It is the duty of librarian and library staff to provide access to the published knowledge to their users irrespective of the origin or e-resource.

Another type of online journals, whose full-text are available in the web for viewing and downloading free of charge, called open access articles. Open Access Articles means online access without access charge to individuals and libraries. A large number of important full text articles are available free of charges in the personal or institutional websites of few eminent personalities.

3.3 Aggregator

An aggregator is a database, collection of electronic publications, most commonly a searchable collection of electronic journals. It provides access to a large number of e-journals from a range of different publishers Aggregator has come as a big solution to the librarians as there is no need of contacting each and every publisher for making their publication available for use. It has made it possible to present electronic content as a simplified access to a range of publishers and purchasing of a large collection, allow libraries to quickly address the information needs of their patrons.

3.4 Consortia

With the Information explosion, it is becoming difficult for the librarian to satisfy the increasing information need of the users. Due to economic reason no library is in a position to acquire all such information in print or other form. Due to cost effectiveness, librarians are coming together in the form of consortia for resources sharing. In India, CSIR Consortia, FORSA, IIM Library Consortia, INDEST Consortium and UGC-info net e journal consortium are some of the consortia serving the varies kinds of institution in the country.

3.5 E-Reference Sources

Now various vendors and publishers are providing various reference sources in electronic form through their databases and web sites such as dictionaries yearbook, encyclopedia' sets. Some of them are dictionaries online (WWW.dictionaries.com, www.dic.leo.org);yearbooks online (www.uja.org); directories online (www.people.yahoo.com). Etc Wikipedia's a new form of reference source which does not have its printed counterparts. Lots of information are available are available in the Wikipedia and the most interesting thing is that new information can be added by the user and the information available can also be altered.

3.6 E-Thesis and Dissertation

E-Thesis and Dissertation are now very useful tool to collect large data for specific subject. This is a very useful service for users or mostly researchers. It reduces the duplication of research works and gives assistance for the selection of the research area to the users of the libraries. As these can be searched subject wise, it reduces the labor of the reference staff a lot.

4. Selection Of E-Resources:

Selection is not a new term to librarian, staff and users as they have been doing it since long back the libraries started acquiring printed material. However libraries are now focusing to take e-resources information technology approaching towards the e-resources rather than printed material as technology developed.

The selection process should be done in relevant with the demands of the users, committee, focus group, users recommendation etc. Apart from this, it should taken into consideration the following steps:

1) to identify library needs;
2) to identify content and scope of the e-resources;
3) to evaluate quality of that particular resource and search capabilities;
4) to estimate the cost;
5) to check either subscription based or web based when acquiring ;
6) to evaluate the systems and technical support;
7) to review licensing agreements;
8) to evaluate application software and installation , updated sporadically or in regular schedule; and
9) to check the facilities for educational support and training

5. Need And Importance Of Library Consortia Based Resource:

Sharing:

The word 'consortia' was originated from the Latin in early 19th century in the sense of partnership. Advanced learners Dictionary describes consortium as 'a group of people' countries. Companies etc. who are working together on a particular project. Information is a national resource and it is necessary for national development. Consortia can become an excellent way in the process of collection, digitizing organizing and making accessible the electronic resources.

The trend today is forming library consortia for sharing of electronic resources. Epublishing has brought a revolution in journals publication ;subscription access and journals online has led to a new and still evolving, form of co-operation among libraries and information centers; every individual library now subscribes to a smaller number of journals, usually those most relevant o their organization.

5. Conclusion:

The library/Information centre is considered to be the backbone of any research organization as it provides its user the literature and information through electronic sources and services in order to carry out their academic activity. It took many years for digital libraries to reach the present state but the Librarian's goal of the fully integrated online digital gateways. Although a library already has a particular journal in print form, but most often, for the sake of integrity and rendering effective value-added services to the users, the library is compelled to subscribe the online access of the same journal for the same period.

In Indian scenario the digitization programmes are in their initial stages and much needs to be done to prepare a long term strategy to sustain these efforts and preserve the digital resources for future use.

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A Critical Study on Tools and Techniques Contemplated for Empowering the Faculties working in Educational Institution

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Abstract :

The Study is to know about the techniques and tools that are used for empowering faculties working in Educational Institution. The Teaching is the noblest among all the profession around. The faculties from teaching fraternity should be knowledgeable to possess some good set of skill, qualifications and feel empowered, which would further be an obvious reflection on the student who are our future generation of our country. So the Study is to critically evaluate the techniques and tool used for empowering the faculty .An empowering emphasizes on autonomy, proper communication, individual participation for academic excellence, rewarding them on achievements and feedback on their performance. Which in turn builds one's Self-esteem and energizes them for perform better and move with upward trend in their career and further motivation in conduction of class and organizing several programs like Seminar, Conference, Workshop's for the well being of the student's Community.

The Questionnaire consisting of 20 statements was used for collection of data and was distributed among 250 faculties working Self finance Arts and Science College. Convenience Sampling techniques were used for this study. Data was analyzed by using Excel & SPSS package by using techniques of Simple Percentage Analysis, ANOVA, Chi-square, Correlation, and F-test.

Objectives Of The Study:

- To Know the Demographical Profile of the Faculty Working in Self Finance Arts and Science college.
- To Study the Tools and Techniques used for Empowering faculties Working in Educational Institution
- To Know the type of faculty training program offered by the institution
- To Understand the level of job satisfaction of the faculty by empowerment

Statement Of The Problem:

Teaching is very noble as well a challenging profession. The job of the faculty is really a challenging their dealing is not with machine or working on techniques the dealings with a social being. The faculty has to feel empowered to get satisfies with their job. So, the current study is targeted to know the tools and techniques contemplated to empower the faculties working in Self Finance Arts and Science College

Descriptive Research:

The Type of research used in this project is Descriptive in nature. The Main goal of this type is to describe the data and characteristics about what is being studied. Descriptive research is the exploration of the existing certain phenomena. The design of the present project is

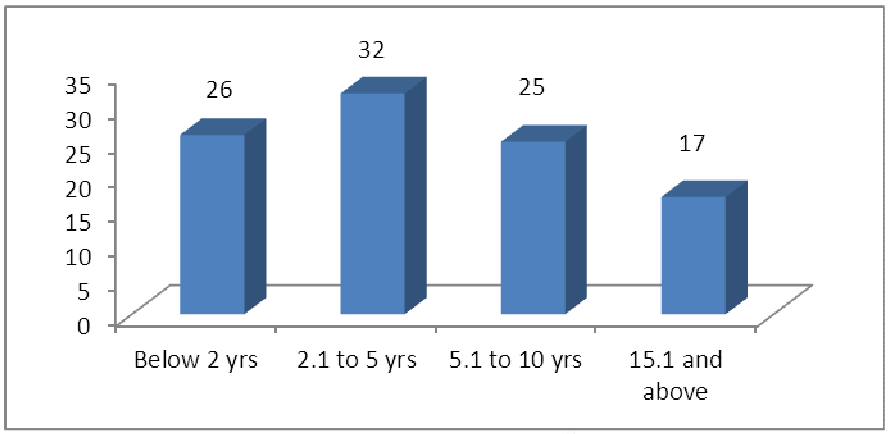
descriptive type of conclusive one.

Statistical Tools For Analysis:

The Data was analyzed through Simple Percentage, Chi-square, ANOVA and Correlation was used for the study

Interpretation:

From the above table it is interpreted that 26 % of the respondents are having below 2 years of experience, 32% of the respondents are having 2.5 to 5 years of experience,25% of the respondents are having 5 to 10 years of experience, 17% of the respondents are having above 10 years of experience.



Chi-Square Analysis Between Gender And Accepting & Appreciating Faculties Suggestions

NULL HYPOTHESIS (H_0): H_0: There is no significant association between gender and accepting & appreciating faculties suggestions.

ALTERNATIVE HYPOTHESIS (H_1)

H_1: There is Significant association between Gender and accepting & appreciating faculty's suggestions

LEVEL OF SIGNIFICANCE α=0.05

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.646[a]	12	.097
Likelihood Ratio	21.732	12	.041
Linear-by-Linear Association	4.954	1	.026
N of Valid Cases	110		

Interpretation:

From the above table the calculated value is (0.097) which is greater than the level of significant (0.05) [0.097 > 0.05]. Therefore we accept the Null Hypothesis {H_0} and reject the

Alternative Hypothesis {H_1}. Hence there is no significant association between Gender and accepting & appreciating faculty's suggestions

Chi-Square Analysis Between Educational Qualification And Motivation To Attend Training, Conference And Fdps:

NULL HYPOTHESIS (H_0)

H_0: There is no significant association between Educational qualification and motivation to attend training, conference and FDP

ALTERNATIVE HYPOTHESIS (H_1)

H_1: There is significant association between educational qualification and motivation to attend training, conference and FDP

LEVEL OF SIGNIFICANCE α=0.05

Chi-Square Tests

	Value	D.f	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.646[a]	12	.027
Likelihood Ratio	21.732	12	.041
Linear-by-Linear Association	4.954	1	.026
N of Valid Cases	110		

a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .33.

Interpretation:

From the above table the calculated value is (0.024) which is lesser than the level of significant (0.05) [0.084 > 0.05]. Therefore we reject the Null Hypothesis {H_0} and accept the Alternative Hypothesis {H_1}. Hence there is significant no association between educational qualification and motivation to attend training, conference and FDP

ANOVA

AGE AND AUTONOMY, EMPOWERMENT MOTIVATE THE EMPLOYEE

NULL HYPOTHESIS (H_0)

H_0 There is no variation between the age and feeling motivated due to Autonomy, Empowerment

ALTERNATIVE HYPOTHESIS (H_1)

H_1 There is a Variation between the Age and feeling motivated due to Autonomy, Empowerment

Age And Autonomyand Empowerment Motivate The Employee

	Sum of Squares	D.f	Mean Square	F	Sig.
Between Groups	11.419	3	3.806	3.267	.024
Within Groups	123.499	106	1.165		
Total	134.918	109			

Interpretation:

From the above table it is interpreted that the calculated table value is (.024) which is lesser than the level of significant (0.05) [0.024 < 0.05]. Therefore we reject the null hypothesis {H_0} and accept the alternative hypothesis {H_1}. Hence there is variation between the age factor and Autonomy and empowerment motivate the employee.

ANOVA

GENDER AND NUMBER OF CONFERENCES ATTENDED BY THE FACULTY IN A YEAR

NULL HYPOTHESIS (H_0)

H_0 There is no variation between the Gender and Number of Conferences attended by the faculty in a year

ALTERNATIVE HYPOTHESIS (H_1)

H_1 There is variation between Gender and Number of Conferences attended by the faculty in a year

Gender And Number of Conferences Attended By Faculty in A Year

	Sum of Squares	D.f	Mean Square	F	Sig.
Between Groups	11.419	3	3.806	3.267	.004
Within Groups	123.499	106	1.165		
Total	134.918	109			

Interpretation:

From the above table it is interpreted that the calculated table value is (.004) which is lesser than the level of significant (0.05) [0.004 < 0.05]. Therefore we reject the null hypothesis {H_0} and accept the alternative hypothesis {H_1}. Hence there is a variation between the gender and number of conferences attended by the faculty in a year.

Findings

- Majority 58% of the respondents belongs to Male category
- 26% of the respondents are in the age of 36- 40yrs.
- Majority of the respondents are having below 2-5 years of experience.
- There is no significant association between Gender and accepting & appreciating faculty's suggestions
- There is no significant association between educational qualification and motivation to attend training, conference and FDP
- There is no variation between the age factor and Autonomy and empowerment motivate the employee.
- There is a variation between the gender and number of conferences attended by the faculty in a year

- There is a positive Correlation relationship between Age and Monthly Income. When the age of the person increase Monthly Income also increase
- There is Positive Correlation relationship between Experience and Monthly Income. When the Experience of the person increase Monthly Income also Increases

Suggestions:

- Faculties can be involved in joined decision making process which gives them an Autonomy and Empowerment to work
- The organization should have to consider their salary & statutory benefits. Which serves as a biggest motivation for the employee
- The organization should train up the employee which gives them more empowerment
- The Educational institution must recognize and appreciated the employee's contribution. Which would helps the employee to achieve greater avenue
- Institution can support the professional learning community for the faculty

Conclusion:

Inspiration and commitment of employees to their work is regarded with high esteem in organizations. This is because inspiration and commitment play a very significant role in determining the performance of employees. The level of commitment and inspiration of employees in organizations are functions of employee motivation and it will help to do better performance in their work. Since the role that motivation plays in an organization is unquestionable, its application becomes the challenge since the concept is quite complex. In order to motivate employees in a company or organization, it is imperative that the needs of employees are identified. Many theorists have come up to highlight the needs of employees at work place. Maslow list the needs of employees in an organization in a given hierarchy which include security needs, social needs, psychological needs, esteem needs and self actualization needs. More than all the above mentioned need employees of all the business irrespective of their position are expected to get more empowered .Empowerment is not just giving them autonomy to work but to give them a space to communicate, reward them in all their achievement and to give sufficient training whenever an need arise.

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A Review on Synthesis and Characterization of Zno Nanoparticles

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Abstract:

All research paper I have studied in during 6 month and finalized these review paper. Zinc oxide is an inorganic compound and usually appears as a white powder. It also called a multifunctional material because of to its unique physical and chemical properties. Zinc oxide nanoparticles were successfully synthesized by a sol-gel method, precipitation method, green leaf extract, and microwave method, wet chemical and hydrothermal method. Different compositions of zinc oxides nano composites were characterized using X-Ray Diffractometer and Photoluminescence Spectrofluorophotometer studies. The X-ray diffraction studies reveals that the synthesized ZnO nanoparticles have wurtzite structure and the particle size varies from 20 to 30 nm.TheZnO nanoparticles were prepared by two different methods where the size of the particles formed were found to be 320 nm and 559 nm studied by the particle size analyzer. The XRD patterns of these sample revealed that the required phase is present with a little amount of impurities. The particle size measurement which was done by particle analyzer was supported by the XRD Scherer's formula. Crystalline oxide powders, combined with other materials, provide possibilities for obtaining improved chemical, mechanical, optical or electrical properties.

Keywords: Nanoparticles, zinc oxide (ZnO), synthesis, characterization

1. Introduction:

Nano means one-billionth, thus nanotechnology deals with materials measured in a billionth of a meter. A nanometer is 1/80,000 the diameter of a human hair or approximately ten hydrogen atoms wide. Nanotechnology is the science of very small things. But nanotechnology is not just involved with small things. Nanotechnology is a multi-disciplinary science. It includes knowledge from biology, chemistry, physics and other disciplines. Nano technology as the manipulation or self-assembly of individual atoms, molecules or molecular clusters into structures to create materials devices with new or vastly different properties

Zinc oxide is an inorganic compound with the formula ZnO. It usually appears as a white powder, nearly insoluble in water. The powder is widely used as an additive into numerous materials and products including plastics, ceramics, glass, cement, rubber (e.g. car tyres), lubricants, paints, ointments, adhesives, sealants, pigments, foods (source of Zn nutrient), batteries, ferrites, fire retardants, etc. ZnO is present in the Earth crust as a mineral zincite; however, most ZnO used commercially is produced synthetically.

Zinc oxide, with its unique physical and chemical properties, such as high chemical stability, high electrochemical coupling coefficient, broad range of radiation absorption and high photo stability, is a multifunctional material. In materials science, zinc oxide is classified as a semiconductor in group II-VI, whose covalence is on the boundary between ionic and covalent semiconductors. A broad energy band (3.37 meV), high bond energy (60 meV) and high thermal and mechanical stability at room temperature make it attractive for potential use in electronics, optoelectronics and laser technology.

Methodology:

1. **ZnO Nanoparticles synthesis by Precipitation method:**

Zinc sulfate (1.5 mol/l) and ammonium bicarbonate (2.5 mol/l) were prepared in distilled water and 100 ml ZnSO4 solution was added to 126 ml NH4HCO3 solution while stirring and the reaction mixture was kept at 45 °C. The slurry of basic zinc carbonate (BZC) in the form of a white precipitate was obtained. It was then filtered, washed and dried. Finally zinc oxide nanoparticle was prepared by calcining the precipitate at 500 °C for 1 hour. In this process, the reaction of Zn ions and ammonium acid carbonate proceeds according to the equation 1.

$$5ZnSO_4 + 10NH_4HCO_3 \longrightarrow Zn5\,(OH)_6\,(CO_3)_2\,(S) + 5\,(NH_4)2SO_4 + 8CO_2\uparrow + 2H_2O \ldots. (1)$$

The complex formed decomposes upon calcining to ZnO according to the equation 2.

$$Zn5(OH)_6(CO_3)_2 \longrightarrow 5ZnO + 2CO_2\uparrow + 3H_2O\uparrow \ldots. (2)$$

1. **ZnO Nanoparticles synthesis by Green method:**

Janjal*et al.* (2017) reported that zinc oxide nanoparticles were prepared by leaf extract of guava plant. For Preparation of leaf extract of guava plant: The leaves of guava (10 mg) were thoroughly washed, dried and then boiled in 100ml distilled water for 15 min. The resultant extract was cooled, filtered using Whatman No. 1 filter paper and used as the extract solutions. In this method, 0.02 M solution of zinc acetate (50ml) was taken and 2ml leaves extract was added drop-wise and the resulting mixture was stirred for 10 minutes. The pH of the mixture was maintained at 12 by adding 1M NaOH drop-wise and the solution was stirred continuously for 2 hr. A pale white precipitate resulted which is washed by distilled water 2-3 times followed by ethanol, filtered and dried at 500C overnight in oven. Pale white powder of zinc oxide nanoparticles was store for characterization. *Coriandrumsativum*leaf was used for the synthesis and characterization of ZnO nanoparticles prepared by green and chemical technique. The average size was found to be 66 nm in green synthesis method while the size was 81nm in the chemical method. The ZnO nanoparticles prepared from *Coriandrum*leaf extract were expected to have more extensive application in biotechnology, sensors, medical, catalysis, optical devices, DNA labeling, drug delivery and water remediation (Gnanasangeetha and Thambavani, 2013) [14]. The antibacterial activity towards human bacterial and plant pathogens showed good sensitivity towards the green synthesized ZnO-NPs at all concentrations. The size of the particles ranged from 100 to 200 nm. The study indicated that the *C. proceraZnO* nanoparticles had strong antimicrobial activity against the tested human and plant bacterial pathogens along with the fungal pathogens (Poovizhi and Krishnaveni, 2015) [22].

Bala*et al.* (2015) [4] reported the synthesis of Zinc oxide nanoparticles from the leaf extract of *Hibiscus subdariffa.* The synthesized ZnO nanoparticles had potential anti-bacterial agents which have been studied on *Escherichia coli* and *Staphylococcus aureus*. The Zinc oxide nanoparticles were synthesized from the leaf extract of Tanners cassia (*Cassia auriculata*). The synthesized Zinc oxide nanoparticles were confirmed by SEM, UV- Vis Spectrophotometer and FTIR. The SEM studies revealed that the synthesized ZnO-NPs were spherical in shape (Ramesh *et al.,* 2014a) [23]. The Zinc oxide nanoparticles were synthesized with the leaf extract of green tea (*Camellia sinensis).* The whole plant body of *Brassica oleraceae*had possessed aphrodisiac activities, and it had a significant role in maintaining maleness. The nanoparticles showed antibacterial activity against both Gram-positive and negative bacteria. The antibacterial

activities increased as the concentration of Zinc oxide nanoparticles increased. The synthesized Zinc nanoparticles were applied on *Arachishypogaea*L (peanut) pot-culture to estimate soil microbial population, soil exo-enzyme activities and physiological growth parameters of the peanut plants. Zinc nanoparticles applied to the peanut pot-culture exhibited good soil microbial and enzyme activities by showingsignificant variations compared to the control and enhanced the physiological growth parameters of peanut plants (Sindhura*et al.,* 2015) [32].

The Zinc oxide nanoparticles were synthesized with the leaf extract of *Aloe vera.* The particles were a hexagonal shape with an average size of 22.18 nm. Photodegradation and antibacterial activity of the nanoparticles were studied. The antibacterial studies of synthesized nanoparticles showed sensitivity to both Gram positive and Gram negative bacteria (Varghese and George, 2015) [38]. The green synthesis of Zinc oxide nanoparticles by using peel extract of *Punicagranatum*. The flower extract of *Trifoliumpratense*was used for the synthesis of Zinc oxide nanoparticles. The synthesized ZnO nanoparticles were agglomerated with a particle size ranging from below 100 to 190 nm. ZnO nanoparticles synthesized from *T. pratense*flower extract showed effective antibacterial activity against all tested strains (Dobrucka and Dugaszewska, 2015) [12]. The Synthesis of Zinc oxide nanoparticles with the milky latex extract of *Calotropisprocera.* The morphology of ZnO NPs embedded in *calotropis*matrix with little agglomeration having sizes about 5 nm throughout the carbon coated copper grid, and average particle size was in the range of 5-40 nm (Ravindra*et al.,* 2011) [27].

2. ZnO Nanoparticles synthesis by Wet chemical method:

The Synthesis of zinc oxide nanoparticles by wet chemical method using zinc nitrate and sodium hydroxides precursors and soluble starch as stabilizing agent. Different concentrations of soluble starch (0.1%), were dissolved in 500 ml of distilled water by using microwave oven. Zinc nitrate, 14.874 g (0.1 M), was added in the above solution. Then the solution was kept under constant stirring using magnetic stirrer to completely dissolve the zinc nitrate for one hour. After complete dissolution of zinc nitrate, 0.2 M of sodium hydroxide solution was added under constant stirring, drop by drop touching the walls of the vessel. The reaction was allowed to proceed for 2 h after complete addition of sodium hydroxide. After the completion of reaction, the solution was allowed to settle for overnight and the supernatant solution was then discarded carefully. The remaining solution was centrifuged at 10,000 rpm for 10 min and the supernatant was discarded. Thus obtained nanoparticles were washed three times using distilled water.

Washing was carried out to remove the byproducts and the excessive starch that were bound with the nanoparticles. After washing, the nanoparticles were dried at 80°C for overnight. During drying, complete conversion of $Zn(OH)_2$ into ZnO takes place.Sivakumar*et al.* (2011) worked on biosynthesis of silver nanoparticles from AgNO3 solution and using *Calotrophis gigantean* leaf. In biosynthesis method *Calotrophis gigantean* leaf acted as a reducing agent. Vafaee*et al.* (2007) [37] workedon synthesis and characterization of zinc oxide nanoparticles using sol-gel method. By using this method they synthesized spherical shape ZnO nanoparticles. They utilized first time triethanolamine (TEA) as a surfactant. Yiamsawas*et al.* (2009) [41] prepared zinc oxide nanostructures by using solvothermal method. They utilized PVP, ethanol, and zinc acetate dehydrate. This entire chemical treated in sealed polypropylene vessel heated in autoclave.

Result & Observation:

1.According to Awwad*et al.,* 2014, the antibacterial activity towards human bacterial and plant pathogens showed good sensitivity towards the green synthesized ZnO-NPs at all concentrations.The synthesis of Zinc oxide nanoparticles was reported with the leaf extract of *Oleaeuropea*. The average size of particles was found to be 500 nm and the thicknesses was about 20 nm by SEM studies. FT-IR analysis of aqueous *Oleaeuropea*leaf extract indicated the presence of phytoconstituents such as amines, aldehydes, phenols and alcohols which were the surface active molecules stabilizing the Zinc oxide nanosheets.

According to Bhumi*et al.,* 2014, the synthesized ZnO-NPs were evaluated for the antibacterial activity against *Bacillus thuringiensis*, *Escherichia coli, Staphylococcus aureus*and*Pseudomonas aeuroginosa.*The highest antimicrobial activity was observed against *Pseudomonas aeuroginosa*followed by *Staphylococcus aureus*(Bhumi and Savithramma, 2014) [5]. The synthesis of Zinc oxide nanoparticles with the leaf extract of *Adhatodavasica*. The Synthesized ZnO-NPs were found to be discoid in shape with an average size of 19 - 60 nm. Phytochemicals present in the plant were responsible for the quick reduction of Zn+ ion to metallic Zinc Oxide nanoparticles.

According to Sindhura*et al.,* 2015, The particles were spherical and sheet shape. The experimental results showed that the diameters of prepared nanoparticles in the solution had sizes between 1 and 100 nm. The whole plant body of *Brassica oleraceae*had possessed aphrodisiac activities, and it had a significant role in maintaining maleness. The nanoparticles showed antibacterial activity against both Gram-positive and negative bacteria. The antibacterial activities increased as the concentration of Zinc oxide nanoparticles increased

2. According to Raut and Thorat2015studied on preparation, characterization and application of zinc oxide nanoparticles by leaves extract solution and boiled upto 600-80 0C by using a stirrer-heater. When temperature of solution reached at 60 0C then 5 grams of $Zn(NO_3)_2$ were as added to the solution. The mixture was then boiled upto reduce to a deep yellow coloured paste. This paste then collected in a ceramic crucible. This paste heated in an air heated furnace at 300 0C for 120 min. A light yellow coloured powder was prepared and this was carefully collected. The powder was mashed in a mortar-pestle so as to get a finer nature for characterization.

Conclusion:

Zinc oxide is a multifunctional material because of its many interesting properties (piezo- and pyroelectric), a wide range ~ 1100 ~ of UV absorption, and high photostability, biocompatibility and biodegradability. ZnO can also be obtained with a variety of particle structures, which determine its use in new materials and potential applications in a wide range of fields of technology. Zinc oxide nanoparticles were synthesized by different methods such as wet chemical method,sol-gel method, green leaf extract methodand UV. The crystallite size of the prepared zinc oxide nanoparticles varies from 25-30 nm. All the prepared nanoparticles showed wurtzite structure.

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Antagonism of Microbial Flora Isolated from Garden Rhizospheric Soil

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Abstract:

The microbes can have capacity inhibit the growth of other microbes for their own survival. The strategy of the microbes which makes them fittest for extreme conditions is its capacity to secrete some of the metabolites responsible for inhibitions of growth of other microbes we can say antibiosis. The phenomenon of these microbes helps to survive them in extreme conditions. For this purpose we have taken garden soil for the investigations and from this soil samples microbial flora were isolated and purified.

The isolated microbial cultures were tested against each other and we found very significant result. Initially we speeded soil samples after dilutions on agar plates we observed around 10 fungal cultures on PDA plates. Further among 10 cultures we got three pure cultures showing positive antagonistic activity against each other. We further calculate activity of antibiosis and we found in multifold inhibitions. From microscopy under light microscope we found that the green spore mat appear similar to Penicillium digitatum, black fungal spore mat similar to Aspergillus niger, while brown fungal spore mat appears to be as blood fungi also known as Tinea versicolor.

Keywords: Antagonism, Rhizosphere, fungal culture

Introduction:

The microbes or pathogens are one of the members of natural soil flora. These microbes are present normally in rhizosphere, which helps crop plant to prevent their predators (George et al., 2002; Reynolds and Barrett, 2003; Gerba and Smith, 2005; Arnone and Walling, 2007). The microbes are important biotic factor of ecosystem and govern distinct functional traits with respect to ecological principles. For the microbes, it is better to compete with other microbes for food and nutrients for their own survival. For the maintenance of microbial communities, microbes start secreting some biomolecules which makes unfavorable conditions for the survival of other microbes like that of antibiosis (Garcia-Bayona and Comstock, 2018). The fittest microbes create interference competition, which harms other microbes.

This phenomenon helps in maintenance of plant health, crop productivity and preservations of functions of ecosystems. Microbes to microbes or organisms to organism there are several interactions within the same community like synergistic and mutualistic in which one organisms helps in the survival of other organisms. Other interactions involved antagonistic or parasitism where one organism is benefitted while one is harmed. These characteristics of microbes exploited in biocontrol of plant pathogens. This effect of antagonism can enhance the biocontrol of plant pathogens or disease causal organisms which helps in the integrations of green farming. Microbes to adapt the characteristics of antagonisms need to have several interactions with other microbes like pathogens. The microbes possessing the characteristics of antagonisms also have the capability to detoxify, can repressed the genes of biocontrol, can actively efflux biomolecules like antibiotics and have antibiotic resistance too (Duffy et.al. 2003).

Materials and Methods:

To find the mechanisms of antagonism in soil micro flora, we have taken soil sample rhizosphere of garden plants and try to effect of antibiosis. The secondary metabolites or chemicals secreted by plants or microbes prevents attack some of the pathogenic microbes or animals. Soil samples were collected from different locations of garden rhizosphere soil. The collected samples were serially diluted and further inoculated on agar plates by spread/streak plate techniques. During the isolation we got numerous fungal and bacterial species and we observed more zone of inhibitions around fungal species so further we have taken these fungal species on Potato Dextrose Agar plates. These isolated species were thought to be secreting extracellular biomolecules which are responsible for antibiosis, hence we have mass cultivated isolated fungal species and extracellular biomolecules were collected by removing biomass through centrifugations. The collected extracellular extract further tested for antimicrobial activity against each other and other bacteria.

Media:

Different types of media were used for selective growth, enrichment culture, and indication of specific properties. Media preparation and sterilization were done according to the protocol and standard recipe.

Sample collection:

Soil samples were collected from nearby rhizosphere sites of School of Life Sciences, Campus and from collected sample numerous fungi were isolated and identified.

Assessment of increase in fold area:

The increase in fold area was assessed by calculating the mean surface area of the inhibition zone of each fungal extract along with distil water as the solvent by using the formula (B2 – A2)/A2, where B is extract in solvent, A is pure solvent (water).

Results and Discussion:

The rhizosphere soil samples were taken from different locations or sites of School of Life Sciences (Fig. 1). Soil samples taken were serial diluted and spread on agar plates for their isolations. During isolations we observed several fungal species are showing antagonistic properties. Further such microbes we purified and tested for antimicrobial properties and we found positive results for the same and found enhanced antimicrobial activity with respect to the solvents.

Figure 1: Collection of rhizosphere soil from different sites of School of Life Sciences.

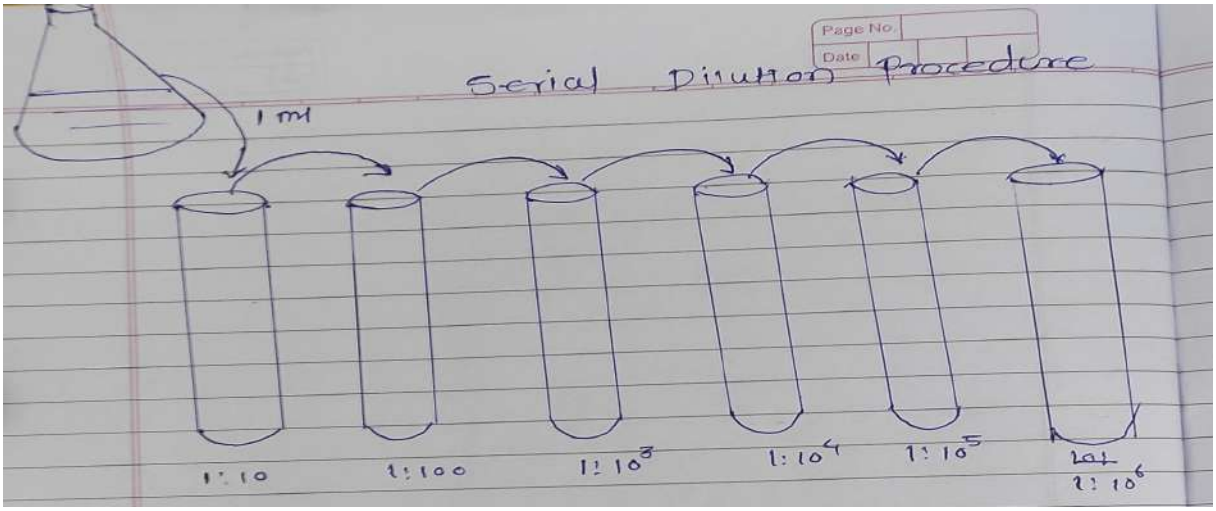


Figure 2: Serial dilutions of collected soil samples in saline water.

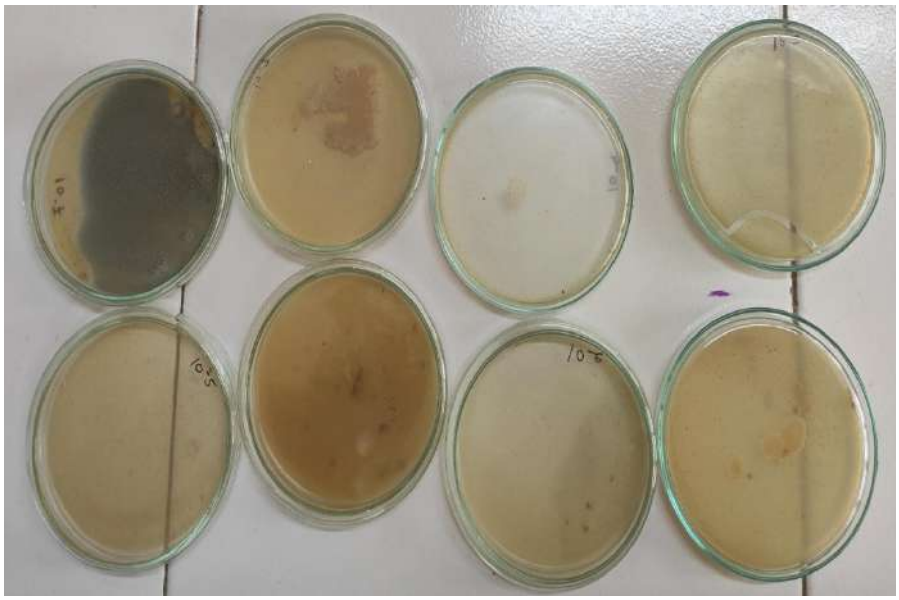


Figure 3 Cultures obtained after serial dilutions and further isolated it.

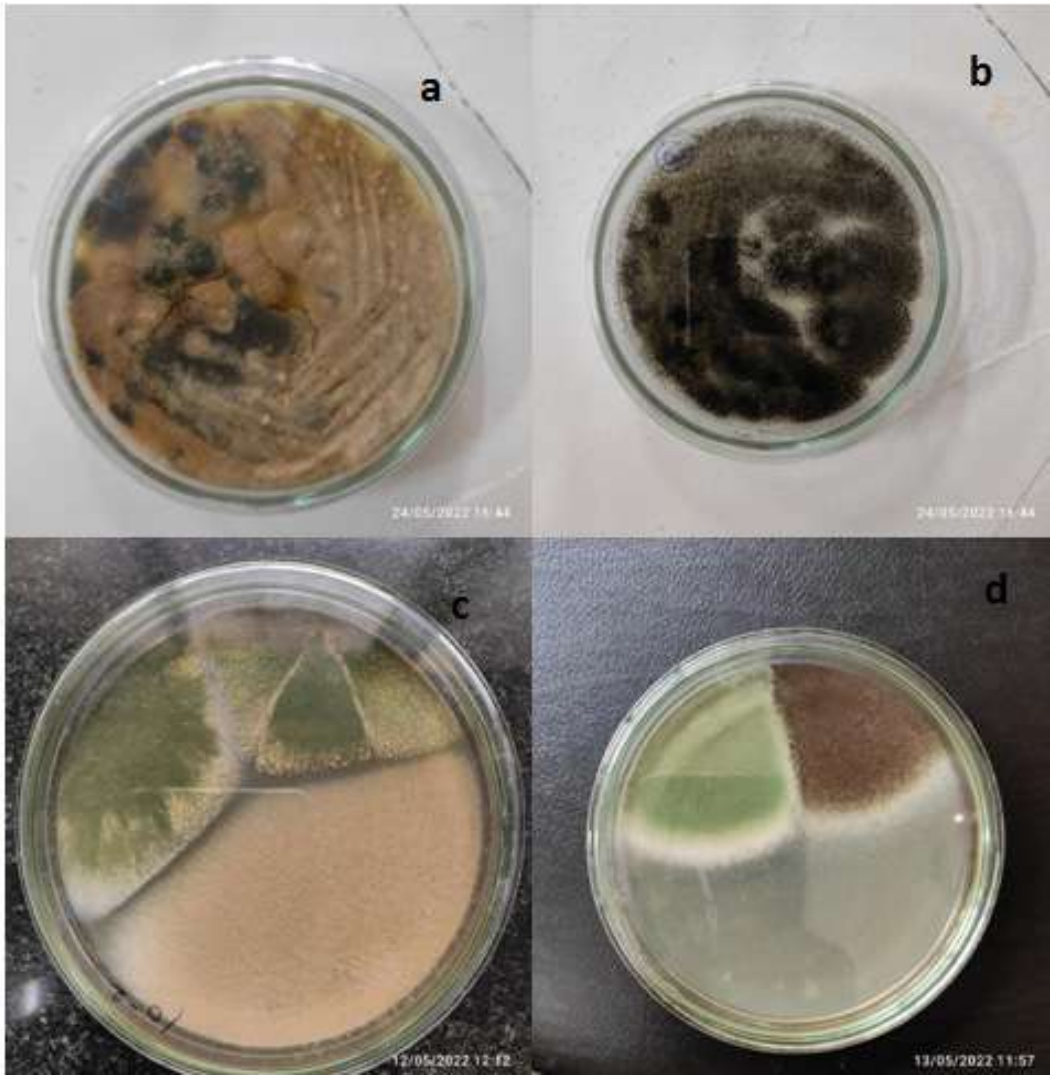


Figure 4: a, b: isolation of fungi from soil samples, c & d fungal cultures had shown antagonism.

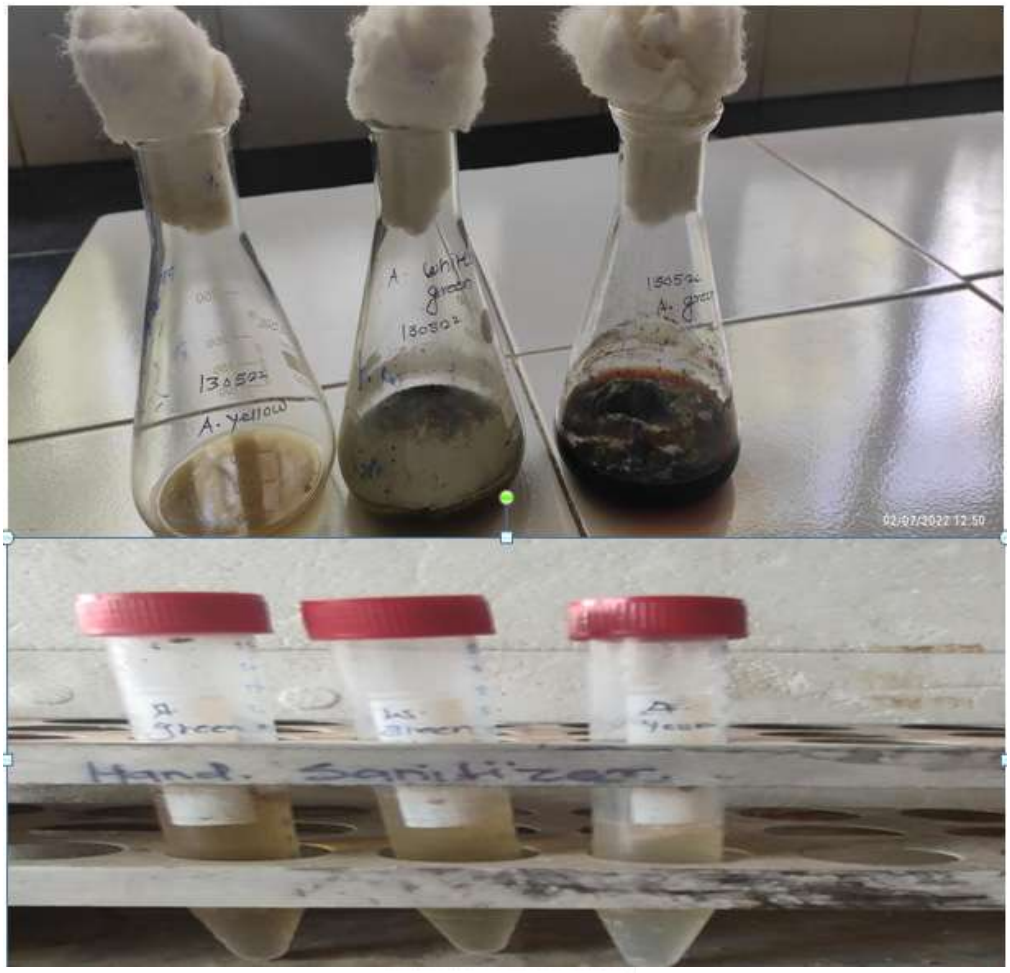


Figure 5: Purified fungal cultures, isolated from soil samples.

Table 1: Antimicrobial or antagonism shown by experimental fungi in fold activity

Sample	Experimental fungi	Control	Fold activity
1	12	08	1.25
2	09	07	0.65
3	11	07	1.46
4	12	09	0.49
5	10	06	1.49
6	12	07	1.93
7	13	06	1.69
8	13	07	2.44
9	09	06	1.25
10	10	07	1.04
11	12	06	3
12	13	06	3.69
13	13	08	1.64
14	13	09	1.64

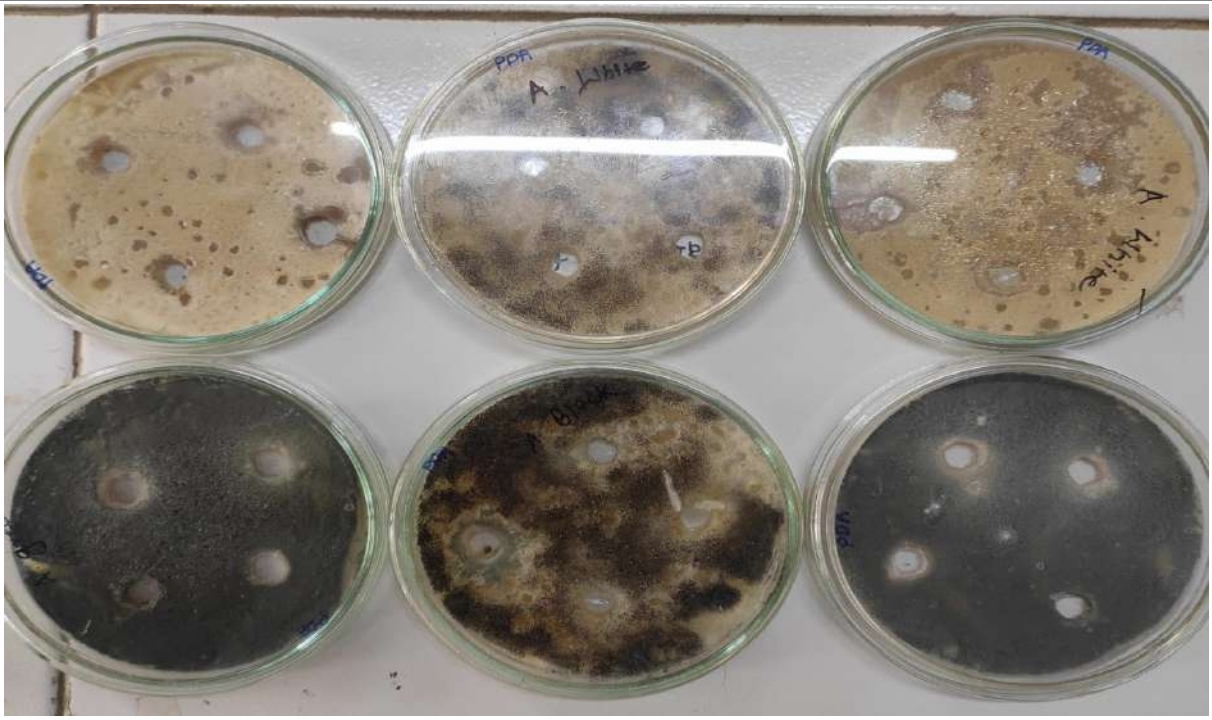


Figure 6 : Antimicrobial activity shown by isolated fungal cultures

The fungal spores or cultures isolated from soil samples were tested against each other to find antimicrobial or antagonism. In this experiment we detected very significant results and we observed clear zone between to fungal mat. Further these cultures when tested for antimicrobial activity we found multifold inhibition activity against fungi and bacteria (Table 1). In this investigation, we are particularly looking some of the compounds which are responsible for growth inhibitions of plant pathogens. We can see with modern agriculture, we are exploiting farm field for production enough amount food as the population day by day increasing. To get higher yield, we are using synthetic fertilizers, to prevent loss of crop yield by pathogens and pest we are applying enormous of biopesticides. After the use of these synthetic materials, they are not easily degraded or we can say their half time is very long, so can face its remnant and products on farm field. These remnants and products after some time makes fertile farm land into sterile one, where we cannot take any sort of crop or food.

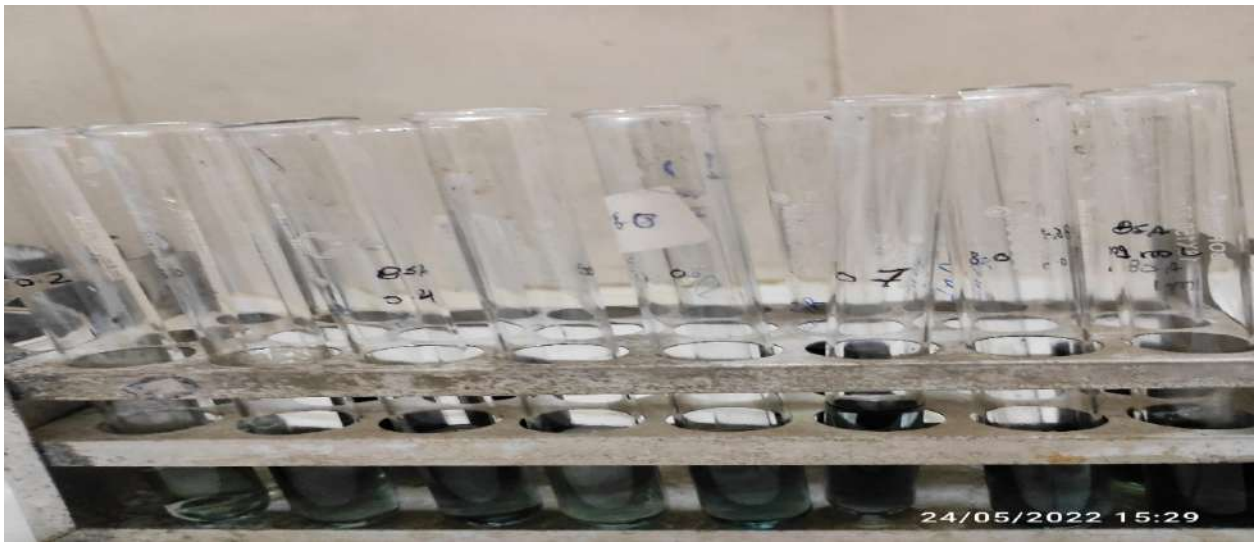


Figure 7: Protein estimation in purified fungal cultures

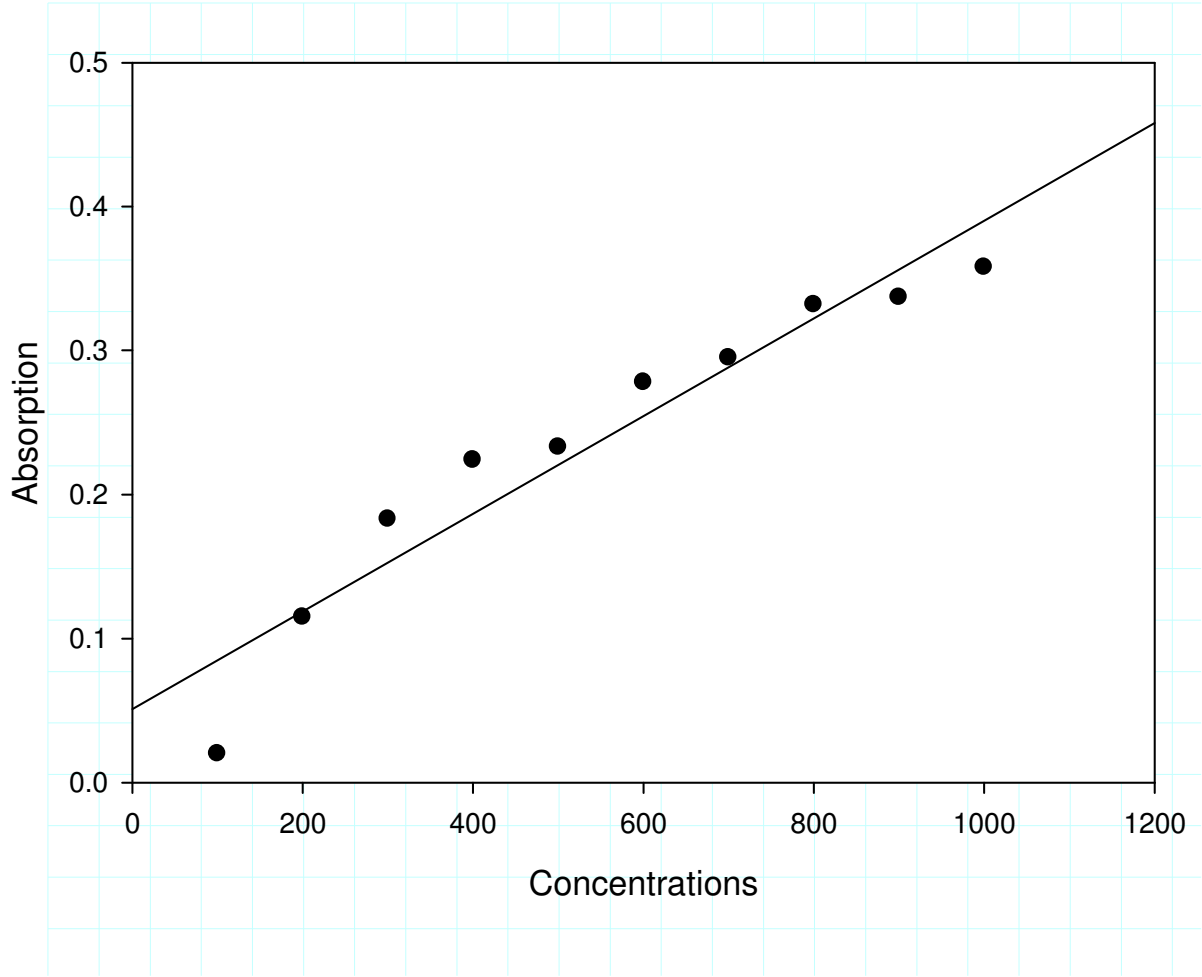
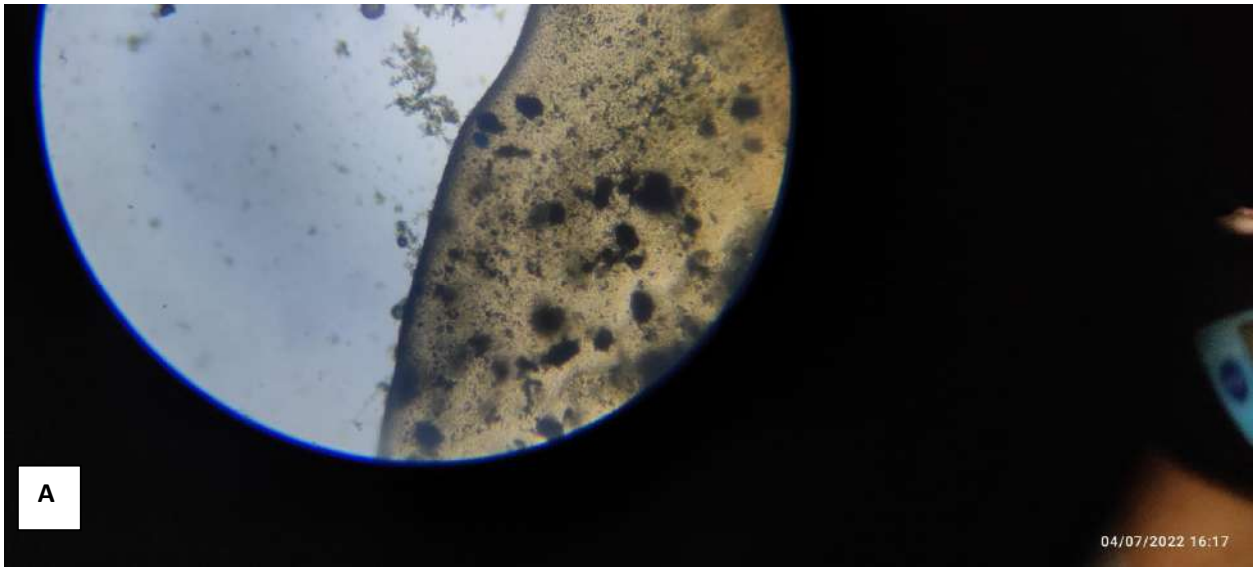


Figure 8: Standard graph for protein estimations

In present investigations we have estimated protein samples by taking bovine serum albumin as the standard protein. And we have found that the microbes or fungi having higher antimicrobial or antagonism are having good contents of protein.



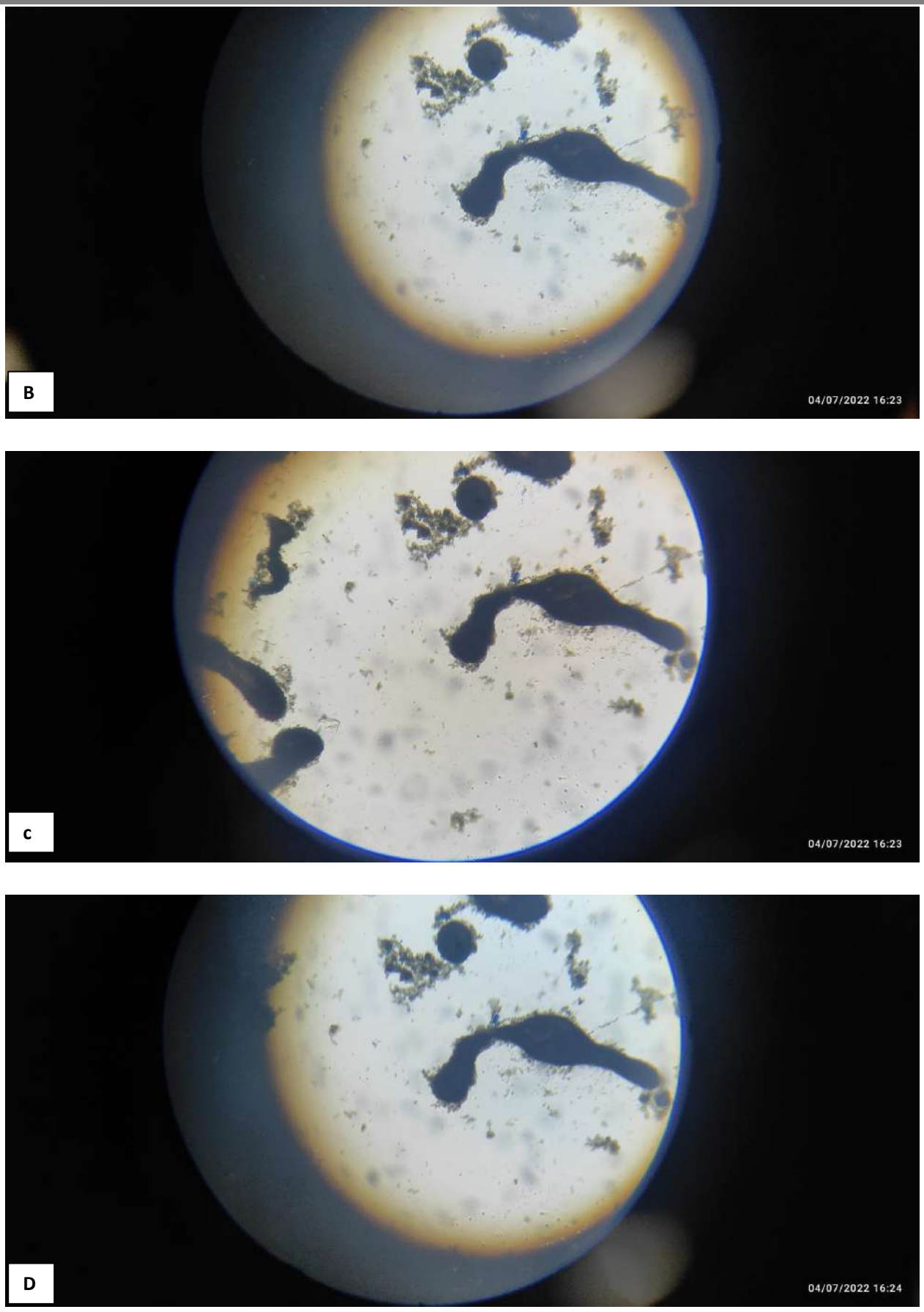


Figure 9: (A-D) Microscopic identifications of fungal spores isolated from soil samples.

From microscopy under light microscope we found that the green spore mat appear similar to *Penicillium digitatum*, black fungal spore mat similar to *Aspergillus niger*, while brown fungal spore mat appears to be as blood fungi also known as *Tinea versicolor*.

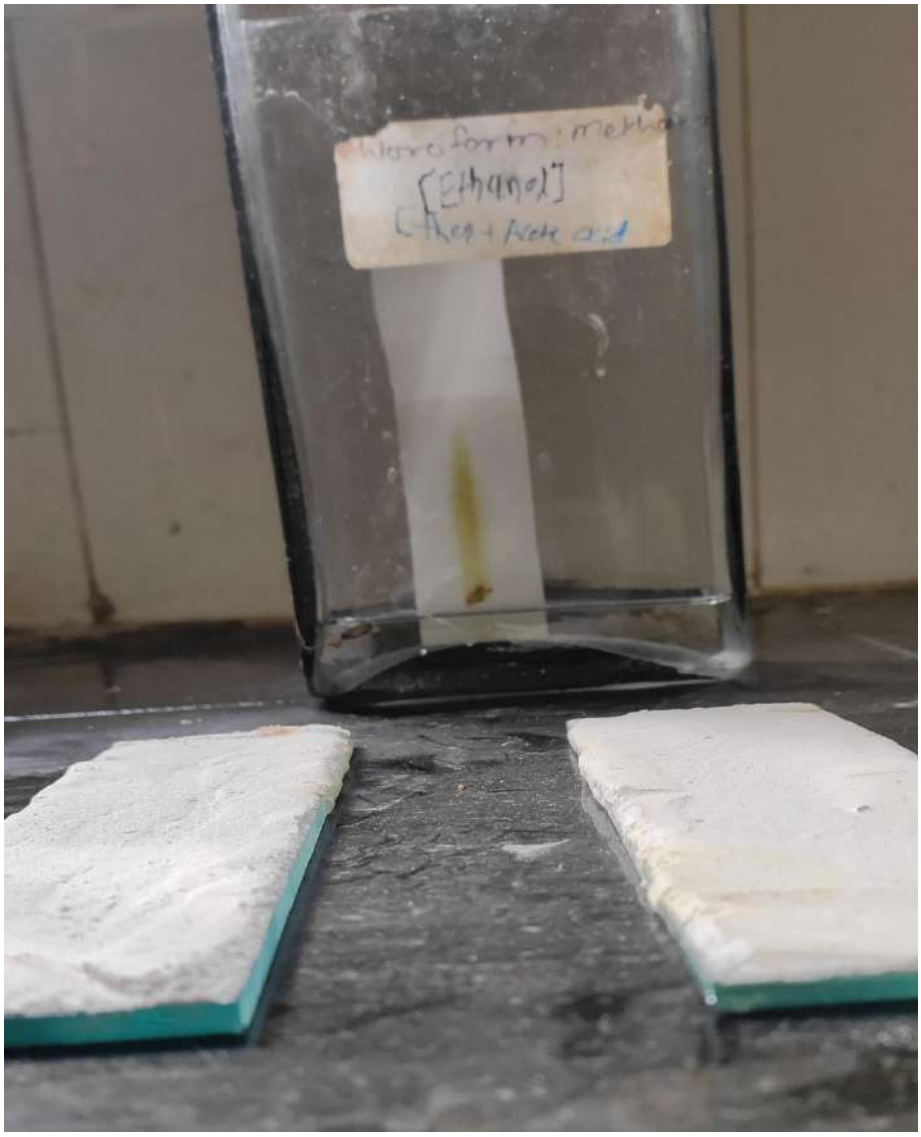


Figure 9: Extracellular components obtained from purified fungi were characterized by Thin Layer Chromatography.

Conclusion:

In the presence on sort of organisms, other organisms cannot be able to survive is supposed to antibiosis. This sort of phenomenon also called as antagonism. Here we can use this sort of phenomenon for the increment in crop yield and for formulations of biopesticides. We can see, if you use such microbes through which we can prevent the growth of pathogenic microbes.

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Synthesis, Characterization of Fe_3O_4@ Sio_2 Andit's Application for Removal of Methylene Blue Dye

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Abstract-

In this study, we successfully synthesized core shell structured Fe_3O_4@SiO_2 nanocomposites by microwave assisted solvothermal method using sodium silicate (Na_2SiO_3), which is more suitable than the conventional silane precursorTEOS (tetraethyl orthosilicate). In the process of surface coating of particle to form a core–shell structure with Fe_3O_4, the Na_2SiO_3 was neutralized with aq. HCl to form silane groups, and the resulting silane groups combined with hydroxyl groups (OH^-) present on the surfaces of the Fe_3O_4 nanoparticles. Then, the Fe_3O_4 nanoparticles and Fe_3O_4@SiO_2 composite nanoparticles were characterized by using X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR), scanning electron microscope (SEM). The SEM and PXRD results show that the synthesized nanocomposite has a semispherical structure with an average particle size of 16-20 nm and excellent magnetization properties (27.9 emu/g). The synthesised Fe_3O_4@SiO_2 nanocomposites also aiming to remove methylene blue (MB) from aqueous solution. This adsorbent combined the magnetic property of magnetic Fe3O4 with the strong adsorption performance on methylene blue. The adsorbent exhibited a typical superparamagnetic, which could be rapidly separated from aqueous solution under external magnetic field. When the initial concentration of MB was 24 mg/L, the maximum adsorption capacity of methylene blue at room temperature was 30.14 mg/g within 30 s at pH 11.

Keywords: Fe_3O_4, Fe_3O_4@SiO_2, structure, nanocomposite, Microwave, methylene blue.

I. Introduction:

In the recent decan, with the development of industrial production, environmental problems have become one of the one of the most challenges facing mankind in this century. Nowadays, organic dyes are one of the most dangerous and serious environmental pollutants [1]. These dyes and their degradation species are toxic in nature, which are regarded as primary cutthroat for potentially carcinogenic and mutagenic effects on human beings [2–5]. For example, methylene blue (MB), a kind of synthetic basic dye, has been widely applied in textiles, tannery, plastics, paper, and paints [6]. However, MB can cause skin irritation, allergy, eye burns, and cancer in humans owing to its toxicity. Therefore, developing relevant methods and materials to remove MB efficiently have aroused considerable attention in the last few decades [7].

The various traditional methods are removed methylene blue such as chemical oxidation, membrane filtration, electrolysis and photocatalytic degradation. However, the traditional methods' conversion and utilization is endowed with two major technological challenges such as the high cost and strictly operation conditions [8-9].Compared with other methods, adsorption method is one of the promising approaches due to its high efficiency and economy.

Many of Researcher published their papers onmagnetic Fe3O4 can be used for wastewater purification, such as to adsorb arsenite, arsenate, chromate, cadmium, nickel. They are also used toalkalinity and hardness removal, desalination, decolorisationof pulp mill effluent and removal of natural organiccompounds.After adsorption, Fe_3O_4 can be separatedfrom the medium by a simple magnetic process. Thus, anefficient, economic, scalable, and nontoxic in nature. But however, due to the large surface energy of the magnetic nanoparticles, they may cause aggregation during catalytic reactions. These nanoparticles have another prone to oxidation in the air, which reduces their magnetic properties. Various studies have also proven that the magnetite nanoparticles without modification have low thermal stability, low water solubility. This drawback can be overcome by using stabilizers for nanoparticles to be used as acoating or supported. The main function of these support of coating is to control the particle size, morphology and dispersion of nanoparticles [8-9]. Therefore, Magnetite (Fe_3O_4), they must be functionalized by various polymers [10], silica [11,12], and metals [13].

Various chemical methods including microemulsions [16], sol-gel syntheses [17], sonochemical reactions [18], hydrothermal reactions [19], hydrolysis and thermolysis of precursors have been used to synthesize Fe_3O_4 magnetic nanoparticles. In the specific synthesis of nanosheets, the methods of solvothermal process, solid-state thermal decomposition route, supercritical fluid technique and bottom-up technique have been attempted [20]. These synthesis methods are usually one-step reaction, and the surface modification procedure is incorporated with the synthesis of particles.

Several previous works, prove that the SiO_2 particles have been proven to be able to give protection to Fe3O4, moreover to the high toxicity properties [11,14]. Silicon is a biocompatible and one of the trace element in the human body and has been the subject of important research due to its distinctive structural properties such as large surface area and specific surface area [14]. Silica (SiO_2) is the stable in acidic conditions and has hydroxyl groups that bind magnetite to various biological ligands. Silica is non-toxic and used as a vitamin supplement and food additive [15].To optimize the structure, size and stability of the magnetic pores, the surface must be modified by adding a silica template (SiO2) so that the size and pore can be more controlled.The combination of Fe3O4 and SiO2 in the nanocomposite system has more advantages such as having biocompatibility, high biostability, and excellent response in catalyst & adsorption. Hence, the selection of synthesis method and the materials for synthesis become difficult to improving the performance of Fe_3O_4/SiO_2 nanocomposites.

The objective of this study, we used microwaveassisted solvothermal reductionsynthesis method of synthesis of Fe_3O_4 and $Fe_3O_4@SiO_2$NPs and study their structure by itscharacterization of using various analytical methods such as X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR), scanning electron microscope (SEM) and vibrating sample magnetometer (VSM).

In the present work our intended is to develop a simple, rapid and cost-effective method for the surface modification of Fe_2O_3 NPs by mesoporous silica with high specific surface area using an inexpensive source of silica source as sodium meta silicate. In this study, we also study an approach of methylene blue (MB) removal from wastewater using $Fe_3O_4@SiO_2$.

II- Methodology:

2.1 Chemicals-

Ferric chloride hexahydrate (FeCl3·6H2O), ferrous sulfate heptahydrate ($FeSO_4$·7H2O), sodium hydroxide (NaOH), hydrochloric acid (HCl, 34.5 %), and sodium meta silicate (Na_2O_3),

were purchased from sigma-aldrich chemical co. ltd. Ethanolwas purchased from Loba chemicals co.ltd.All chemicals mentioned above were of the A.R. Grade and used without further purification.Demineralised water was used in all experiments.

2.2 Synthesis of Fe_3O_4-

Magnetic nanoparticles (Fe-NPs) were prepared by using prevision which is slightly modified the solvothermal reductionmethod [21]. Two solutions were prepared to synthesize the nanoparticles as follows. For solution 1, 5 mM $FeSO_4$. $7H_2O$ (1.39g)were dissolved in 50 mL of distilled water and for solution 2, 10 mM $FeCl_3.6H_2O$ (2.76 g) were dissolved in 50 mL of distilled water. Both solutions 1 and 2 were combined in 250 mL R.B. and then in this solution add 50 mM mercaptoethanol. This mixture placed inmicro-oven at 80 $^oC$for 2 min at 560 w pawer with continuous stirring. The pH of solutions was adjusted to 10 by the dropwise addition of NH4OH (25%) along with continuous stirring until the solution become black. Then again solution placed in heat in the micro-oven at 80 ^oC for 2 min at 560 Wpawer. The resulting magnetic NPs was collected using external magnet. After separation, nanoparticles were washed five times with ethanol and then with distilled water, followed by drying overnight in an oven at 80 ^oC.

2.3 Preparation of sodium silicate solution

The weighed 10 grams of sodium meta silicate (Na_2O_3) and add it into 100 mL of 4MNaOH solution in Conical flask. Then this solution was placed in sonication bath for 20 min make it homogeneous. Then solution is filtered and the filtrate is taken. Theresulting filtrate is a sodium silicate solution which is used to make for further.

2.4 Synthesis of core–shell Fe_3O_4@SiO_2 –

Fe_3O_4@SiO_2core-shell nanoparticle was synthesized by slightly modified Stöber method [22]. 0.2 g Fe_3O_4NPs and mixture solution containing 80 ml ethanol and 20 ml deionized water were dispersed in an ultrasonic bath for 30 min to make the homogeneous solution. Then, sodium hydroxide (1 mL) and 2% solution of sodium silicate added drop by drop with constant stirring in above dispersion solution of Fe_3O_4 NPs and then this solution was placed microvan at 50 ^0C for 2 min at 560W Power. Then adjust the pH= 6 of mixture, by using 1 M HCl and the reaction mixture further heated in micro-oven at 50 ^0C for 10 min at 560W Power. Finally, the resultant Fe_3O_4@$SiO_2$was separated by an external magnet, washed three times with distilled water, and dried in an oven at 50 ºC.

2.5 Adsorption experiments -

All adsorption experiments were performed in 100 mL of plastic tubes containing 30 mL MB aqueous solution. The amount of Fe3O4@ SiO2 adsorbent was kept at 30 mg. After the solution pH was adjusted with negligible amounts of 0.1 mol/L KOH and HCl solutions to designated values, the suspensions were shaken at 298 K for 3 h. The effect of solution pH on the adsorption of MB was studied in the range of pH 2–11. The adsorption percentages (η%) and adsorption capacity (mg/g)) was measured by the amounts of MB adsorbed on Fe3O4@SiO2, which was calculated according to the equation as follows,

$$\eta\ (\%) = \frac{(C_0 - C_e)}{C_0} \times 100\ \% \qquad \text{……(1)}$$

$$q_e = (C_0 - C_e) \times \frac{V}{M} \qquad \text{……..(2)}$$

Where V (mL) is the volume of the MB dye, M (g) is the mass of Fe3O4@SiO2, and C_0 (mg/L) and Ce (mg/L) are the initial and the equilibrium concentrations of MB, respectively.

2.5 Characterization Techniques -

The obtained powder samples at were characterized by various sophisticated techniques were for identification of their structure and particle size.

2.5.1 Fourier transform infrared spectroscopy – Fourier transform infrared spectroscopy (FT-IR) spectra were obtained by using the Fourier-transform infrared (FTIR) analysis (Perkin Elmer - Spectrum RX-IFTIR). FT-IR spectra of the particles of samples were recorded by scanning the sample in the range of 400–4500 cm−1.

2.5.2 X-ray diffraction -The structure and phase of silica were examined by X-ray Diffraction (XRD) Cu K-alpha-1 where as nickel metal is used as beta filter with λ = 1.54060 Å.

2.5.3 Scanning electron microscopy and energy dispersive X-ray analysis –The morphology and elemental analysis of the sample were characterized by using Scanning ElectronMicroscopy (SEM) Carl Zeiss SMT Ltd., Zeiss EVO 18.

III. Results And Discussion:

3.1 Powder X-ray diffraction –

The The crystallinity of the synthesized samples was investigated with X-ray diffraction analysis (XRD). Fig. 1. shown XRD patterns of the Fe3O4. Six characteristic peaks at 30,2, 35,5, 43,3, 53,7, 57,2 and 62,9 were corresponding to the (220), (311), (400), (422), (440) &(511) crystal planes of a pure Fe_3O_4 with a spinal structure [17].

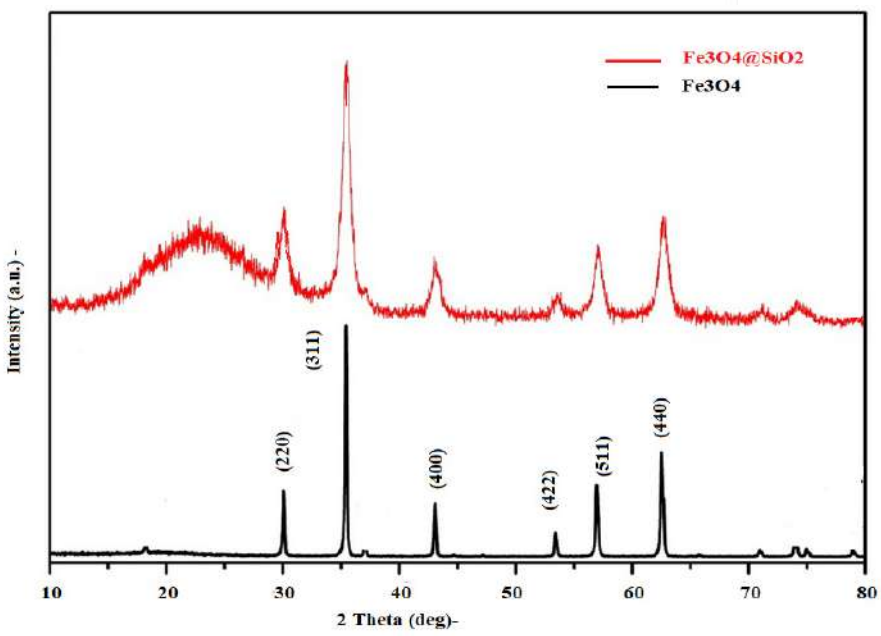

Fig. 1 XRD Pattern for synthesis samples Fe_3O_4 & Fe_3O_4@SiO_2

The peaks indicating that Fe_3O_4 with a spinal structure and no characteristic peak of impurities are detected in the XRD pattern.The highest intensity of diffraction peak (311) was analyzed using the Scherer equation (as shownin Equation 1) generated the particle sizes of 16 nm and 20 nm.

$$D = \frac{K\lambda}{\beta \cos\theta} \text{----------(1)}$$

where variable D is crystal size (nm), K is lattice constant (0.98), λ is wavelength (0.154 nm), β isfull width half maximum (FWHM) of the maximum intensity, and θ is Bragg peak angle.

3.2 **FT-IR analysis-**

FT-IR spectra analysis were used to identify the synthesized structure, and the results are shown in Figure 1. The broad peak at 3424 cm-1 and 1624 cm-1 are assigned to stretching and bending vibrations of the hydroxyl group of water, respectively. The characteristic peak for the vibration mode of the Fe-O bond of Fe3O4 is located at 565 cm−1 shown in the fig. 2. By comparing Figure 2, Fe3O4 & Fe3O4@SiO2 , we can be seen new peak around 1091, 950, and 799cm-1 in the FT-IR spectrum of $Fe3O4@SiO_2$, which is related to asymmetric stretching, symmetric stretching, and vibration modes of Si-O-Si bonds that indicate that the SiO_2 on the surface of Fe3O4 nanoparticles[3]

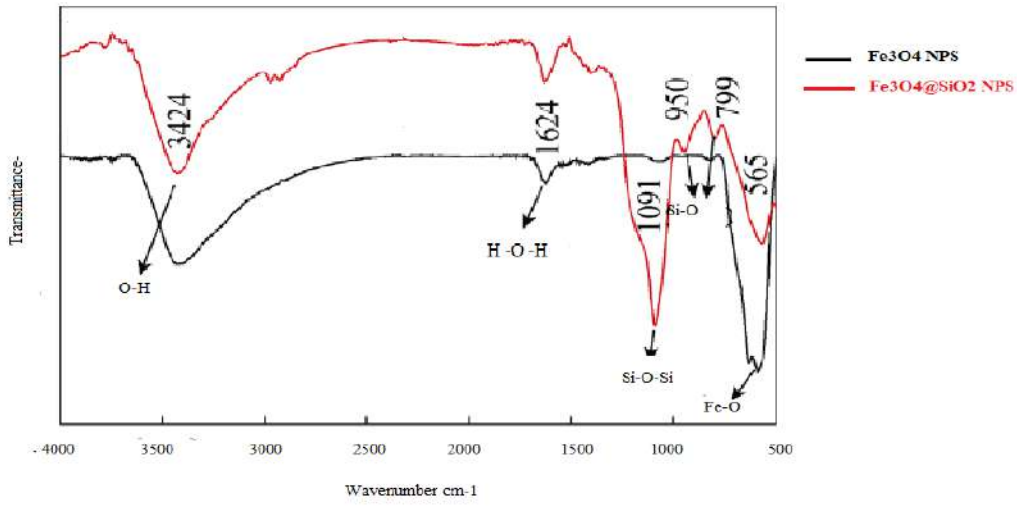

Fig.2 FT-IR spectra analysis

3.3 Surface Morphology (SEM) -

In order to investigate the morphology of prepared material, scanning electron microscopy (SEM) and the FTIR spectrum were employed to observe the surface morphology of Fe_3O_4, $Fe_3O_4@SiO_2$ NPS as shown in Figure 3. Based on the observation from SEM micrographs Fe_3O_4, $Fe_3O_4@SiO_2$ particles composed of small particle. A. shown the SEM image, the Fe_3O_4 nanoparticles were spherical, regular in shape, and uniform in size. The Fe_3O_4 nanoparticles were found to be approximately 16 nm in size, which was consistent with the results from the Scherrer equation based on the XRD data. Comparing Figs. 3(A)–(B), it is obvious that the Fe_3O_4 particles were coated with SiO2, as verified by FTIR analyses described in subsequent sections. The control of the monodisperse size is very important because the properties of nano crystal strongly depend upon the dimension of nanoparticles [24].

3.4 Magnetic properties –

A vibrating sample magnetometer (VSM) were used to investigate the magnetic properties of synthesized materials. As shown in Figure 4, magnetic hysteresis loops do not show obvious remanence or coercivity at room temperature, indicating that all samples Fe_3O_4 & $Fe_3O_4@SiO_2$have superparamagnetic properties. The magnetic saturation values (Ms) of Fe_3O_4 & $Fe_3O_4@SiO_2$ were 58.7, 27.9 emu/g, respectively. They decrease in the magnetic saturation values (Ms) value after coating confirms that it has been done successfully [23]. Fig.4 , shows the VSM measurements for analysing changes in magnetization caused by formation of the SiO2 layer on the surfaces of the Fe3O4 nanoparticles.

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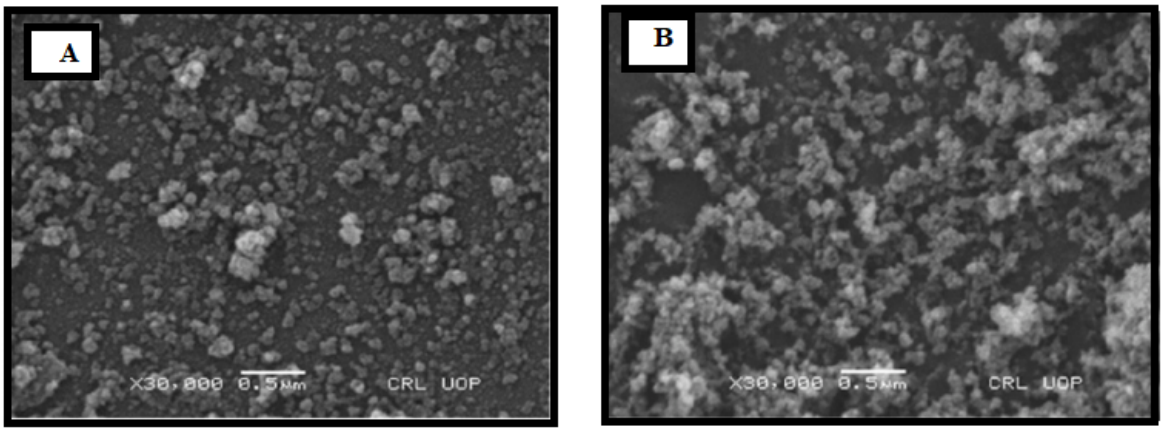

Fig.3 SEM micrograph of Fe3O4 nanoparticles (A) and Fe3O4@ SiO2 nanocomposites (B)

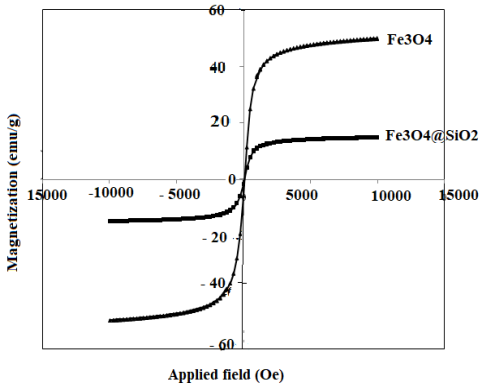

Fig. 4 Room temperature hysteresis loops Fe_3O_4 & Fe_3O_4@SiO_2 samples

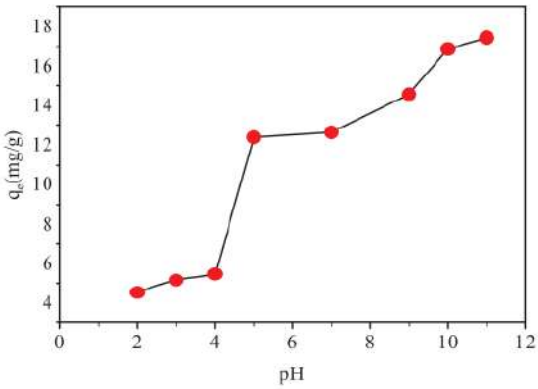

Fig. 5 Effect of initial solution pH on the and adsorption of MB by Fe3O4@SiO2, initial = 15 mg L–1 .at T = 298 K,

3.5 Effect of pH on the adsorption-

The effect of pH on the adsorption of MB on the prepared Fe3O4@SiO2- was investigated in the pH range of 2–11. The pH values were adjusted by HCl (0.1 mol/L) and NaOH (0.1 mol/L). As can be seen from Fig. 6, the adsorption capacity and dye removal rate increased with the increase of pH values from 2 to 11. The variation tendency is governed by the electrostatic attraction between the MB and the surface charge of Fe3O4@SiO2 R-spheres [24]. MB is a cationic dye, which exists in solution in the form of positively charged ions due to a large amount of H+ at low pH values. The amino group and sulfonic acid group on the sorbent have an electrostatic repulsion force to the MB cations, therefore resulting in a low adsorption capacity. As the pH increases, the amino group and sulfonic acid group are deprotonated, and the electrostatic attraction between the Fe3O4@ SiO2-CR and MB becomes stronger. The adsorption capacity suddenly increases at pH 5 may be due to the relatively weak protonation of amino and sulfonate, and the enhanced electrostatic adsorption. In addition, such as hydrogen bonding, van der Waals interaction as well as physical sorption had important impacts in theadsorption.Therefore, the adsorption capacity of MB on Fe3O4@SiO2 can be improved at high pH and reached the best with strong alkali solution.

IV. Conclusion:

Fe_3O_4@SiO_2core–shell magnetic composite nanoparticles were prepared successfully by a cost-effective one-pot microwave assisted hydrothermal process. The Fe_3O_4 magnetic particles

were approximately 16 nm in size, and the SiO_2 coating was approximately 4 nm thick. Based on the SEM results, the Fe_3O_4 was spherical, regular in shape, and uniform in size, and the SiO_2 coating layer was uniform. The saturation magnetization of the Fe_3O_4 nanoparticles was 58.7 emu/g, while that of the Fe_3O_4@SiO_2 composite nanoparticles was 27.9 emu/g. This difference could be attributed to the SiO2 coated layer.

In this study, magnetic composites Fe3O4@SiO2 were successfully synthesized as a novel adsorbent and applied to remove MB from wastewater. The excellent adsorption performance can be attributed to the strong electrostatic interactions between MB and Fe3O4@SiO2. Besides, the adsorption of MB on Fe3O4@SiO2 is also strongly dependent on solution pH. Fe3O4@SiO2 nanospheres can be quickly and easily separated by magnetic separation from MB solutions. Therefore, the prepared Fe3O4@SiO2 magnetic nanospheres can be potentially used as a highly effective material for the removal of MB from organic contaminated wastewater.

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A Study on Ethnobotanical Resources of Jaunsar Bawar Region of Garhwal, Uttarakhand

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Abstract:

Ethnobotanical resources are the indigenous knowledge of people about plants and medicine. Ethnography is the study of human society while botany refers to the study of flora or plants. The study area which is the Jaunsar Bawar region, houses two primitive groups of people – the Garhwalis and the Jaunsaries who still follow their traditional system of medicine extracted from plants. The Jaunsar Bawar is a hilly region in Garhwal division of Uttarakhand in northern India located in the north-western part of Dehradun district.The methods used in this ethnobotanical research work are pre-structured interview schedule of the local healers and elderly people who has a better knowledge and experience about herbal medicines for the treatment of various illnesses. This research work took approximately five months of field work. It is known from the societies living in surrounding that the indigenous people majorly use the ethnobotanical species such asAnogeissuslatifolia, Terminilia species, Lanneacoromandelica, Anogeissuslatifolia and Adina cordifolia that surrounds the Jaunsar Bawar region. A few samples of these plant species were also sent for scientific examination.The traditional knowledge of herbal medicine of these primitive groups of people may be scientifically validated with Ayurveda through phytochemical analysis.

Keywords: Ethnobotany, Jaunsar Bawar, Primitive, Herbal Medicine, Garhwalis, Jaunsaries.

Introduction :

India is known for its rich heritage of the knowledge of natural products, particularly of its herbal medicine. Indian people are using medicinal plants from prehistoric period.[1,6] Tribal, living mostly in the remote forest areas, still depend to a great extent on the indigenous system of medicine. Indigenous healing practices have been culturally accepted during all phases of human culture and environmental evolution. About 85% of traditional medicines are plant derived.[2,5] Medicinal plants have a long-standing history in many indigenous communities, and are an integral part for treating various diseases, particularly to curve daily ailments, and this practice of traditional medicine is based on hundreds of years of belief and observations. With enormously diversified ethnic groups and rich biological resources, India represents one of the great emporia of ethno-botanical wealth.[3,4]Nothing is more fundamental to human life than health (Strange), good physical and mental health helps a man go to the top or his or her destination very easily. But if any problem arises, physically or mentally then survive within the environment become effected. 'Health is the level of functional and metabolic efficiency of a living organism'. The WHO defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". Cited [7,8]

Different types of tree or plant parts like bark, leaves, roots etc. as well as shrub also they have been used to made their herbal remedies for their treatment. Even now days sometribal groups are using ethno-medicinal practices for their treatment. As we all know that tribes are mainly depending on their natural resources and they also worship nature. Now days they always try not to use modern medicine for their minor ailments. The present study 'Ethno-medicinal practices among people of Jaunsar Bawar Region of Dehradun district of UttaraKhand. The livelihood of people in area is mainly depends upon forest collection and trading. They are very hard working and as a result mostly of the adult family members have been suffering from different types of fever and body pain. The most interesting thing is that; to heal this problem they do not go to hospital or any modern health care practitioners. When they cannot tolerate the pain then few of them take ethno-medicines to cure the problem and others go to near modern medicinal practitioners. However, when serious problems like breathiness, chest pain etc has been appeared then they must go to hospitals to getting the health facilities.

The primary objective of the present study is to find out the use of ethno-medicinal practices among people of the Jaunsar Bawar Region of Dehradun district of UttaraKhand. Apart from this the present study also try to find out different types ethno-medicinal herbs and systems among the studied people and area.

Materials And Methods :

The present study is a cross-sectional study. And the study has been done among people of Jaunsar-Bawar Region of the Dehradun district of UttarKhand. Field work have been carried out in the area for around six months in three phases in different seasons to encounter different medicines for different health problems. Pre-structured interview schedule has been used to collect the primary data. Face to face interview of local healers, patients and senior members of society have been carried out. To verify the data some, focus group discussions also made of local healers, older male and older women groups. The primary data have been classified and systematised with their botanical name with consultation of Botanists. Further data is classified as medicines using for communicable and non-communicable diseases.

Results And Discussion:

Different type of morbidity and it's healing process are presented below:

Viral disease:

For cough and cold, symptoms of the disease were watering from nose and cough. Causes of the disease were weather change and cold. Treatment was as follows- (a) traditional treatment-leaf, root and bark of Abiespindrow Royale, Abrusprecatorius L., and Acacia catechuWilld.bark of the Totla tree. They used the bark of this tree by boiling with water, and eat biscuits; (b) modern treatment was using antibiotic, antacid, syrup, and antihistamine.

Fever :

Local name was Bukhar. Symptoms of the disease were high temperature, headache, and body ache. Causes of the disease were weather change, cold, and hard working. Treatment of the disease was as follows: (a) traditional treatment was they used the leaf, root, flower of the Justiciaadhatoda L. and leaf and stem of NernerisasiaticaRoxb. Ex DC.Extract of neem leaves, and use the bark of deshim tree, and chewed the root of ultekhara tree, eat honey, use a piece of wet clothes on the forehead, and use jadibuti; (b) modern treatment was using antibiotic (tablets-Amoxyclav, Lifflaxi, PPI, paracetamol, vitamins, ORS, azithromycene).

Pain in abdomen :

Local name was pet dard. Symptoms of the disease was heavy pain in abdomen. Causes of the disease were polluted water, unhygienic conditions and bad food habit. Total individuals who were suffering from this disease were 14. Treatment followed was- (a) traditional treatment was chewing peyarapata (leaves of guava tree), using mantra andingboileded water; (b) modern treatment was using pain killer (Decolic, Cyclopam), ORS, antacid (Rantac, Pancid, Aciloc).

Headache :

Local Name wasmathadard. Symptoms of the disease was headache and feeling irritated. Causes of the disease was high blood pressure, hard work and cold. (a) Traditional treatment was the leaf, root, stem of VitexnegundoL.consuming cooked sojinaand consume it, use to eat the bark of the lagakomache and arjun tree; (b) modern treatment was using painkiller such as Parasafe, disprins, crocin.

Acidity :

Local name was gas. Symptoms of the disease were pain in abdomen and vomiting. Cause of the disease was wrong food habit. Treatment followed was- (a) traditional treatment was the leaf, stem, fruit, bark and root of Callicarpa Vahl utilising extracts of tree sugarcane, use branches of sandhi tree, extracts of guava leaves, bark of chatuhal tree, mantra, the root of gurjer tree; (b) modern treatment- antacid (PPI, Aciloc 300, Rantac).

Rashes :

Local name of the disease was khujali. Symptom of the disease was rashes on skin. Causes of the disease were water pollution, weather change and uncleaning. Treatment of the disease was- (a) traditional treatment- use the leaf, bark, seed, flower and fruit of the herb, Cannabis sativa L. extract of neem, ambashi, toltla, dunche, vutta tree; (b) modern treatment was using B-tex, lifeboy, amoxyclave, Amaxycol, Azythromycal, flouconazole, antihistamine, BB lotion and Detol.

Chest Pain :

Local name was chhatidard. Symptom of the disease was pain in chest. Causes of the disease were hard work, acidity, cough, and heart disease. Treatment followed was (a) traditional treatment was chewing brikhma and punga flowers; (b) modern treatment was using pain killer, antacid and use few other medicines after pathological test.

Foot pain :

Local name was pairdard. Symptoms of the diseases were pain in foot, and swelling in pain. Cause of the disease was hard work. Treatment followed was- (a) traditional treatment was oiling on foot, one type of jadibuti (Cinnabar, china rose, incense, clove, oil, half boiled rice binding with white string); (b) modern treatment was using Moov, pain killer.

Pulmonary obstructive disease:

Local name was sans samasya. Symptoms of the disease was shortness of breath. Causes of the disease were cold, dust and weather change. Treatment followed was- (a) traditional treatment was chewing the roots of ultekhara tree, the bark of gamari tree, using the root of beetle nut tree; (b) modern treatment was using Vetolin HFA, ProAir HFA.

Pain in back :

Local name was pith dard. Symptoms of the disease were pain in mid-section, problem in up down movements. Cause of the disease was hard work. Treatment followed was- (a) traditional treatment was giving massage with oil, and mantra, one type of jadibuti (Cinnabar,

china rose, incense, clove, oil, half boiled rice binding with white string); (b) modern treatment was using Moov and pain killer.

Pain in waist :

Local name was kamardard. Symptoms of the disease was pain in mid-section and problem in up down movements. Cause of the disease was hard work. Treatment of the disease followed was- (a) traditional treatment was giving massage with oil, and mantra, one type of jadibuti (Cinnabar, china rose, incense, clove, oil, half boiled rice binding with white string); (b) modern treatment followed was using Moov and pain killer.

Eye Problem :

Local name was najarkisamasya.Symptoms of the disease was pain in eye and vision problem. Cause of the disease was aging. Treatment given was- (a) traditional treatment– they do not use any traditional healing process; (b) modern treatment was using various eye drop.

Decrease of blood cells :

Local name was khunki kami. Symptoms of the disease were fading skin color, weakness, white eye colour and migraine. Cause of the disease was improper food habits. Treatment was- (a) traditional treatment used was marusai and rai leaves as a vegetable, and use to eat fishes, and meat; (b) modern treatment followed was using iron tablet and folic acid tablet.

Liver problem :

Local name was libharkisamasya. Symptoms of the disease was loss of appetite, weakness, reddish eye and stool problem. Cause of the disease was bad food habit, hard work and using polluted water. Treatment followed was- (a) traditional treatment was using- extracts of lauribedh tree, root of beetle nut tree, extract of sugarcane, branch of sandhi tree, boiled papaya, use tika (give them one type of chemical, which can make a mark on their forehead) on their forehead; (b) modern treatment was using poyratynimide and injection of streptomycine.

Tumor:

Local name was massa. Symptoms of the disease was lump on body parts pain. Cause of the disease was nil. Treatment was as followed: (a) traditional treatment was using jarivuti and mantras; (b) modern treatment was operation.

Tooth pain :

Local name was dathdard. Symptoms of the disease were pain in teeth, sometime blood appear from tooth. Cause of the disease was over pressure on teeth and something enter into teeth (meat). Treatment was (a) traditional treatment was utilising bark of satankadana and neem trees with honey; (b) modern treatment was using pain killer, antibiotics, and antacid.

Neck Pain :

Local name was gale me dard. Symptom of the disease was pain in neck. Cause of the disease was hard work and bad life style. Treatment used was- (a) traditional treatment was massaging oil on neck; (b) modern treatment was nil.

Rural and tribal people residing in area are having trust on ethno-medicine and sometimes on magico-religious practices. But at present with the pace of civilization these people of the state is continuously face the westernization and as result a huge acculturation in their daily behavioural life takes place. At present most of t people give up their traditional dress and start to wear western dress and blindly follow the western culture to fulfil every need of their life, they also give up their age old traditional medicinal practices which are entirely based on the natural resources. Instead of that they are now mostly depends on the western medicine to treat

their ailments. From the present study it has been observed that only 15 % families still believe on ethno-medicine. And these families practice ethno-medicinal system due to trust on nature. They think nature has all healing power of human's problem. Now the present situation has changed. More than sixty-five percent (65.5%) of families now practice both ethno-medicinal and modern medicinal system. The individuals of these families choose ethno medicine first. After that when ethno-medicine fails to heal the problem then they go for getting treatment from modern medical system. Beside this rest 34.5% families totally depend upon on modern medicinal system. They do not believe in any traditional health care system. Various types of tree barks, roots and leaves has been used to treat the alignment. The traditional medicine practitioners known as Ojha always extend their helping hand to sort out the health problem of the villagers. And the bonding between traditional local healers and villagers is very strong and healers are from the same society.

Conclusion :

Jaunsar- Bawar region is mostly dominated by tribal and rural families. They occupied the region from ancient time and live in symbiosis with nature. Impact of Education in general and medical education in particular is below then the state and national average. Present study reveals this is the basic reason of their belief on traditional medicine. Ethnobotanical medicine using by people in this region needs phytochemical analysis and validity. Further the rich natural resources and their traditional knowledge on herbal medicine may be an asset to the Government of Uttarakhand and AYUSH Department, Ministry of Health and Family Welfare ,Government of India if it will be taken up for scientific and medicinal uses for the region and country.

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Study on Measuring The Effectiveness of Online Marketing on Integrated Marketing Communication : A Special Reference to Anand City

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Abstract :

IMC mergers various promotional tools and communication / marketing / advertising services and techniques to maximize profit. IMC is ultimately achieved through concise and reliable messaging that fosters familiarity and consumer affinity. In the this research study, Descriptive research is followed. Descriptive research is usually a fact-finding view generalizing a cross - sectional study of current situation. The main goal of descriptive research is to describe any particular event, phenomenon and situations on the basis of observations. Survey for research work was conducted in the Anand city for keeping in mind that online marketing is still a metropolitan phenomenon in the developing country like India. Sample of 200 respondents was selected for survey.

Key Words: Marketing communications, advertising, online marketing

Introductions

Integrated marketing communication (IMC) is an approach used by organizations to brand and to align their communication efforts for objectives accomplishment. The American Association of Advertising Agencies defines IMC as "a concept that recognizes the added value of a comprehensive plan that evaluates the strategic roles of a variety of communication disciplines, and combines these disciplines to provide clarity, consistency and maximum communication impact." The primary objective behind an IMC strategy is to create a unified experience for consumers across different aspects of the marketing mix. As each marketing communication channel works together in unity with the brand's core image and messaging, rather than in isolation.

As per Don Schultz (2008), IMC is a strategic business process used to plan, develop, execute and evaluate coordinated, measurable, persuasive brand communication programmes over time with consumers, customers, prospects, and other targeted, relevant external and internal audiences. The key difference in this definition of IMC from that of simple Marketing Communication is highlighted by use of three words: i) strategic, ii) appraise and iii) quantifiable. In essence, IMC applies use of marketing communication mix in such a way that strategically designed to accomplish organizational objectives, it is used to measure to accountability over marketers and are evaluated over time. These elements are also stressed on by various IMC authors (Schultz, 1996; Duncan & Caywood, 1996), who believe that although the concept of IMC is not new, but the fact that previously marketing communication was not coordinated strategically and strategy is now believed critical, gives this concept a new look.
Since the major domains of research topic are – Integrated Marketing Communication & Online Marketing. The review of literature will revolve around these.

Research objectives:

Based on the above research problems, the research objectives are as follows:

i. To analyze the effectiveness of online marketing as compared to traditional marketing tools.
ii. To know sources of information for various brands amongst customers of Anand City.
iii. To find awareness about Internet advertising amongst customers of Anand City

iv. To find purpose/reasons of using Internet amongst respondents of Anand City
v. To know customers' perception for online marketing strategies amongst respondents of Anand City.

In the this research study, Descriptive research is followed. Descriptive research is usually a fact-finding view generalizing a cross - sectional study of current situation. The main goal of descriptive research is to describe any particular event, phenomenon and situations on the basis of observations.

In present research study, the required data was collected through Sample survey using structured questionnaire. Since 'Customer`s inclination towards Online marketing' is the core focus of the study, a structured & closed ended questionnaire was prepared for customers only. The questionnaire incorporated questions related to customers' preference for online marketing and other traditional mediums for getting awareness on various brands and making purchase decision.

In the present study, researcher has used published and unpublished sources of secondary data. Secondary data was collected to provide this research paper necessary conceptual clarity. Information related to IMC, online marketing & its implication etc. was collected through various secondary sources such as research journals, reference books, business magazines and content sharing websites.

In present study researcher has used stratified probability sampling with -

- Sample size: 200 (Sample size is selected on the basis of discussion with the research expert)
- Area covered – Anand District
- Sample frame – Households

Data Analysis & Interpretation

In the present study researcher used descriptive statistical tools. Primary data is used while analyzing and drawing inferences.

This part of study is mainly focused on verifying main objectives of study. Researcher used statistical tools like mean, standard deviation and graphs for analysis of primary data.

Profile of Respondents

Survey for research work was conducted in the Anand city for keeping in mind that online marketing is still a metropolitan phenomenon in the developing country like India. Sample of 200 respondents was selected for survey. The questionnaire included a segment on customers profile as a classification of their demographic factors such as gender, age & occupation. During data collection phase, due care was taken in order to make sure that the given questionnaire is completely filled by the respondents.

The detailed respondent profile is as follows:

Table no. 1 Respondent's profile

Age	Occupation				Gender		
	Student	Service	Self Employed	Total	Male	Female	Total
18 to 25	81	0	0	81	38	43	81
25 to 35	19	41	3	63	31	32	63
35 to 45	0	47	9	56	29	27	56
Total	100	88	12	200	98	102	200

From the above table no. 1, Out of 200 respondents - 100 are students out of which 81 are between the age 18 to 25 years & 19 are between the age 25 to 35 years. There are 88 respondents who are jobber out of which 41 are between the age 25 to 35 years & 47 are between the age 35 to 45 years. Also, there are total 12 respondents who are self-employed out of which 3 are between the 25 to 35 years & 9 are between the age 35 to 45 years.

As far as gender wise segmentation is concerned, there are total 98 males out of which 38 are between the age 18 to 25 years, 31 are between the age 25 to 35 years & 29 are between the age 35 to 45 years. And there is total 102 males out of which 43 are between the age 18 to 25 years, 32 are between the age 25 to 35 years & 27 are between the age 35 to 45 years.

The details of responses given regarding the medium to get knowledge are given in the following table.

Table no. 2 Do consumers rely on just one medium to get knowledge about any brand?

Particulars	Frequency	Percent
No	82	41.0
Somewhat	47	23.5
Yes	71	35.5
Total	200	100.0

From table no.2, it is observed that when respondents were asked if they rely onjust one medium to get knowledge about any brand; 41% have given negative response, 35.5% respondents have given complete positive response while only, 23.5% responded that they rely partially.

Table no. 3 Sources of awareness for various brands

Sources of awareness	Frequency	Percent
Print ads	22	11.0
Television commercials	53	26.5
In-store promotion	37	18.5
Outdoor media	18	9.0
Online media	70	35.0
Total	200	100.0

From table no. 3, it is observed that when respondents were asked about through which source do, they refer the most to get information about various brands; 11% have chosen print ads, 26.5% respondents have chosen Television commercial, 18.5% have chosen In-store promotion, Only 9 % have chosen Outdoor media, 35 % respondents have chosen Online media, which is the higher of all.

Table no. 4 Details for information and time spend to take purchase of any commodity

	Do not require much information to take purchase decision		Do not prefer to spend much of my time in purchase of any commodity	
	Frequency	Percent	Frequency	Percent
Strongly disagree	33	16.5	27	13.5
Disagree	80	40.0	38	19.0
No opinion	36	18.0	34	17.0
Agree	28	14.0	68	34.0
Strongly agree	23	11.5	33	16.5
Total	200	100.0	200	100.0

From table no.4, it is observed that when respondents were first asked whether they require much information to take purchase decision; secondly whether they spend much time for purchasing any commodity; 16.5% respondents shown strong disagreement to the first question and 13.5% to second question, whereas 40% respondents were disagreeing to the first question and 19% to second question. Considering data of complete sample of all respondents' descriptive statistics parameter scores are calculated and tabulated below.

Table no. 5 Descriptive statistic scores for information and time spend to take purchase of any commodity

Parameter	Do not require muchinformation to take purchase decision	Do not prefer to spend much of my time in purchase of any commodity
Mean	2.6400	3.2100
Median	2.0000	4.0000
Mode	2.00	4.00
Std. Deviation	1.24020	1.30168

From table no. 5, it is observed that

1. Mean value scores for parameter much information to take purchase decision is not required is 2.64 which indicates respondent disagreement. It means they really required much information to take purchase decision. Median and mode values are equal to 2 also support this result.
2. Mean value scores for parameter much time is required to spend to take purchase of any commodity is 3.21 which indicates respondent agreement. It means they do not prefer to spend much of their time in purchase of any commodity.

Importance of Online advertising in changing market scenario:

Online Marketing refers to a set of powerful tools and methodologies used for promoting products and services through the internet. It connects organizations with qualified potential customers and takes business development to a much higher level than traditional marketing.

Knowledge about the use of internet:

Today, Internet is one of the most important parts of our daily lives. There are large numbers of activities that can be done using internet and so it is very important. Most of the traditional communication media including telephone, music, film, and television are being reshaped or redefined by the internet.

To understand whether respondents are convergent with the use of Internet; they were asked about their knowledge about use if internet. The details of which are tabulated below.

Table no. 6 Knowledge about the use of internet

Code	Response	Frequency	Percent
1	Not knowledgeable about	14	7.0
2	Somewhat knowledgeable about	28	14.0
3	Knowledgeable about	67	33.5
4	Very well knowledgeable about	91	45.5
	Total	**200**	**100.0**

Interpretation:

From table no. 6, it is observed that 7% were not knowledgeable about internet and 14% were somewhat knowledgeable about internet.

It means major percentage of respondents is very well knowledgeable about internet. They are well aware with various usage, functions and benefits being offered by internet. While out of 200 respondents, only few i.e., 7% were not awared about internet. So, it reveals that there is high degree of knowledge for internet usage.

Frequency of being online:

Table no. 7 Descriptive statistic scores for knowledge about the use of internet andfrequency of being online

	Are you convergent with the useof Internet?	Frequency of being online
Mean	3.1750	3.5650
Median	3.0000	4.0000
Mode	4.00	4.00
Std. Deviation	.92120	1.23832

From table no. 7, it is observed that Mean value scores for parameter their convergence with internet is 3.17 which indicates respondent agreement of being convergent with internet.

Hence, most of the consumers are well versed with the usefulness of internet and they actually make maximum utilization of the various functions served by internet and therefore their tendency of being online is high.

Purpose for using Internet:

To understand the real purpose for using internet respondents were asked to ranking each purpose between the scales of 1 to 5, where 1 is the most important and 5 is least important. The details are tabulated in the following table.

Table no. 8 Purpose for using internet

	Social networks		Media sharing sites		Blogs		Podcasts & RSS		Collaborative websites		Other content sharing websites		Online shopping	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Most important	73	36.5	50	25	26	13	33	16.5	32	16.0	43	21.5	60	30.0
2.00	65	32.5	48	24	42	21	32	16.0	43	21.5	43	21.5	42	21.0
3.00	20	10	22	11	45	22.5	25	12.5	25	12.5	29	14.5	21	10.5
4.00	20	10	34	17	40	20	47	23.5	38	19.0	37	18.5	40	20.0
Least important	22	11	46	23	47	23.5	63	31.5	62	31.0	48	24.0	37	18.5
Total	**200**	**100**	**200**	**100**	**200**	**100**	**200**	**100**	**200**	**100**	**200**	**100**	**200**	**100**

From table no. 8, it is observed that Social networks are considered most important 36.5% respondents andleast important by 11% respondents, Media sharing sites are considered most important 25% respondents and least important by 23% respondents.

It means that Social networking is the foremost purpose for which majority of respondents use internet. Certain social networking sites such as Facebook, Orkut, LinkedIn etc. have become popular in recent times, used to share the personal & professional views with known and unknown people who can be found out through these sites. After Social networking, second preference given to the online shopping. It allows flexibility to the consumers to view a

wide range of products & brands, evaluate them online by reading their features and making an online purchase. Media sharing is at third place. It allows them to share media material such as photos, music, video, news etc.

To analyze in detailed, some important statistics (parameter) were calculated, andthe results of analysis are tabulated below.

Table no. 9 Descriptive statistic scores Purpose for using internet

	Social networks	Media sharing sites	Blogs	Podcasts& RSS	Collaborative websites	Other content sharing websites	Online shopping
N	200	200	200	200	200	200	200
Median	2.00	3.00	3.00	4.00	3.50	3.00	2.00
Mode	1.00	1.00	5.00	5.00	5.00	5.00	1.00

Hence, respondents strongly feel that the most important activities to be done through internet are social networking as it connects them with others, online shopping as it offers them convenience of shopping and media sharing site as it allows them to download their favorite enticing material such as songs, video, games etc.

Use of online activities by companies in their marketing efforts:

Online advertising is geared towards defining markets through unique and useful applications. Having an onlinepresence will first bring their business to the potential customer's attention. If online presence is complete with positive reviews and a professionally updated website; customers will see the reputation of the brand and will be more likely to choose those brands. To analyze in detailed respondents were asked to give their view on agreement scale considering two different attributes.

Table no.10 Do companies include online activities in their marketing strategy?

Code	Response	Frequency	Percent
1	Strongly disagree	32	16.0
2	Disagree	41	20.5
3	No opinion	22	11.0
4	Agree	43	21.5
5	Strongly agree	62	31.0
	Total	**200**	**100.0**

From table no. 10, it is observed that when respondents were asked whether companies should use online activities in marketing efforts; 16% were strongly disagreed, 20.5% shown disagreement and 21.5% shown agreement whereas 31% were strongly agreed.

It means majority of respondents are completely agreed that companies should use online activities in their marketing efforts. Since online activities facilitate good access and higher reach to the customers; companies must take this advantage by incorporating online advertising in their marketing strategy.

Hence, consumers are with the strong opinion that companies use online activities to spread awareness & sell their product.

Table no. 11 Importance of factors motivating respondents to like the brand on internet

	Discount		Stay informed ab theactivities of company		Get updates on brands and its future extensions		For fun, entertain-ment		Get access to the exclusive content		Interaction	
	F	%	F	%	F	%	F	%	F	%	F	%
Most important	49	24.5	52	26.0	36	18.0	33	16.5	53	26.5	48	24.0
Important	66	33.0	52	26.0	49	24.5	56	28.0	59	29.5	61	30.5
Least important	44	22.0	42	21.0	61	30.5	45	22.5	42	21.0	36	18.0
Not important	41	20.5	54	27.0	54	27.0	66	33.0	46	23.0	55	27.5

It means majority of respondents are motivated to use internet as it offers them products at discounted rates, gives access to exclusive content such as specific functional & emotional benefits of the brand and facilitates interaction about the brand directly with the company.

Table no. 12 Preference for the print ads or television commercials

	Frequency	Percent
Strongly disagree	23	11.5
Disagree	41	20.5
No opinion	19	9.5
Agree	79	39.5
Strongly agree	38	19.0
Total	**200**	**100.0**

From table no. 12, it is observed that whether they don't prefer the print ads or Television commercials much to get the brand awareness, 11.5% respondents have shown strong, 20.5% respondents were disagreeing and 39.5% respondents were agreed

It means majority of respondents agreed that they do not prefer Television commercials or print ads to get brand related awareness. So, these popular traditional mediums are no longer remained first preference for the consumers to receive ad messages.

Table no. 13 Descriptive statistic scores for Preference for the print ads or televisioncommercials

Parameter	Value
N	200
Mean	3.3400
Median	4.0000
Mode	4.00
Std. Deviation	1.30880

Hence, it reveals that today consumers do rely on print ads television commercials much to get awareness.

Table no. 14 Benefits of online marketing over traditional marketing

	Frequency	Percent
Wide range of information	48	24.0
Ease of shopping	46	23.0
Time saving	31	15.5
Low cost	24	12.0
Interactive medium	51	25.5
Total	**200**	**100.0**

From table no. 14, it is observed that 24% of respondents find online marketing advantageous as it offers wide range of information about the brand, 23% of respondents find online marketing advantageous as it offers ease of shopping and 25.5% of respondents find online marketing advantageous as it is an interactive medium.

Table no. 15 Loopholes in online marketing over traditional marketing tools

	Frequency	Percent
More Susceptible	33	16.5
More scope for fraudulent activities	52	26.0
Lack demonstration	40	20.0
Privacy Issue	42	21.0
Often interrupting	33	16.5
Total	**200**	**100.0**

From table no. 15, it is observed that 16.5 % of respondents find online marketing is not safe as it is more susceptible, 26% of respondents find online marketing is not safe as there is more scope of fraudulent activities, 20% of respondents find online marketing is not safe as it lacks demonstrations and 21% of respondents find online marketing is not safe as it may result in some serious privacy issues.

Conclusion :

The study concludes that consumers rely upon more than one medium in order to enhance their brand related knowledge. It means that they use the combination of various sources for making final purchase decision. Along with the traditional sources, they heavily rely on modern marketing tool i.e., online advertising.

Consumers do require detailed information about the brand so as to evaluate its strengths & weaknesses; this ample amount of information then saves their time by allowing them to make the purchase decision quickly. This shows that consumers try to get more information before they make purchase. They receive this information through various mediums; so, integration of these mediums is necessary to feed the required information to the customers for brand evaluation which in turns will save consumers' time & efforts while making an actual purchase.

The study also reveals that main reason for growing importance of online marketing is the increasing literacy about internet among people. They have identified that internet is truly advantageous through which they can serve their various purposes mainly social networking, online shopping & media sharing (photo, music, video). This efficacy of internet has intensified their tendency of being online.

Today's consumers strongly feel that every company must use this efficacy to strengthen its marketing efforts. So that they will get motivated to use online

Marketing with the intent of getting access to exclusive content about the brand and getting discount and sharing their feedback about brand with the advertiser.

With the advent of internet technology, consumers' preference towards traditional marketing tools has decreased. Most popular traditional marketing tools are television & print media. The major benefits of online marketing are its capability of interaction between consumers and advertisers followed by availability of wide range of information & ease of shopping. These benefits make online marketing superior than traditional marketing.

But at the same time consumers are susceptible about the user-safety side of internet. They feel that online marketing is unsafe as it may lead to increase in frauds & privacy issue.

Recommendation :

Conclusion given above reveals that consumers use more than one medium to make brand choice, therefore it is recommended that Companies should mix & match various mediums to reach their desired target audience. This will help to spread awareness among them and to influence buyer's behavior thus companies must formulate an effective Integrated Marketing Communication plan where they can combine various tools to grasp maximum prospects.

It is also revealed that consumers have good enough knowledge about internet technology and they are in favor of using online marketing, therefore it is recommended that Every company big or small should grab this advantage and include online marketing in their marketing efforts. Online marketing forms can be mainly web marketing, E-commerce, social media marketing. Consumers find certain benefits in online marketing over traditional marketing; therefore, companies can spend more on online media rather than the traditional tools.

But along with its advantages, online marketing has certain limitations also, limitations like possibility of fraudulent activities or privacy issues are beyond control. Cybercrime cannot be eradicated easily or completely therefore, it is recommended that Companies should not rely entirely on online marketing; they must make it a part of Integrated Marketing Communication strategy. As a result of which limitations of online marketing will be covered as the other mediums will build the required credibility and positive image about the brand. This credibility will generate trust among consumers towards the brand.

The study could be extended; so as to cover all the states of India as the researcher believes that consumer buying behavior w.r.t online marketing may be at the variance in different states.

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आधुनिक समाज में वृद्धों की समाजिक एवं मानसिक स्थिति का

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''वृद्धावस्था या बुढ़ापा जीवन की उस अवस्था को कहते हैं जिसमें उम्र मानव जीवन के औसत काल के समीप या उससे अधिक हो जाती है। बुढ़ापा जीवन का अंतिम पड़ाव होता है, इस पड़ाव में आते-आते जीवन अशक्त हो जाता है, वे शारीरिक एवं मानसिक रूप से कमजोर हो जाते है। वृद्धों की यह स्थिति उनकी समस्याओं का मुल कारण बन जाती है।

भारतीय परम्परा एवं संस्कृति ने हमेराा बुजुर्गो का सम्मान किया है, जिससे उन्हें समाज में एक सम्मानजनक स्थान मिला है। मनुष्य के औसत जीवन चक्र में वृद्धावस्था या बुढ़ापा सभी समाजों में श्रेष्ठ मानी जाती है, लेकिन किस उम्र में व्यक्ति को वृद्ध माना जाए इस पर एक राय नहीं है। दुनिया के विकसित देशों में जहाँ वृद्ध होने के उम्र का आकलन ६५ वर्ष से अधिक को माना गया है, वहीं दुसरी ओर भारत में इनके उम्रों का आकलन ६० वर्ष के पश्चात् से प्रारंभ कर दी जाती है।

वर्ष १९५१ में वृद्धों की जनसंख्या १.९८ करोड़ थी जो वर्ष २००१ में बढ़कर ७.६ करोड़ हो गई तथा २०११ की नवीनतम जनगणना के अनुसार वृद्धों की आबादी (६० वर्ष से उपर) १०.३८ करोड़ है जो भारत की कुल आबादी का ८.५८ प्रतिशत है। इससे स्पष्ट है कि वृद्ध लोगों की संख्या में निरतंर बढ़ोतरी जारी है।

आज तेजी से बढ़ते आधुनिकीकरण एवं शहरीकरण ने मात्र एक शताब्दी के अंतराल में हीं उन्नती कर नई-नई तमाम आवश्यक वस्तुओं की खोज की है जो आज लगभग सारी जरूरत की आवश्यकताओं में शामिल हो चुकी है, आज इनके बिना मानव जीवन की कल्पना करना नामुमकिन है। भोग विलासिता की जीवन जीने की होड़ ने सामाजिक-ताने-बाने को तोड़ कर रख दिया है। युवा अपने परम्परागत कार्य को छोड़कर मशीनीकरण की ओर आसानी से अग्रसरित हो रहे हैं, जिससे उन्हें कहीं भी जाकर रोजगार करना संभव बना दिया है। अंततः संयुक्त परिवार एकल परिवार में परिवर्तित होने को मजबूर हो गए है। युवा वर्ग के अपने गांव-शहर छोड़ जाने तथा व्यक्ति अपने बच्चों के पढ़ाई-लिखाई, अच्छी नौकरी हेतु परिवार से अलग होने को बेबस हैं जिसके कारण घरों में वृद्ध अकेले रह गए हैं जिससे उनकी सुरक्षा और गंभीर बन गई है।

आज बुजुर्ग की स्थिति अकल्पनीय है। वृद्धावस्था अभिषाप सदृश होती जा रही है। उनका जीवन यापन बहुत कठिन होता जा रहा है। कोई चलने में असमर्थ तो कोई अपाहिज सदृश बेड को ही अपनी नियत्ति मानकर जीवन निर्वाह कर रहे हैं। अगर किन्हीं का जीवन भौतिक सुख सुविधा से परिपूर्ण हो फिर भी समय किस तरह व्यतीत करें इसकी समस्या उन्हें आहत्त करती है। जिन बच्चों के लालन-पालन में उनका सारा जीवन व्यतीत हो गया वे बच्चे अपने परिवार में ही व्यस्त हैं। कुछ मजबुरीवश लाचार हैं तो कुछ माता-पिता के कर्तव्यों से विमुख, बेचारे बुजुर्ग सोचते हैं कि कोई उनसे दो बातें कर लें। बेचारे बुजुर्ग उपेक्षित जीवन जी रहे हैं। वे पड़ोस की दया पर निर्भर रहते हैं कि कोई पड़ोसी मित्र आए तो दिन कट जाए। विडम्बना यह है कि न तो वे अपनी स्थिति के विषय में कुछ कह सकते हैं और न तो अपने बच्चों की गलतियों को अनदेखा कर सकते हैं, समाज में वे अपनी संतानों की छवि को कम नहीं करना चाहते

फलतः उन्हें घुट-घुट कर जीवन जीना पड़ता है। आज समाज का रूप परिवर्तित हो रहा है। आजकल बच्चों के पाठ्यक्रमों को भी इतना विस्तारित किया गया है कि उन्हें समय नहीं मिलता कि वे अपने दादी-नानी के पास बैठकर किस्से या कहानियाँ सुन सके। ऐसी बहुत सारी महत्वपूर्ण बातें जो बुजुर्गो से सीखी जा सकती है वे उनसे वंचित रह जाते हैं, जिसके कारण बच्चों में वह गुण नहीं आ पाते। बच्चों को बुजुर्गों के प्रति लगाव भी उतना नहीं हो पाता जिसकी वजह से बुजुर्गों को अकेलापन का एहसास होने लगता है। कभी-कभी स्थिति ऐसी हो जाती है कि बहु-बेटे भी उनसे बात नहीं करते वृद्ध किसी कोने में बैठ कर उपेक्षित जीवन जीने को मजबूर हो जाते हैं। तमाम कठिनाइयों को झेलकर अपना पेट काटकर माँ-बाप अपने बच्चों को बड़ा करते हैं, उन्हें पढ़ा-लिखा कर एक मुकाम दिलाते हैं लेकिन बड़े होकर वहीं बच्चे उनसे विमुख हो जाते हैं। ऐसे किस्से कहानियाँ रोज सुनने को मिलते हैं जब कोई कपुत अपने पिता या माँ को किसी अनाथाश्रम में या कहीं दर-दर भटकने को छोड़ जाता है, बेचारे लाचार दर-दर की ठोकर खाने को मजबूर हो जाते हैं। बच्चों को उंगली पकड़कर चलना सिखाने तथा उन्हें चांद सूरज की संज्ञा देने वाले बुजुर्गों को जब सहारे की बेहद जरूरत होती है, बच्चे उनका हाथ छोड़ जाते हैं।

वस्तुतः वृद्धावस्था अपने आप में एक ऐसी बिमारी है जिससे उबर पाना इस उम्र में संभव नहीं रह पाता है। 'वेद व्यास महाभारत में कहते हैं कि वृद्धावस्था और मृत्यु के वश में पड़े मनुष्य को औषधि मंत्र, होम और जप भी नहीं बचा पाते हैं।''

आज के बुजुर्ग अचानक आए परिवर्तनों को स्वीकार नहीं कर पा रहे हैं। आधुनिकीकरण एवं वैश्वीकरण के कारण मानव का रहन-सहन, खान-पान एवं सोच में बदलाव आ रहे हैं। बुजुर्ग ये चाहते हैं कि उनके बच्चे उसी आदर्श और संस्कारों के साथ चले जैसे पहले हुआ करती थी, उन्हें अपने समय के जीवन मूल्य और आदर्श ही अच्छे लगते हैं, अतः इसके लिए वे नए जमाने और नयीं पीढ़ी को दोषी मानते हैं, परन्तु नयी पीढ़ी को उनकी सोच एवं उनके सिद्धान्त नहीं पसंद आते वे उसे नकार देते हैं और पुरानी पीढ़ियों से दूरियाँ बनाने लगते हैं जिससे परिवार में सामंजस्य का अभाव उत्पन्न होने लगता है जो घर के बुजुर्गों के लिए दुखदायी होता है।

पिछले कुछ दशकों में पूरे विश्व में वृद्धों की जनसंख्या तेजी से बढ़ी है। संयुक्त राष्ट्र जनसंख्या कोष का यह आकलन है कि २०५० तक समूचे विश्व में प्रत्येक छः सर्वाधिक बुजुर्गों में से एक भारत का निवासी होगा तथा चीन एकमात्र ऐसा राष्ट्र होगा जहाँ विश्व के सर्वाधिक संख्या में बुजुर्ग लोग जीवन व्यतीत करेंगे। वर्ष २०११ के आवास संबंधी आंकड़ों से यह भी स्पष्ट होता है कि पिछले एक दशक में घरों की संख्या में भारी वृद्धि हुई है, ऐसा समझा जाता है कि आगामी समय में ग्रामीण एवं शहरी क्षेत्रों में निवास कर रहे बुजुर्गों की जीवनयापन व्यवस्थाओं में भारी परिवर्तन आ सकता है। अतः उन्हें विशेष प्रकार का सामाजिक, आर्थिक एवं मनोवैज्ञानिक सहारा देने की आवश्यकता है, जिससे उनकी स्थिति को सुदृढ़ बनाया जा सके। आज हमारे देश में समस्याओं के बढ़ने के अनेक कारण है जो समाज की देन हैं, लेकिन जैसे-जैसे आधुनिकीकरण, वैश्वीकरण एवं भौतिकवाद का विकास हुआ वृद्ध लोग उपेक्षा का शिकार होकर समस्याओं से घिर गए उनकी स्थिति दयनीय हो गई। उनकी स्थिति इस प्रकार है-

वृद्धों की सामाजिक स्थिति :

बुजुर्ग हमारे समाज की धरोहर होते है, उनका परिवार में होना सिर्फ परिवार के लिए नहीं बल्कि पूरे समाज के लिए जरूरी है। भारतीय संस्कृति एवं परम्परा ने हमेशा बुजुर्गों को सम्मान किया है, जिससे उन्हें समाज में एक सम्मानजनक स्थान मिला है, लेकिन शहरीकरण तथा औद्योगिकरण के परिणामस्वरूप संयुक्त परिवार प्रणाली कमजोर हो गई है। आज संयुक्त परिवार एकाकी परिवार में बंटते जा रहे हैं। घर में वृद्ध बेबस और बेसहारा बच जाते है। अकेलेपन की भावना वृद्धजनों में आत्मसम्मान एवं विश्वास की कमी को उत्पन्न करता है। प्रायः ऐसा देखा जाता है, वृद्ध महिलाएँ घर के कामकाज में अपने आपको थोड़ा व्यस्त रखती है तथा पुरूष घर के बाहर के कामों में अपने परिवार की सहायता करते है, इस सबके बावजुद वृद्धों को परिवार में वह सम्मान नहीं मिलता जिसके वे हकदार होते है।

सामाजिक क्षेत्र में जीवन के प्रांरभिक चरण में जब व्यक्ति वयस्क हो जाता है तो उसके कार्य कलापों में वृद्धि हो जाती है, जैसे-विवाह कार्य, परिवार का पालन-पोषण सामाजिक संगठनो में सदस्य बन जाना आदि। इस कार्यकलापों में उनके अधेड़ होने तक अनुभवों एवं जिम्मेदारियों में बढ़ोतरी होती रहती है, वृद्धावस्था में उनकी भुमिकाएँ या तो समाप्त हो जाती है या तो उनके उत्तरदायित्व शक्ति में कमी आ जाती है। अतः व्यक्ति के वृद्ध होने पर जीवन के सभी क्षेत्रों में उसकी समाज में सामजस्य स्थापित करने की क्षमता कम हो जाती है। नौकरी या व्यवसाय से मुक्त होने के कारण समाज एवं परिवार में उनका वर्चस्व, मान-सम्मान में कमी होने लगती है जिससे इन्हें अपना जीवन-यापन कठिन लगने लगता है।

कभी-कभी ऐसा देखा जाता है कि बच्चे को अपनी नौकरी या किसी अन्य कारणों से शहर से दूर जाना पड़ता है तथा वे अपने माता-पिता की सेवा करने में असक्षम होते हैं तो उनकी सुरक्षा के लिए उन्हें वृद्धाश्रम भेज देते हैं।

वृद्धों की मानसिक स्थिति :

वृद्धावस्था में शारीरिक बदलाव के अनुसार मानसिक परिवर्तन भी होता है। इस अवस्था के प्रवेश करते ही मानसिक तनाव की स्थिति बनने लगती है तथा लोगों से संपर्क बनाना सहयोगी या मित्रों के निधन हो जाने से मानसिक तनाव उत्पन्न होने लगती है। यह सर्व विदित है कि पति या पत्नी में से किसी एक की मृत्यु हो जाने से हीन भावना की वृद्धि होती है तथा आत्मविश्वास का अभाव दिखने लगता है, जिससे मानसिक विकृत, अकेलापन आदि जैसे दोष निर्माण होते हैं। अतः समाज में वे ज्यादा सहयोग नहीं दे पाते जिससे उनमें निरूपयोगिता की भावना उत्पन्न होने लगती है। परिवार में सामंजस्य की कमी तथा आपसी मतभेद के कारण उनकी मानसिक स्थिति खराब होने लगती है। आर्थिक दृष्टि से सम्पन्न होते हुए भी बहुत से वृद्धजन अकेलेपन के कारण डिप्रेशन का शिकार हो जाते है; जिससे उनमें शारीरिक एवं मानसिक रोगों की उत्पत्ति होती है।

बुढ़ापे में उनकी इन्द्रियाँ कमजोर हो जाती है जिससे उनकी आँखों की नजर घट जाना, जोड़ो में दर्द होना, स्वाद और सूंघनें की चेतना कम हो जाना तथा सुनने की शक्ति घट जाना आदि रोग से वे पीड़ित हो जाते हैं। उनकी सोचने समझने की शक्ति कम हो जाती है। उन्हें हर समय लगता है सब उनकी उपेक्षा करते है और वे अपने आपको बिल्कुल अकेला समझने लगते है।

आधुनिकीकरण से पूर्व संयुक्त परिवार ही वृद्धजनों की मानसिक सुरक्षा प्रदान करता था परन्तु अब इसके विघटन के परिणामस्वरूप कोई ऐसा विकल्प उनके सामने नहीं है जो उन्हें संयुक्त परिवार जैसी मानसिक सुरक्षा प्रदान कर सके। अभी हाल ही के अध्ययनों से यह स्पष्ट हुई है कि संयुक्त परिवार में रहने वाले वृद्धजनों में अकेलेपन एवं मानसिक असुरक्षा का एहसास एकाकी परिवार में रह रहे वृद्धजनों के मुकाबले काफी कम हाता है।

वृद्धों के प्रति सरकारी नीति एवं कार्यक्रम ½Goverment Policy and Programe for Eletorly½

सर्वप्रथम संयुक्त राष्ट्र संघ ने १९४८ ई. में वृद्ध आयु अधिकार पर एक घोषणा पत्र तैयार किया जो १९६९ ई. में आम सभा तथा १९७२ ई. में संयुक्त राष्ट्र संघ की आर्थिक एवं सामाजिक कॉन्सिल में रखा गया तथा उस पर विस्तारपूर्वक विचार विमर्श किया गया। १९८२ ई. में Vienna International Plan of Action on Ageing पारित किया गया जिसमें निम्नलिखित सुझाव दिए गए-

१) स्वास्थ्य एवं पोषण २) आर्थिक सुरक्षा ३) सामाजिक सहभागिता ४) आवास एवं पर्यावरण ५) उपभोक्ता एवं संरक्षण ६) अनुसंधान एवं संरक्षण

१९९० ई. में संयुक्त राष्ट्र संघ की आम सभा में ५ अक्टूबर को ''वृद्ध लोगों का अधिकार दिवस'' मनाने की घोषणा की गई।

१९९१ ई. में संयुक्त राष्ट्र ने वृद्ध लोगों हेतु नियमों पर अपनी मोहर लगाई। जिसमें भोजन, पानी, आवास तथा वस्त्रों तक पहुँच, स्वास्थ्य रक्षा हेतु सामाजिक एवं कानूनी सेवाएँ कार्य हेतु अवसरों की उपलब्धता, सम्मान सुरक्षा एवं बिना शोषण के जीने जैसे अधिकार पर बल दिया गया।

राष्ट्रीय सामाजिक सहायता कार्यक्रम :

इस कार्यक्रम की शुरूआत १५ अगस्त १९९५ को हुई थी यह कार्यक्रम गरीब परिवारों में वृद्धावस्था, जीविकोपार्जन करने वाले मुख्य सदस्य की मृत्यु तथा मातृत्व जैसे स्थिति में लाभ पहुंचाने के लिए सामाजिक सहायता की एक राष्ट्रीय नीति प्रस्तुत करता है। इसके तीन अंग है-

I. राष्ट्रीय वृद्धावस्था पेंशन योजना
II. राष्ट्रीय परिवार लाभ योजना
III. राष्ट्रीय मातृत्व लाभ योजना

१९९८ में इन योजनाओं में आंशिक सुधार किया गया जो इस प्रकार है-

इंदिरा गाँधी राष्ट्रीय वृद्धावस्था पेंशन योजना :

- आवेदनकर्त्ता (पुरूष या महिला) ६० वर्ष या इससे ज्यादा उम्र के हो। पहले उम्र ६५ वर्ष थी, पर जून २०११ में संशोधन कर इसे ६० वर्ष कर दिया गया। इसके अलावा ८० वर्ष से अधिक आयु के वृद्धों को ५०० रू० प्रतिमाह पेंशन प्राप्त होंगे।
- ऐसे आवेदनकर्त्ता जो अपने जीविकोपार्जन के लिए परिवार या दुसरे पर निर्भर होंगे वे दरिद्र की श्रेणी में आएंगे। केन्दीय सहायता के दावे के लिए वृद्धापेंशन की राशि २०० रूपए प्रतिमाह है।
- इस स्कीम की उपर्युक्त शर्तें पूरी करने पर ७५० रूपए प्रतिमाह की राशि उपलब्ध कराई जाती है।

झारखण्ड राज्य में कुल ५.९८ लाख लोग वृद्धावस्था पेंशन के अंतर्गत लाभ पाते हैं, जिसमें ३,६६,२३६ व्यक्ति राष्ट्रीय वृद्धावस्था पेंशन के तहत एवं २३१६७१ व्यक्ति राजकीय वृद्धावस्था पेंशन के तहत प्राप्त करते हैं।

वृद्धजनों के लिए राष्ट्रीय नीति ¼NPOP½

यह नीति जनवरी १९९९ में वृद्धजनों के कल्याण और प्रतिबद्धता सुनिश्चित करने के लिए घोषित की गई।

नई राष्ट्रीय वृद्धजन नीति २०११ में लागू की गई इसका मुख्य उद्देश्य व्यक्ति को स्वयं या अपने सहयोगी के वृद्ध जीवन की तैयारी हेतु प्रोत्साहन देना, गंभीर हालत वाले वृद्ध लोगों के स्वास्थ्य की देखभाल और संरक्षण तथा वृद्धों में ऐसी जागरूकता पैदा करना जिससे वे स्वयं आत्मनिर्भर बन सके।

राष्ट्रीय वृद्धजन परिषद् ¼NCOA½

केन्द्र सरकार द्वारा वर्ष २००५ में इसे पुर्नगठन किया गया। जो वृद्धों के बारे में नीतियों और कार्यक्रमों के विकास के लिए सरकार को सलाह और सहायता देती है।

वृद्धों के लिए समन्वित कार्यक्रम :

इस योजना के अंतर्गत गैर-सरकारी संगठनों पंचायती राज संस्थाओं और स्थानीय निकायों को परियोजना लागत की ९० प्रतिशत वित्तीय सहायता दी जाती है। यह सहायता वृद्धाश्रम बनाने और उसकी देखभाल करने, वृद्धों को गैर संस्थागत सेवाएँ उपलब्ध कराने पर व्यय की जाती है।

वृद्धजनों के लिए भारतीय रेल में रियासत :

न्यूनतम ६० वर्ष से अधिक आयु के व्यक्तियों के लिए कुल किराये पर ३० प्रतिशत की छूट तथा महिला वरिष्ठ नागरिकों को ५० प्रतिशत तक की छूट प्रदान की जाती है।

बैंक जमाओं पर अधिक ब्याज : बैंकों में वरिष्ठ नागरिकों को उनके निवेश पर तुलनात्मक रूप से आधे से पौन प्रतिशत अधिक ब्याज दिया जाता है।

वरिष्ठ नागरिक बचत योजना : वरिष्ठ नागरिक बचत योजना पर ब्याज दर ९ फीसदी की होती है। इस योजना में प्रवेश करने की उम्र ६० वर्ष है तथा सेवानिवृत्त रहे व्यक्ति की उम्र ५५ साल या इससे अधिक है।

वरिष्ठ नागरिक अधिनियम २००७ ¼Senior Citizen Act, 2007½

- आय अथवा अपनी संपत्ति से अपना खर्च उठाने में असक्षम है। माता-पिता अपने बच्चों से रख रखाव के लिए उचित भोजन, आवास, कपड़े और चिकित्सा, उपचार के व्यय के लिए आवेदन कर सकते हैं।
- संतानहीन वरिष्ठ नागरिक जो ६० वर्ष या इससे अधिक के हैं, वे भी अपने रिश्तेदारों से रख-रखाव का दावा कर सकते हैं जो उनकी संपत्ति पर कब्जा रखते हैं या बाद में इसकी संभावना है।
- रख-रखाव के लिए ट्रिब्युनल द्वारा अंतरिम मासिक भत्ता, वरिष्ठों की अपेक्षा तथा देखभाल से इंकार किया तो १०,००० रूपए की मासिक भत्ता देने का आदेश का प्रावधान है।
- इसके विरूद्ध जाने पर दोषी व्यक्ति को ३ माह का कैद या ५००० रूपये का जुर्माना अथवा दोनों दण्ड दिया जा सकता है।
- इस अधिनियम में लाभार्थियों के लिए वृद्धाश्रम की स्थापना तथा अस्पतालों में वृद्ध नागरिकों के लिए अलग से सुविधाएँ प्रदान करने का प्रावधान है।

इस प्रकार वृद्धों के सुरक्षा हेतु अनेक नीतियाँ एवं कार्यक्रम चलाए जाते हैं जिससे वृद्धों की स्थिति अधिक से अधिक बेहतर बन सके।

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माध्यमिक शिक्षा में सूचना प्रौधोगिकी की भूमिका का समाजसास्त्रीय अध्ययन

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शोध सार

शिक्षा व्यक्ति का मानसिक, सामाजिक, नैतिक चरित्रिक तथा सांस्कृतिक विकाश करता है। शिक्षा लोगों की मनोवृतियों में परिवर्तण ला कर, उन्हें इस प्रकार के व्यवहार के लिए प्रेरित करती है जो व्यवहार खुलें समाज की विशेषता है।

शिक्षा मानव जीवन की अमूल्य धरोहर है शिक्षा के द्वारा मानव सुसंस्कृत बनाता है शिक्षा मनुष्य की सभी प्रकार की दास्ताओं पर प्रहार करके उसें तार्किक एवं ज्ञान वान बनाती है। शिक्षा व्यक्ति के व्यक्चि के सर्वांगीण विकास के लिए अत्यन्त महत्वपूर्ण है। शिक्षा व्यक्ति में आत्मनिर्भता, स्वामत्तता और अधिकार सम्पन्नता की भावना विकसित करती है। इससे व्यक्ति सामाजिक सरोकार पारस्परिक सदभाव और सहनशीलता जैसे गुण प्राप्त कर जीवन मूल्य और शालीनता अपनाने में सफल होता है। शिक्षा से ही मानव की संपूर्ण प्रतिभा योग्यता एवं संम्भावनाओं का विकास संभव होता है। अशिक्षित व्यक्ति किसी भी समाज के लिए अभिशाप होता है, क्योंकि वह समाज का जिम्मेदार नागरिक नहीं बन सकता है।

शिक्षा का समाजशास्त्रीय परिप्रेक्ष : *अलग-अलग विद्वान शिक्षा का आकलन एवं मूल्यांकन अलग-अलग प्रकार से करते है। कभी-कभी इनका दृष्टिकोण एक दुसरे के विपरित होता है। फ्रासीसी समाजशास्त्री एमिल दुर्खीम (१८५८-१९१७) ने शिक्षा को एक विद्या के रूप में स्थापित करने का प्रयास किया। इन्होंने कहा शिक्षा कैसी भी हो, इसे नैतिकता पर जोर देना चाहिए। दुर्खीम के बाद वेबर ने शिक्षा को अपने अध्ययन का केन्द्र बनाया। १९४० के दशक के बाद युरोप और अमेरिका में यह समझा जाने लगा कि विज्ञान तथा प्रोद्योगिकी की शिक्षा प्रदत गुणो पर जोर नहीं देती है। जहाँ-जहाँ औद्योगिक समाज में शिक्षा का प्रसार हुआ है वहाँ सामाजिक संस्तरण में बदलाव आया है।*

कीर्वड : आनलाईन लर्निग, सूचना तकनिकी, कम्पयुटर, माध्यमिक शिक्षा, मोबाइल ।

फ्रासीसी विद्वान पी. बोरदयू ने कहा है शिक्षा का मुख्य कार्य शासक वर्ग की संस्कृति, अधार्त विचारधारा, मूल्यों एवं हितो का ''सास्कृतिक पूर्णउत्पादन'' करना है। प्रभुवर्ग शिक्षा के माध्यम से विशेष प्रकार के अर्थ को लोगों पर थोप देते है, उन्हें सही साबित करते है।

बोरदयू ने कहा है कि निम्न वर्ग के बच्चे यही समझते है कि उन्हें कुछ विशेष हासिल नही होना है, इसलिए वे प्रयास ही नहीं करते है वे समझते है कि चाहे कुछ भी कर ले, बड़ो की सुविधायें उन्हे नहीं मिल सकती है। बोरदयू ने शिक्षा को ''सांस्कृतिक पूँजी'' का है।

शिक्षा के प्रकार्यात्मक परिप्रेक्ष :

इमाइल दुर्खीम ने कहा है कि शिक्षा समाज की आवश्यकता को पूरा करती है शिक्षा से समाज में एकता, सुदृढ़ता एवं स्थिरता उत्पन्न होती है। शिक्षा से समाज में समरूपता उत्पन्न होती है। स्कूल में बालक निश्चित नियमों के अन्तर्गत ही अन्य लोगों के साथ अर्न्तक्रिया करता है। यह अनुभव बालक को समाज के अन्य सदस्यो के साथ अन्तः क्रिया करने हेतू तैयार करता है। दुर्खीम के समान पारसन्स भी यही मानते है कि विद्यालय समाज का लघु रूप में प्रतिनिधित्व करता है। विद्यालय बच्चों को समाज के मूलभूत मूल्यों में समाजीकृत करते है। टालकॉट पार्सन्स भी प्रकार्यवादी दृष्टी से शिक्षा की चर्चा की है। शिक्षा से सार्वभोमिक मूल्य पनपते है, अपनाये जाते है। शिक्षा से समाज में मूल्य सिखये जाते है।

जान डी.वी. (J.DEWEY) मानते थे शिक्षा का उद्देश्य अपनी सम्पूर्ण क्षमता को विकसित करने हेतू प्रोत्साहन देना है। इवान इलीच (IVANILLICH) ने अपनी पूस्तक (DESCHOOLING SOCIETY) (१९७१) में वर्तमान औपचारिक शिक्षा पद्धति को

अनुपयोगी बतलाया है उनके विचार से समाज को विद्यालय विहिन करने की आवश्यकता है। इलीच ऐसी शिक्षा की बात करते है जो अनौपचारिक तथा आत्म निर्देशित हो। इन्होंने (WEB LEARNING) बेब शिक्षा पर काफी बल दिया है, ऐसी शिक्षा जिसे व्यक्ति स्वतंत्र होकर कम्पयुटर पर अर्जित कर सकता है।

भारत में शिक्षा का स्वरूप : भारत में बुनियादी शिक्षा की तस्वीर काफी डरावनी है। इसे आकड़ों में साफ देखा जा सकता है। निरक्षरों की आबादी के मामले में भारत का स्थान आज विश्व में पहला है। विश्व के कुल निरक्षरों में उनकी ३०: आबादी भारत में है। ६ से १४ वर्ष आयुवर्ग के २०: से अधिक बच्चे स्कूली शिक्षा से वंचित है। भारतीय शिक्षा व्यवस्था में अनेक समस्याये है घर से स्कूल की दूरी यातायात की सुविधा का अभाव जातीय एव लिंगभेद तथा विद्यालयों का अनुप्युक्त वातावरण।

शिक्षा का स्तरी करण : आधुनिक समय में शिक्षा एक बाजार वस्तु के रूप में तीन भागों में विभक्त है सबसे ऊपर उच्च कोटि की शिक्षा है, जिसपर कवेल संभ्रान्त वर्ग का कब्जा है। जो शिक्षा के निजीकरण और को क्रय करने के लिए बाध्य है। मध्य स्तरीय शिक्षा पर मध्यमवर्गीय लोग तथा कुछ मात्रा में निम्न वर्ग के लोगों का प्रभुत्व है। अंतिम स्तर पर सकारी स्कूलों में शिक्षण पाने वाला निम्न वर्ग है जो वंचित अवश्य है, लेकिन संतुष्ट है।

माध्यमिक शिक्षा : शिक्षा पैमाना के अर्न्तराष्ट्रीय मानक वर्गीकरण पर दो चरणों को शामिल करती है। स्तर-२ को बुनियादी शिक्षा का अंतिम और दुसरा चरण माना जाता है हर देश का उद्देश्य बुनियादी शिक्षा प्रदान करना है। माध्यमिक शिक्षा आम तौर पर प्राथमिक शिक्षा के छः साल बाद होती है। अधिकांस देशो में माध्यमिक शिक्षा "अनिवार्य" है कम से कम १६ वर्ष की आयु तक। बच्चे ११ वर्ष की आयु में निम्न माध्यमिक चरण में प्रवेश करते है। १९८९ से, शिक्षा को एक बच्चे के लिए बुनियादी मानव अधिकार के रूप में देखा गया है। बाल अधिकार के कन्वेंशन के अनुछेद २८ में कहा गया है कि प्राथमिक शिक्षा निशुल्क और अनिवार्य होनी चाहिए। माध्यमिक शिक्षा हर बच्चों को उपलब्ध और सूलभ होने चाहिए। कुछ देश १६ वर्ष से कम आयु के सभी युवाओं के लिए अनिवार्य और मुफ्त शिक्षा की और बढ़ रहे है।

सूचना प्रौद्योगिकी : वर्तमान समय में सूचना **प्रौद्योगिकी** ने मानव जीवन में क्रांति ला दी है और यह नगरीय क्षेत्रों के साथ-साथ ग्रामीण क्षेत्रों में अपनी दस्तक दे दी है आज समाज की विभिन्न आवश्यकताओं की पूर्ति सूचना क्रान्ति ही कर रही है। टेलीफोन, मोबाइल फोन, कम्प्युटर, लैपटॉप जैसी अनेक सूचना यंत्र आज लोगों को तरह-तरह की जानकारियाँ उपलब्ध करवा रही है जैसे-कृषि, शिक्षा, स्वास्थ्य की जानकारी, राष्ट्रीय घटनाये आदि भारत में कम्प्यूटर उपभोक्ताओं की संख्या ८१ मिलियन तथा डैन्सिटी ७.१: है जो भारत में सूचना क्रांति के बढने का सूचक है।

सूचना **प्रौद्योगिकी** क्षेत्र के विस्तार हेतु अनेक योजनाये तथा परियोजनाएँ भारत सरकार द्वारा संचालित की जा रही है। इसमें राज्य सरकारे भी अपना योगदान दे रही है। आज किसी भी देश में शिक्षा एव तकनीकी शिक्षा में जो सूधार हो रह है वह बहुत कम समय में दुनिया के अधिकांस देशो तक पहुँचाये जा रहे है। जैसे कम्प्यूटर का प्रयोग अब अधिकांश लोगों द्वारा होने लगा है। १९८४ में टेक्नॉलोजी मिशन ग्रामीण दूर संचार मिशन, भी सरकार द्वारा चलाए गये जिससे संचार क्रांति हर गाँव तक पहुँच सके औंर लोगों को नवीनतम तथा त्वरित जानकारी प्राप्त करने में सहायता मिले।

माध्यमिक शिक्षा में सूचना प्रौद्योगिकी : कक्षा में मोबाइल उपकरणों का उपयोग करना छात्र की रूची को बनाये रखने का साधन बन गया है। 'एडुटोपिया के नवीनतम गाइड' 'मिडिल स्कूल फार लर्निंग' यह मोबाइल एप है। जिसके द्वारा शिक्षण की सामग्री उपलब्ध रहती है। टेलीविजन पर शैक्षिक प्रसारण द्वारा एक साथ बड़े क्षेत्र और बहुत बड़ी संख्या तक पाठ्य सामग्री पहुचाना सलुभ हो गया हैं। कक्षा में रूबरू अध्ययन के साथ-साथ दूर शिक्षा के मामले में कक्षा आधारित अध्ययन के विकल्प के एक रंग के रूपमें इन प्रसारण का महत्व असंदिग्ध है। इन दृष्य श्राव्य माध्यमों को कैसेटो द्वारा उपलब्ध करा कर विद्यार्थियों को समय और स्थान की सीमाओं से मुक्त कर दिया है। जब चाहे शैक्षणिक कार्यक्रम देख और सुन सकते है। कई प्राइवेट ट्यूटर अपने विद्यार्थियों को पढाने के आडियो विडियो का प्रयोग कर रहें है।

सूचना प्रौद्योगिकी के द्वारा विद्यार्थी उन स्थानों को अपनी आखों से देख सकता है। जिसके बारे में वह पढ़ता है। विज्ञान का विद्यार्थी प्रयोगशालाओं, अनुसंधान केन्द्रों और विविध प्रकार के प्रयोगों से दृष्य माध्यम के द्वारा परिचित हो रहा है।

फ्री आनलाइन कोर्स योजना : १. स्वयं प्रभां⟶ मानव संसाधन विकास मंत्रालय ने छात्रों के लिए कए नई योजना शुरू की है इस योजना से सरकार छात्रों को मुफ्त में आनलाइन शिक्षा प्रदान करेगी। स्वयं (SWAYAM) के ३२ चैनल के जरिए भी पढाई कर सकेगें। इस योजना से स्कूल से लेकर कॉलेज तक के छात्रों को मदद मिलेगी। स्वयं खुद २००० पाठ्यक्रय की मेजबानी करने में सक्षम है।

२. ई. पाठशाला : केन्द्रीय मानव संसाधन मंत्रालय ने ई-पाठशाला नाम से मोबाइल फोन एप और बेवसाइट पोर्टल लांच कर दिया है। इस एप के जरिये एन.सी.आर.टी की किताबों को मुफ्त में डाउनलोड़ किया जा सकेगा हिन्दी और अंग्रेजी दोनों माध्यम से सभी विषयों की किताबें उपलब्ध होती है।

३. टॉप पैरेंट एप : तीन से आठ साल तक के बच्चों के अभिभावकों के लिए निःशुल्क मोबाइल एप है। ''इस एप से मध्यप्रदेश राज्य के सभी विद्यार्थी घर बैठे स्कूल शिक्षा विभाग द्वारा अध्ययन सामग्री प्राप्त कर, आनलाइन अध्ययन कर सकेगें।

४. दीक्षा एप : NCTE के द्वारा जारी किया हुआ एंड्राइड एपलीकेशन है, जिसे मोबाइल में इंनस्टाल करने के बाद घर बैठे अपने मोबाइल से ही पढाई कर सकते है। इस एप से पहली कक्षा से लेकर दसवी कक्षा तक, की पढाई आनलाइन अपने मोबाइल से कर सकते है।

५. बाइजू एप (BYJU'S) : यह आनलाइन अपलीकेशन है जिसके द्वारा स्कूल के पाठ्यक्रम को इन्टरनेट के माध्यम से पढाया जाता है। इंडिया के वेस्ट शिक्षक के द्वारा पाठ्यक्रम को पढाया जाता है,। यह शिक्षण मोबाइल, लैपटॉप, टैबलेट, आदि के द्वारा उपलब्ध किया गया है।

६. वेदान्तु एप (Vadantu App) : यह ई-लनिग एप है जिसका उपयोग कर बच्चे लाइव कलास के साथ-साथ स्टडी मेटेरियलल क्लास-१-१२ तक स्कोलरसिप क्युिज, टेस्ट इत्यादि पा सकते है यह इंडिया एप है जो सभी वर्ग के बच्चों को शिक्षा से जोडने का काम करती है।

७. डाउटनर एप (Doubtner App) : यह एपलिकेशन २४ घंटे विधार्थी के समस्या के सुझाव के लिए बनाया गया है।

पूर्व साहित्य का अध्ययन (Review of Earlier studies.)⟶ पान्डेय, रवि प्रकाश (२०१२) इसमें इन्होंने लिखा है- आज दुनिया के विभिन्न विश्वविद्यालय ई-लर्निग के माध्यम से शिक्षण प्रशिक्षण का कार्य सम्पन्न कर रहे है दुनिया के एक कोने में बैठा व्यक्ति अथवा संस्था इन्टरनेट के माध्यम से ज्ञान एवं विर्मश को दुनिया के दुसरे कोने पर बैठे व्यक्ति या संस्था को उपलब्ध करा रहे है। इसमें समय और दूरी समाप्त हो गई है। भारत में विभिन्न मुक्त विश्व विद्यालय आज इसी के प्रयोग से ज्ञान बाट रहे हैं।

चौबे, सरयू प्रसाद (1990) : इसमें इन्होंने कहा है कि चलचित्र एव आकाशवाणी द्वारा व्यक्ति अपनी मनोदशा को पूनर्जीवित कर रूचिकर बनाता है, परन्तु ये शिक्षा के दृष्टिकोण से अत्यधिक प्रभावशाली है। वे घटनाये जो दूर-देश में वातावरणों में घटती है, उन्हें इसकी सहायता से कक्षा में सजीवता के साथ प्रदर्शित किया जा सकता है, और तत्सम्बंधी शिक्षा प्रदान की जा सकती है।

साहु, गायत्री (2007) : इन्होंने लिखा है कि शिक्षा कैसी हो, उसका उद्देश्य कैसा हो, किस प्रणाली द्वारा शिक्षा दी जाए ये सब शिक्षा की महत्वपूर्ण बाते है। शिक्षण को सरल, सहज बोधगम्य, रोचक, तथा मनोरंजक बनाने के लिए मिडिया के विभिन्न साधनों का प्रयोग शिक्षकों द्वारा किया जाता है जिसमें टी.वी. कम्प्यूटर इन्टरनेट आदि प्रमुख है। शिक्षा के लिए कई तरह की नई प्रौद्योगिकी का प्रयोग स्वयं भारत में किया जा रहा है।

सिंह जे.पी. (२०१३) : शिक्षा आवश्यक ज्ञान और दक्षता प्रदान करती है जो व्यक्ति को समाज में आर्दश रूप में कार्य करने योग्य बनाती है। विज्ञान तथा तकनीकी के माध्यम से हम अपनी शिक्षा प्रणाली को २१ शताब्दी के लिए तैयार कर सकते है सूचना तथा संप्रेषण प्रौधोगिकी में आये ताजा बदलाव शिक्षा की अलख जगा सकते है। आज शिक्षा ज्ञान और सूचना की पूँजी

का आधार बन गयी है। राष्ट्रीय शिक्षा नीति १९८६ यह मानती है। कि "एक निश्चित स्तर तक हरेक शिक्षार्थी को बिना किसी जात पात, धर्म स्थान या लिंग भेद के लगभग एक जैसी अच्छी शिक्षा उपलब्ध हो।

श्री वास्तव, राजीव कुमार (२०१२.१३) : इन्होंने लिखा है कि दुनिया बहुत छोटी हो गई है, एक गाँव बन गई है जहाँ सब लोग सब कुछ जान सकते है आज सूचना प्रौधोगिकी की विश्व स्तर पर एकीकरण हुआ है। इसके अधिकाधिक प्रयोग से विशेष रूप से इन्टरनेट के तीव्र विस्तार के फलस्वरूप विभिन्न क्षेत्रों में मानव गतिविधियों में क्रांतिकारी परिवर्तन दृष्टिगोचर होते है।

दाधीच, बालेन्दु शर्मा (योजना २०२१) : डिजिटल इंडिया की बदौलत एक अरब भारतीय को आनलाइन लाने कि दिशा में बड़ी सफलता प्राप्त की जा चूकी है। भारत में सस्ती दरो पर उपलब्धी स्मार्टफोनों के साथ-साथ सस्ती दरो पर इन्टरनेट कनेक्टिविटी की उपलब्धता और दुर संचार की विश्व-स्तरीय आधार भूत ढाचे ने डिजिटलीकरण की अदभुत क्रांति को साकार कर दिखाया है।

निशंक, रमेश पोखरियाल (योजना २०२१) : शिक्षा अन्य बातो के अलावा सांस्कृतिक जागरूकता और सहानुभूति दृढता धेर्य, टीमवर्क नेतृव संवाद सहित ज्ञान सम्बंधी सामाजिक और व्यवहारिक कौशल विकसित करती है इस प्रकार २०२२ तक नया भारत एक ऐसी शिक्षा प्रणाली के लिए मजबूत आधार प्रदान करेगा जो आसनी से सुलभ निष्पक्ष, गुणवर्त्तापूर्ण, किफायती और जवाब देही के सिद्धान्तों पर आधारित होगी। नये भारत की शिक्षा विद्यार्थी को लाभकारी और संतोष्प्रपद रोजगार के लिए तैयार कर चरित्र निर्माण का बढावा देने में सक्षम बनायेगी।

प्रस्तावित शोध का महत्व :(Significance of the studies.*)* प्रस्तुत शोध अध्ययन का महत्व वृद्ध स्तर पर होगा। आज कल वैश्विक महमारी कोरोना के कारण सभी स्कूल बन्द है और बच्चों की शिक्षा पर कोई प्रभाव नहीं पड़े इसलिए प्रत्येक वर्ग की पाठ्यक्रम को सूचना प्रोद्योगिकी के स्त्रोत, कम्प्यूटर मोबाइल, इन्टरनेट के द्वारा जारी किया गया। जिसमें प्रत्येक आय समूह के लोगों ने सराहनीय योगदान दिया। माध्यमिक शिक्षा काल में ही बच्चों का चरित्रिक विकाश के साथ-सथा उनकी रूचियों एवं व्यवहारिक गुणों एवं रचनात्मक प्रवितियों आदि का विकाश होता है। वैसे तो सूचना प्रोद्योगिकी शिक्षा का अच्छा माध्यम है जो शिक्षा से संबंधित कई आवश्यकताओं की पूर्ति करता है।

कोविड़ जैसे महामारी के समय में भी भारत नही बल्कि पूरे विश्व स्तर पर सूचना प्रौधोगिकी ने अहंम भूमिका निभाई चाहे वह क्षेत्र अर्थव्यवस्था हो या सांस्कृतिक, सामाजिक, अन्तःक्रिया या शैक्षणिक व्यवस्था ही क्यो न हों।

आज के समाज की समस्याओं और आवश्यकताओं की दृष्टि से इस अध्ययन की प्रासंगिकता : (Relevance to the present Day problems and needs of society.) आज के युग में स्मार्ट फोन, कम्प्यूटर, ई-लर्निग की महत्ता से हम सभी परिचित हैं। राष्ट्रीय शिक्षा नीति में विद्यालयी स्तर से ही कम्प्यूटर शिक्षा पर अधिक बल दिया गया हैं ताकि बालक शुरू से ही सभी स्तर का ज्ञान को और भी तीव्र गति से विकषित कर सके। १९८५ में पहली बार शिक्षा को विद्यार्थों तक पहुँचाने के लिए दृष्य एवं श्राव्य माध्यम को आवश्यक हिस्से के रूप में प्रयोग आरंभ किया गया १९९९ से 'ज्ञान दर्शन" के नाम से दुरदर्शन का एक स्वतंत्र चैनल आरम्भ किया गया। जो पहला शिक्षण चैनल कहा जाता है। आज प्रोद्योगिकी के जिस दौर से हम गुजर रहे है उनमें शिक्षा के लिए कई तरह की नई प्रोद्योगिकी का प्रयोग स्वयं भारत में किया जा रहा हैं दूर शिक्षा के व्यापकीकरण के चलते इनकी उपयोगिता की बढ़ रही है। अब फोटो कम्पोजिंग का इस्तेमाल ज्यादा हो रहा है। फोटो कापीयर ने विद्यार्थियों के लिए अधिक बड़े स्तर पर तरह तरह की पाठ्य सामग्री आसानी से उपलब्ध कराने में मदद की हैं

इस प्रकार शिक्षा के क्षेत्र में सूचना प्रोद्योगिकी ने संभावनाओं के नये द्वार खोल दिये है, परन्तु प्रश्न यह उठता है कि भारत जैसे देश में जहाँ अभी भी एक तिहाई से अधिक आबादी निरक्षरता के अभाव से ग्रस्त हैं, जहा लगभग इतनी आबादी गरीबी की रेखा से नीचे जीवन यापन कर रही है, वहां क्या शिक्षा के सार्वभौमिकरण के अभियान को सिर्फ सूचना प्रोद्योगिकी के माध्यम से सफल बनाया जा सकता है? क्या इस प्रोद्योगिकी का प्रयोग गरीबी रेखा से नीचे जीवन यापन करने वाले वर्ग भी कर रहे है? जिन तक शिक्षा पहुचाना सबसे पहली प्राथमिकता है। इस दृष्टि से विचार करे तो स्थिति कतई संतोषप्रद नहीं है।

गांव में ट्राजिस्टर तो फिर भी उपलब्ध हो जाते है, परन्तु टेलीविजन खरीदना गरीब परिवारों के लिए अब भी असंभव है। भारत के अधिकांस गांवों में बिजली की आपूर्ति बहुत कम है।

ऐसी स्थिति में यह संभव नहीं लगता कि, प्रसारण केन्द्रों और सैंकड़ो चैनल के बावजूद गाँवों और सुदूर क्षेत्रों में रहने वाले गरीब और पिछडे लोगों को इन सभी सुविधाओं का लाभ सचमुच मिल सकेगा।

अतः इन समस्याओं को देखते हुये आज के वर्तमान समाज में शोध कार्य की अत्यंत आवश्यकता है। वर्तमान शिक्षा के क्षेत्र में जो परिवर्तन या विकास हो रहा है,। अतः इस संदर्भ में यह मेरा यह शोध अध्ययन विधार्थी तथा मानव समाज के लिए उपयोगी होगा।

आकडों का अभिसारण एंव विश्लेषण : (Suggestion)

प्रस्तुत शोध अध्ययन का योगदान इस बात को अनुरोखित करेगा कि पिछले कुछ वर्षों में सूचना प्रोद्योगिकी ने शिक्षा और विज्ञान के क्षेत्र में अमूलय योगदान दिया है। विश्व की आबादी का लगभग ३.१ मिलियन लोग रोजाना सूचना प्रोद्योगिकी का प्रयोग कर रहे है, परन्तु भारत में संसाधन की पहुँच लोगों तक समुचित रूप से नहीं हो पाई हैं कठिनाई भी यही है कि शिक्षण में सूचना प्रोद्योगिकी का प्रयोग उसी सम्पन्न वर्ग तक ही सीमित है जो कम्प्यूटर खरीदने की क्षमता हासिल कर चुके है। २१वीं सदी में सूचना के माध्यम का विस्फोटक युग एक नये तरिके से समाज की संभावनाओं का निर्माण करेगा। माध्यमिक शिक्षा पर सूचना प्रोद्योगिकी की बढ़ती हुई भूमिका को देखते हुये सरकार को कोई ठोस कदम उठाना चाहिए, जिससे हर क्षेत्र, वर्ग के विद्यार्थी को उचित और मूल्यवान शिक्षा प्राप्त हो सके। शोध के होन से मौजूदा ज्ञान में बढ़ोतरी होती है तथा कार्य क्रम क्रियान्वयन करने में सहायता मिलती है। वर्तमान समय में स्मार्टफोन, कम्प्यूटर में इन्टरनेट के द्वारा शिक्षा ग्रहण करनें में सबसे ज्यादा बच्चे प्रभावित हो रहे है उनपर इसका नाकारात्मक प्रभाव भी पड़ रहा हैं अतः यह शोध विद्यार्थियों के शिक्षण से सम्बंधित समस्याओं के सामाधान में सहायता पहुँचायेगा इसके साथ ही इस विषय पर नया प्रकाश पड़ेगा, जो भविष्य के कार्य योजना निर्माण में सहायक हो सकता है।

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लोकविधी जागरण : एक विधिनाटय

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सोनई ता. नेवासा जि. अहमदनगर पिन कोड नं. ४१४१०५

प्रस्तावना :

विधीनाटयात एकाच वेळी विधी व नाट्य प्रकटत असते. विधिनाटय ही लोकानाटयाची पूर्ण अवस्था असते. विधी, भक्ती व नाट्य या गोष्टीविधीनाटयात एकत्रपणे येतात. खंडोबाच्या नावाने जागरण घालणे हा विधीनाटयाचाच प्रकार आहे. महाराष्ट्र, कर्नाटक, आंध्रप्रदेश आणि तामिळनाडू या प्रदेशात अनेक जाती जमातीत खंडोबाचे जागरण घालणे हा एक कुलाचार आहे. ज्या घराण्याचे कुलदैवत खंडोबा आहे, अशा कुटुंबात वर्षातून एकदातरी स्वतःच्या घरी किंवा देवस्थानाला जावून खंडोबाच्या नावाने जागरण घातले जाते. जागरण केल्याशिवाय खंडोबाच्या उपासानाविधीस पूर्णत्व येत नाही, अशी लोकांची धारणा असते. म्हणून जागरण घालून देवाची शक्ती जागृत करावी व त्यांची कृपा आपल्या कुटुंबावर व्हावी, संकटे तळावीत म्हणून जागरण हा विधी कुलाचाराच्या माध्यमातून केले जातात. लोकांची धार्मिक भावना जागृत करण्यासाठी हि विधीनाटयासारखे विधी उपयोगी ठरतात.

जागरण हा कुलाचार व कुलधर्माचाच एक भाग मानला गेला असून त्याचे सादरीकरण जागरणाच्या स्वरुपात केले जाते. वाघ्यामुरळीची उपास देवता जेजुरीचा खंडोबा ही होय. त्या दैवताच्या उपासनेसाठी करावयाचा विधी जागरण या नावाने ओळखला जातो. या विधीत पुरोहित म्हणून वाघ्याआ-मुरळी व त्यांचा संच आलेले असतात. यजमानाने त्यांना मुद्दाम श्रद्धापूर्वक बोलविलेले असते. सगे-सोयरे, मित्रपरिवार, गावकरी हे त्यात श्रद्धापूर्वक सामील होतात. या विधीसाठी विशिष्ट वस्तू वाघे व त्यांचा मांड असे घटक समाविष्ट झालेले असतात. हे घटक एकात्मतेने विधीनाटय सादर करतात.

श्रीकृष्णाने पहिले जागरण घातल्यामुळे हिंदूधर्मात ते शास्त्रसंमत झाले. विशेष म्हणजे खंडोबाची पूजा ही शंकराची पूजा मानली जाते. म्हणून आजही भाविक भक्त वाघ्या-मुरळीला बोलावून जागरण गोंधळ घालतात.

"तिळा इडा पावड पूजा |
देव आले भक्ता काजा
भक्ती भावाची माळ तुळशीची |
पुत्र पंचावन्न लक्ष्मी
गाई, म्हशीन भरतील वाडं |
ताक दुधानं भरतील ड़ेरं
जो भाव भरला कोटंबा तो भाव
सिद्धीस ने मल्हारी म्हाळसा राव" ||

त्यानंतर जागरण स्थळी देवताची स्थापना केली जाते. पूजाविधी मांडला जातो. त्याचे एक पारंपारिक शास्त्र आहे. त्यानुसारच पूजाविधी मांडतात.

वाघ्या-जागरणाच्या पूजेसाठी यजमानाला खालील सामग्री आणावयास सांगतो. त्यात पाच नारळ, हळद-कुंकू, लाल गाचे वस्त्र, खोबरं, सात खारका, सात हळकुंडे, सात फळे,फुले व फुलांचे हार, भंडारा, गोडेतेल, सात बदाम, सात लाल सुपाऱ्या, नागवेलीची पानं, कापूरवड्या, गुलाल, खंडोबाचा टाक, चांदीचा गाडा, दिवटी-बुधली, लंगर, पाच ज्वारीची ताटे, गहू, गांडूळ, कलश, बाजरीच्या कडकन्या इ. सामुग्री तयार ठेवण्यास

सांगतो. परंपरेने पाच वस्तू व सात वस्तू यांना शुभ संकेत आहे. त्यामुळे पाच सात असा शुभ अंक कल्पून या वस्तू मांडल्या जातात असे वाघे सांगतात.

❖ पूजाविधी :

जागरणाच्या पूजेसाठी सामुग्री आणल्यानंतर वाघे प्रथम गायीच्या शेणाने जमीन सारवून घेवून त्या जागेवर व आजूबाजूला मुत्र शिंपून वातावरण शुद्ध करून घेतात.

रंगभूमी भरल्यानंतर पूजा मांडली जाते. हि पूजा मांडताना प्रथम उसाच्या अथवा ज्वारीच्या ताटांची तिकाटणी एका रंगावर उभी केली जाते. चौरंगावर लाल वस्त्राची गादी करून ठेवतात.व त्यावर भंडार्याची भरणी करतात.तिकाटणीवर लांच्या माळा सोडतात. नागवेलीची पाने ठेवून त्यावर नारळाचा घट बसवितात. चौरंगावर असे दोन घट बसविले जातात. प्रात एक घट खंडोबाचा व दुसरा घट देवीचा असतो. घटाच्या समोर देवीचा टाक ठेवून यजमान त्या घटाची व टाकाची पूजा करतो. वाघे व इतर जमलेल्या सर्व मंडळींच्या कपाळावर भंडारा लावून व यजमानालाही भंडारा लावून "यळकोट यळकोट जय मल्हार" म्हणून जागरणाला प्रारंभ केला जातो.

जागरणाचा पूर्वरंग :

जागरणाचा प्रमुख वाघ्या हातात खंजिरी घेवून आपल्या पारंपारिक वेशात उभा राहतो. त्याच्या गळयात भंडाऱ्याने गरीबाच्या चामड्याची पिशवी असते. त्याच्या सोबत मध्ये मुरळी आणि मागे इतर साथीदार वाघे तुणतुणे,इफ,टाळ,पाटी,दिमडी अशी पारंपारिक वाद्ये घेवून ही मंडळी उभी असते. जागरणाचा प्रारंभ गणेशाचे नमन करून होतो. त्यास,

गण- १ :

"महाराजा गणराया, तुझ्या चरणी नमन माझे
गण हा गौरीचा नंदन, चौदा विद्येचा हो साधन
मलदार मार्तंड तुझे ध्यान आम्ही लागतो तुमच्या पाया
महाराज गणराया"

याप्रमाणे गण गायिल्यानंतर आवतन होते त्यात देवदेवतांना जागरणासाठी येण्याचे आवाहन केले जाते.

पुर्वरंगाच्या या टप्यात वाघ्या-मुरळी देवदेवतांना जागरणासाठी येण्याचे आवाहन करतात. हे आवाहन करण्यामागे देवदेवतांची आपल्यावर कृपा होईल आणि सादर करीत असलेला कार्यक्रम निर्विघ्न पार पडेल अशी भूमिका जागरण सादर करणाऱ्या वाघ्या-मुरळींची असते.वाघ्या-मुरळीं देवतांना आवाहन खालील गितातून करतात.

"जागरण मांडिले मल्हारी जागरणाला यावे"
सोबत म्हाळसा-बाणु आणावे |
खंडोबा जागरणाला यावे |
सकळीक देवा जागरणाला यावे |
आपल्या भक्ताला वारंवार तारावे" ||

अशा गीतातून वाघ्या-मुरळींदेवदेवतांनाजागरणासाठी येण्याचे आवाहन करतात. यावेळी मुरळीचा पदन्यास असतो. सर्व वाद्येही खालच्या स्वरात वाजविली जातात.

गीतातून गण आणि देवदेवतांना आवाहन केल्यानंतर जागारानातील प्रमुख वाघ्या संचातील इतर वाघ्यांना व मुरळींना रंगमंचावर स्थान ठरवून देत असतो. त्यात उजव्या किंवा डावीकडे सर्व बाजूकडून देव जागरणाला

आले असे गृहीत धरून डोबाची अध्यात्मिक उपासना गीते गायली जातात. त्यातून खंडोबाचे गुणगान केले जाते.

"सोन्याची जेजुरी | गडाला नवलाख पायरी |
तेथे नांदतो देव मल्हारी |
संग म्हाळसा-बाणाई या दोन्ही नारी |
झेंडे लावती अहो जेजुरीला नवसाचे |
काय वर्णू गुण या खंडेरायाचे |
होऊन घोड्यावर स्वार निघाले खंडेराया |
मार्ग चालली फौज भक्तांची लावली माया" ||

म्हाळसा-बाणाईचा संदर्भ घेतल्याशिवाय खंडेरायाच्या जीवनाला पूर्णत्व प्राप्त होऊ शकत नाही. त्यामुळे वाघ्या-मुरळी रेखाबाविषयीची महानता नोंदवतात. त्याठिकाणी म्हाळसा आणि बाणाई यांचाही उलगडा नकळत वाघ्या-मुरळी यांच्या गीतातून पास होत असतो.

साध्या -मुरळी जागरणात जी गीते गातात ती सहसा ग्रामीण संस्कारातून आलेली असतात. त्यामुळे ग्रामीण धर्मविषयक कल्पना, देवदेवतांच्या संदर्भातील श्रद्धा, ग्रामीण जिवनातील सुखदुखांच्या प्रसंगाचे देवतेच्या संदर्भातील आरोपण, महाराष्ट्रातील संस्कार, अध्यात्मिक कुटाचा स्पर्श, ग्रामीण शृंगार आदी बाबींचा स्पर्श वाघ्या-मुरळीच्या गीतांना झालेला असतो.

पूर्वरंगातील गीते :

"तू तालात घाटी वाजव
तू डोक्यात दिमडी वाजव
तू तुनतुना संबळ वाजव
जागरण गोंधळाची रात गाजव
खंडेरायाच चांगभल बोलायचं
रूप हे पाहून भंडारा उधळून लंगर तोडायचा
मल्हारी मार्तडांचा यळकोट गजर करा
देवाचिया तळी भरा, भक्तीभाव धरा
देव हा मायाळू आहे तो कृपाळू
मल्लू देवाला जागरणाला उठून बोलवायचं
तू डोक्यात दिमडी वाजव" ...

जागरणाचा उतररंग :

जागरणाचा पूर्वरंग संपल्यानंतर दहा-पंधरा मिनिटे विश्रांती घेवून वाघ्या-मुरळी उत्तररंगाला सुरुवात करतात. यात डाबाची महात्म्यपर गीते, पौराणिक स्वरुपाची गीते, खंडोबा,म्हाळसा,बाणाई यांची सांसारिक कथा आणि कथागीते, नृत्य, संगीतासह सादर केली जातात. तसेच राजे महाराजे यांची उदाहरणे देवूनही काही गीते वाघ्या-मुरळी या भागात गातात. शिवाय लंगर ताडणं, भार उतरणे आदी बाबीही उत्तररंगात येतात. त्यामुळे गोंधळापेक्षा जागरण विधीनाटय अधिक रंगतदार असते. भगत याच्या नृत्यात पदन्यासाची विशिष्ट पद्धत असते. कृपाणी **कथागीते**

जागरणाच्या या उत्तररंगात सादर केली जाणारी कथागीते म्हणजे जागरणाची नाट्यसंहिताच असते. ती अलिखित स्वरुपाची आहे. मौखिक परंपरा ही वाघ्या-मुरळीत परंपरेनेच आलेली असल्यामुळे आणि ते

खंडोबाचे उपासक असल्याने याविषयी आणि म्हाळसा बाणुविषयांच्या गीतांची संख्या त्यांच्याकडे विपुल प्रमाणात असते. त्यांच्या गीतातील विषय हे जीवनातील घटना प्रसंग आणि जीवानुभव खंडोबा देवाच्या माध्यमातून उत्कटतेने चित्रित केलेले असतात. जागरणाच्या रंगात वाघ्या-मुरळी खंडोबाच्या लग्नाचे, खंडोबाच्या सांसारिक जीवनाचे, दोन बायकांचे, त्यातील सवती मत्सराचे, खंडोबाच्या प्रसिद्ध स्थळांचे, बाणाईच्या सौंदर्याचे, म्हाळसाच्या केविलवाण्या अवस्थेचे चित्रण अनेक गीतात अतिशय कुशलतेने सादर करीत असतात. त्यांचे नृत्यही पाहण्यासारखे असते.

त्यादृष्टीने काही कथागीते पाहता येतील.

"काळाचा कर्दनकाळ मल्हारी तो कैवारी, दैत्याची
धडकेने खडक फोडतो, भैरवनाथ जय मल्हारी |
नाथाचा नाथ मल्हारी, भक्तांना पावतो जय मल्हारी ||
दर्शन देतो जय मल्हारी ...
गडाचा राजा मल्हारी हाय गं , तो येडा हाय गं , तो कुपनी चेडा
त्यांचा ढवळा घोडा त्याचा लंगर तोडा , त्याची वारी चढा
जेजुरीच्या राज्याचं लगीन पालीला ठरलं , देवाच्या हे लग्नात तांदूळ वाटलं
चला चला जाऊ ग पालीला म्हाळसाईच्या लग्नाला
हळद लावा देवाला बोई , तेलचं लावा देवाला बाई , बाशिंग बांधा देवाला बाई,
कंगण बांधा देवाला बाई
पालीला पाली देवाचं व-हाड गेलं , देवाच्या लग्नाला गौरीचा गणपती आलं
ब्रम्हा , विष्णू आलं ग पार्वतीच शिव आलं , सभेचा इंद्र आला गं ...
अन केदारनाथ आला गं आला , गडाचा राजा मल्हारी हाय गं ...
ते शंभूश शिवगण आलं , सांर भाविक भक्त आलं
जेजुरीत दिवाळी साजरी झाली , देवाची पटराणी पालीची भारता आली
गडावर बिपमाळ पेटवली जेजुरी सारी नटवली
जेजुरी गाव सजून गेलं , वरात पाहून भाऊन गेलं ...
देवाला पाहून सारं हारलं, देवाचं चरण भक्तांनी धरलं
गडाचा राजा मल्हारी देव मल्हारी हाय गं
असा पाहून सोहळा आहा , भक्त आनंदी झाला पाहा ...

लंगर तोडणे :

काही ठिकाणी जागरणाची सांगता करताना लंगर तोडण्याचा विधी केला जातो. उत्तर रंगात कथा सादरीकरणाचा पहाटेपर्यंत चालतो. तो संपल्यानंतर जसे काही लोक भार उतारतात तर काही लोक लंगर तोडण्याचा विधी करतात. किलो वजनाची अठ्ठावीस कड्या लोखंडाची साखळी म्हणजे लंगर होय. एक पहार जमिनीत रोवून त्याला हा लंगर लावतात. प्रथम या लंगराची पूजा केली जाते. विशिष्ट प्रकारचे गीतही लंगर तोडताना म्हणतात, "मारी मातंड घेऊन खंडा तोडी मुंडा या वैऱ्याचा".

असे गीत म्हटल्यानंतर वातावरण भारले जाते. या वातावरणाने वाघ्याच्याही अंगात देवाचे वारे येते व त्या अवस्थेत वाघ्या किंवा भगत लंगर तोडतो. लंगर तोडण्याचा हा विधी अत्यंत काटेकोरपणे केला जातो. या विधीत नाट्य भरलेलं असल्याने जागरणाची जमलेले भाविक भक्तही तनमनधनाने या विधीचा सोहळा पाहत असतात.

या लंगर तोडण्यालाही खंडोबाच्या भक्तीत आणि जागरणात अतिशय महत्वाचे स्थान आहे. कारण हा लंगर जर नाही तर जागरण घालणार्याचे काही तरी चुकले आहे, या जागरणाला देव पावला नाही असे म्हटले जाते. आणि जर सदानंदाचा यळकोट यळकोट म्हणत तर जागरण खंडेरायाजवळ पोहोचले असे समज वाघ्या-मुरळी आणि जागरणासाठी जमलेल्या श्रोत्यांचा असतो. लंगर तोडण्याचा विधी अतिशय काळजीपूर्वक केला जातो.

जागरणातील उत्तररंगात लावलेले आख्यान संपल्यानंतर लंगर का तोडला जातो याचे सविस्तर वितरण देवाची प्रचात सोपान खुडे पुढीलप्रमाणे करतात. "वाघ्याजवळ कोटंबा आणि लंगर या वस्तू असतात.कोटंबामधील कोट नाम आणि अंबा याचा अर्थ आई असा आहे. थोडक्यात मातृदेवतेचे म्हणजेच स्त्रीत्वाचे लंगर हे प्रतिक आहे. "लंगर" हा "नांगर" या शब्दाशी संबंधित आहे. नांगर हा शेतीच्या बीजवपन करीत असत. त्या काठीच्या हा प्राचीन ऑस्ट्रीक शब्द वापरलेला आहे. लंगर या शब्दाचे मूळ "लक" हा शब्द आहे. म्हणजे लंकर , लंगर प्रक्रियेशी संबंधित आहे. अशा प्रकारे लंगर या शब्दाचा उलगडा सोपान खुडे यांनी केलेला आहे.

समारोप :

वरील विवेचनावरून वाघ्या-मुरळी हे समाजानेच जन्माला घातलेले अपत्य आहे. समाजाच्या मानसिकतेतून काही खातर हा विचार बाहेर आलेला दिसतो. कारण जुन्या काळी देवाला माणसांचा बळी देला जात असे. तसेच प्राचीन काळी देवाला मानुस वाहण्याची परंपरा होती. नंतर त्या प्रथेला पायबंद बसला. आणि कोंबडे, पशुपक्षी, जनावर देवाला बळी देण्याची प्रथा अस्तित्वात आली. गुलाम म्हणून माणसे विकायची परंपरा होती. याचाच मागळातील माणसांची किंमत शून्य होती.

संदर्भ :-

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Bio-Energy from Food Waste : A New Generation Bio-Fuel

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Abstract:

Food waste production worldwide is expected to increase by 33% within the next decade.Significant quantity of global food wastage throughout the value chain right from harvesting to storage, processing and consumption is overlooked due to rapid industrialization and population growth. To meet the escalating demand for fuel and at the same time slowing down the fast-depleting fossil fuel resources through conversion of food waste to bio-based liquid or gaseous fuels appears to be an attractive option. Biofuels are also called as agrofuels i.e., any fuel whose energy is obtained through a process of biological carbon fixation.There are several factors that decide the balance between biofuel and fossil fuel use around the world. Those factors are cost, availability, and food supply. Finding new uses for waste has renewed interests for the solution to the constraints of a resource system. Food waste is indeed an untapped resource with great potential for generating energy. Huge quantities of food waste is generated worldwide and currently its disposal is becoming a challenge. In future, this can contribute to resolve the waste disposal, energy scarcity and energy security problems which could contribute substantially to bio-based economy. Since food waste is considered zero cost material, conversion of food waste into biofuel will provide an innovative food valorisation strategy and it is possible to develop cost-effective commercial methods.By this, energy from food waste can emerge as the next-generation biofuels along with lignocellulose, non-food materials, algal biomass, and energy crops grown on marginal lands.

Keywords: Biofuels, food waste,fossil fuel, agrofuels, algal biomass, and energy crops.

Introduction:

Increasing demand for diesel fuel and growing concerns over global warming and crude oil shortage have advanced the development of renewable alternative fuels with low greenhouse gas emissions. Finding new uses for waste has renewed interests for the solution to the constraints of a resource system. Some one third of all food produced around the worldfor human consumption gets discarded uneaten, and environmentalists, energy analysts and entrepreneurs are beginning to take notice (Mathews, 2008; Dar *et al.,* 2019). The quantity of food loss and waste globally was put "at ~33% of food intended for consumption".This was further broken down per regions around the world and per capital food waste at consumer level as 98-115 kg/year in the North-America and Europe and "6–11 kg/year in sub-Sahara Africa and South/Southeast Asia" (FAO, 2011).The current annual food waste stands at around 1.6 billion tonnes, which is worth around $ 1.2 trillion loss. Out of this, nearly 50%–60% comes from post-consumption waste (leftover). Besides, food waste is causing serious environmental concerns as it contributes to the total global greenhouse gas emissions (Fatemeh and Yassir, 2021).

The ever-increasing food waste from households, retail establishments and food service industry totals 931 MMT annually globally (Mishra *et al.,* 2022).Most of these food wastes are lost along the food supply chain, which is almost all currently landfilled, incineratedordiscarded in most of the cities and places, which causes the public health hazards and diseases like malaria, cholera, typhoid. Inadequate management of wastes like uncontrolled dumping bears several adverse consequences: It not only leads to polluting surface and groundwater through leachate and further promotes the breeding of flies, mosquitoes, rats and other disease bearing vectors (Rajashekhara*et al.,* 2019). Also, it emits unpleasant odour& methane which is a major greenhouse gas contributing to global warming.Reducing waste and better utilization of waste and losses in the value chain is among the means for international climate policy and for transformation to renewable energy. The production of food loss and waste often lead large amount of wastewater and solid waste (Valta*et al.,* 2017).

As petroleum based fuels are finite reserves, demand for biofuels is rapidly growing worldwide.In this context, popular biofuels that are commercially available in various countries are biodiesel, bioethanol and bio-oil. Food waste is indeed an untapped resource with great potential for generating energy. Food wastes is a well-known nonedible source which contain significant amount of lipids, carbohydrates, amino acids, and phosphates, which can be utilized as resources in the production of biofuel.Diverting even just a portion of this waste to so-called waste-to-energy (WTE) systems could free up large amounts of landfill space while powering our vehicles and heating our homes, and thus putting a significant dent in our collective carbon footprint. Perhaps that's why WTE is one of the fastest growing segments of the world's quickly diversifying energy sector.There is also general agreement in the literature that the current status of food waste recycling technologies require fine-tuning to make them economically viable (Sindhu *et al.,* 2019).

Food waste:

Food waste can be raw, cooked, edible and inedible parts generated during production, storage distribution, and consumption of food stuffs. In other words, food waste is the outcome of different food processing practices that have not been reused and are disposed of as waste.Food wastes is a well-known zero-value and non-consumable resourcewhich contain significant amount of lipids, carbohydrates, amino acids, and phosphates, which can be utilized as resources in the production of biofuel (Pleissner*et al.,* 2013).Food wastes also contain wide variety of organic constituents including starches, proteins, oils, fats, nutrients, and natural acids.Carbohydrate, lipid and carbon containing materials present in food waste can be converted to bioethanol, biodiesel and biooil. Lipid extracted from food waste is converted to biodiesel in 95–97% yield. On the other hand, 92–96% bioethanol obtained by fermentation of food waste. Along this line, pyrolysis of food waste can be performed to obtain biooil and biochar.

Food and Agricultural Organization (FAO) defined food loss as, "food produced for human consumption but not eaten by human." It went further to define food loss as "the decrease in the amount or value of food," while food waste is considered as a component of food loss which is referred to as "the disposal or non-food use of food that was intended for consumption along the entire food production and distribution chain, that is, from production to consumer" (FAO, 2013).

Worldwide food loss statistics: Food loss can be attributed to the following main reasons (Dung *et al.,* 2014)

a. Lack of proper planning in food management, as various sectors (e.g. manufacturers, hospitality, lodging, travel and tourism, recreation and wholesalers) try to satisfy consumer's requirements of high quality and quantity supplies.
b. Inadequate production techniques, poor post-production management, lack of suitable infrastructure, processing and packaging.
c. Lack of awareness at the communities and household levels on the impact of food waste on the environment.

Occasionally, food can also be lost due to the interruption of the supply chain by bad weather or natural disasters, such as hurricanes or floods. However, this is not significant when compared to the continuous loss in the household and hospitability sectors, especially in highly populated cities. More specifically, buffets in hotels and restaurants are major contributors to food wastes because in many cases the extra food cannot legally be reused nor donated without following strict health regulations (FoodPrint, 2021;Pirani and Arafat, 2016).

Sources of food waste:

Sources	Example
Residential	Homes, town house, apartments, societies etc…
Commercial	Office cafeteria, shopping malls, hotels, airports, restaurants etc….
Institutional	Gurdwara/Mandir, School, hospitals, prisons, hostels, etc…
Industrial	Lunchroom, cafeteria, kitchen wastes etc… (but not industrial process wastes)

Overview:

Rapid increase in global population and their food ingestion habit plays a major role in generation of food waste (FW). FW includes some part of cooked and uncooked plant waste, animal waste, leftover food and spoiled food etc. Conventionally these wastes are managed by incineration or landfill (Kannah*et al.,* 2020). These techniques demand high cost and it has own demerits. Incineration of FW results in emission of flue gas and pollutes the environment by ash waste. In case of landfill, the improper design pollutes the water source. Hence, there is a need to manage the generated FW using eco-friendly and economically viable techniques. The composition of the FW may differ based on the source of generation. Biofuel or value added products recovery from FW mainly depends on its biochemical composition (*Anon.,* 2013).

Food waste has a significant potential to be employed as a raw material in the production of biofuel through various fermentation processes due to its organic- and nutrient-rich contents. The food waste characters and management have been extensively investigated, and valorization of food waste to biofuels is considered as the most promising strategy(Li and Yang, 2016). Apart from the management of food waste, this strategy can reduce dependency on crude oil, which has an opportunity to stabilize food prices as well as address society's behaviour toward food waste.

In this context, the valorization of food waste to different sorts of biofuels, for example, biodiesel, bioethanol, biohydrogen, bio-oil, biochar, and biomethane by employing well-structured and efficient valorization technologies can be an attractive and viable approach to counter the current global energy crisis and in establishing a sustainable bioeconomy (Dhiman

and Mukherjee, 2020). This type of food waste management not only resolves the serious pollution problem but also helps to reduce the dependency of the energy sector on fossil fuels (Luque and Clarke, 2013).

Also, by making use of a pair of simple chemical processes - hydrothermal liquefaction and anaerobic digestion - we could turn food waste into environmentally friendly biofuel.Hydrothermal liquefaction involves heating food waste under high pressure - essentially pressure-cooking it - to create an oil that can be refined into fuel (Karmee, 2016). Next, the watery food waste left over after the liquefaction undergoes anaerobic digestion, a process in which microbes break down the waste into biogas that is primarily composed of methane and carbon dioxide (*Anon.*, 2017). A simple process flowchart of food waste conversion to energy is given in fig. 1.

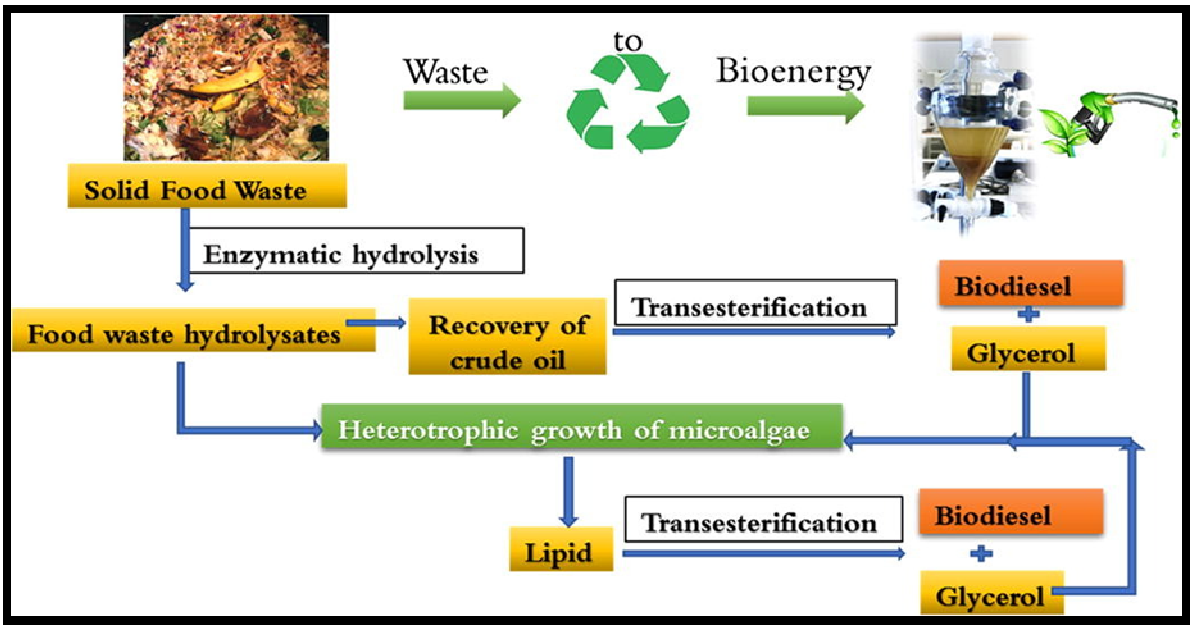


Fig.1: Process of conversion of food waste to energy **Source:**Patel *et al.*(2019)

Currently there are some 800 industrial-scale waste to energy plants in more than three dozen countries around the world, and likely thousands of smaller systems at individual sites. Most employ anaerobic digesters, which make use of microorganisms to break down and convert organic waste into a fuel such as biogas, biodiesel or ethanol. With some 70 percent of food waste around the world still going into landfills, there is a lot of potential feedstock to keep this environmentally friendly carbon neutral fuel source coming (Isah and Ozbay, 2020).However, the implementation of modern food waste management technologies is hindered by the lack of standard processing procedures due to the regional diversity of the food waste characteristics. Besides, there are social and technical challenges associated with the lack of proper post-consumption food waste segregation mechanism at the industrial and community levels, as well as the lack of sufficient research on sustainability and life cycle assessment (LCA) of the food waste management options.

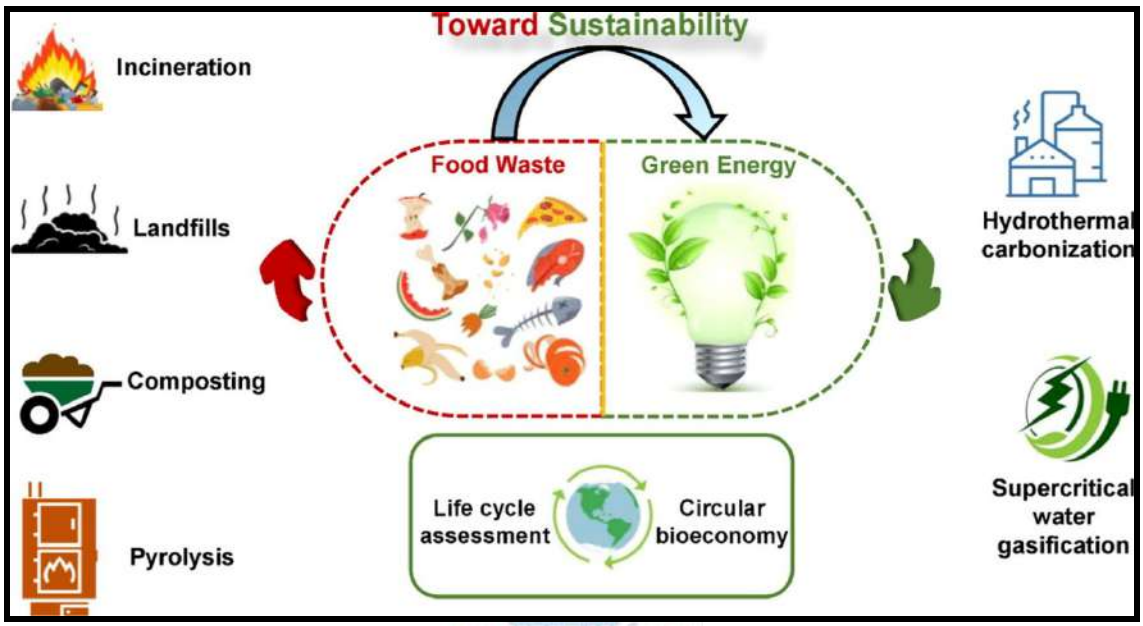
Environmental impact:

Waste to fuel energy recovery is virtually **carbon neutral**, since, by using the bio-oil obtained to power heat engines, the same amount of carbon dioxide is generated that was present in the initial biomass, in turn captured from the atmosphere by plants and fixed in organic matter during photosynthesis. There is thus no need to add additional carbon derived from fossil fuels to

this virtuous cycle. In other words, instead of being released into the atmosphere, the carbon is stored in the **bio-oil** and **biofuel.**

Food waste and spill can play a role as a solution for low carbon transport, assuming that the principles of waste hierarchy are followed. This means that energy use of food waste is the least preferable option after prevention, re-use and recycling. It is, however, more desirable solution than disposal without recovery. Also, waste-to-energy can be diversified and improved for better utilization.

Focusing on sustainability and life cycle assessment through conversion of food waste to energy: Pictorial representation



Source: Aditya *et al.* (2021)

Factors to be considered:

Factors involving in conversion of food wastes to energy involves, current situation of biofuel production, hypothetical barriers of the food waste feedstock, technology readiness and conversion, policies support, demand of the biofuels, community involvement and additional value creation in the economic sector (Hafid*et al.,* 2021).

Meanwhile, extensive research in laboratory and pilot scale for biofuel production from food waste in constructing smart facilities integrating food waste processing and biofuel plant technology, metabolic pathway involved and the policy uncertainty impeding the investment in the large scale is to be foreseen.

Summary:

In the past decade, we have seen technological advancements in motor vehicles that run on renewable energy sources. The increasing threat of fossil fuel depletion coupled with the need to maintain renewable sources continues to push for the demand for biofuel. We live in a world where the global market for biofuels and renewable sources continues to grow in order to maintain the growing population. Our reliance on energy is a global necessity as our government attempts to mitigate the growing issue of climate change as a direct result of increased demand for automobile fuel. The most obvious benefit of replacing fossil fuels is the environmental impact it will have on carbon emissions. Since biofuels burn faster and cleaner

than fossil fuels, it will release greenhouse gases at a lower and slower rate. Secondly, the use of biofuels will allow the economy to reap its benefits.

Conclusion:

"Over the next 25 years, global energy demand will grow by 50 percent, while global oil supply dwindles at a rapid pace. Waste-to-energy is an obvious solution to meet the world's burgeoning energy demand". Biofuel Production, only one step on the path. The real message is not about fuel. Let us build a community that is concerned about mother earth. The problems of today will not be fixed by few people doing big things…they will be fixed by you and us doing small things with a new vision.

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Screening of High Yield Contributing Charactersin Soybean (Glycinemax L.)

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Abstract:

In the present investigation, attempts were made to Screening of high Yield Contributing Characters in soybeaninduce in variety of soybean (Glycine. max. L) JS-335 and DS-228 by employing physical (Gamma rays) and chemical (Ethyl Methane Sulphonate) Mutagens in M2 Generation. Ethyl Methane Sulphonate Gamma ray induces mutagenesis in soybean crop. In both varieties increasing and decreasing high yielding mutation were observed.

A wide spectrum of viable mutants with varying morphological traits could be observed in M2 generation of Soybean. The various types of viable mutants obtained in the Soybean M2 Generation were: - 1. The Branched 2. Tall 3. Dwarf with erect habit 4. Early maturing 5. High yielding 6. Late maturing 7. Short pod 8. Bold seeded 9. Large leaf 10. 4 seeded pod all the concentration of both the mutagens used succeeded in including the different type of viable mutants in Soybean. The frequency of viable mutants showed the highest values at the 0.15% (EMS) and 5KR concentration in varieties JS-335 and 0.20/(EMS) & 20KR concentration in varieties DS-228 respectively. The frequency of viable mutants ranged from 9.42% to 13.77% in EMS 8.00 to 12.45% in EMS and 11.50% in VEMS and 11.50% to 14.26% and 9.45 to 15.96% in GR treatment in Soybean.

Keywords: Ethyl Methane Sulphonate, Mutagenic frequency, spectrum, Gamma Rays.etc

Introduction:

Soybean has an important place in world's oilseed cultivation scenario, due to its high productivity, profitability and vital contribution towards maintaining soil fertility. The crop also has a prominent place as the world's most important seed legume, which contributes 25% to the global vegetable oil production, about two thirds of the world's protein concentrate for livestock feeding and is a valuable ingredient in formulated feeds for poultry and fish. About 85% of the world's soybeans are processed annually into soybean meal and oil. Approximately 98% of the soybean meal is crushed and further processed into animal feed with the balance used to make soy flour and proteins. Of the oil fraction, 95% is consumed as edible oil; the rest is used for industrial products such as fatty acids, soaps and biodiesel. The major soybean producing nations are the United States, Brazil and Argentina. The three countries dominate global production, accounting for 80% of the world's soybean supply Soybean contributes significantly to the Indian edible oil pool. Presently soybean contributes 43 % to the total oilseeds and 25% to the total oil production in the country. Currently, India ranks fourth in respect to production of soybean in the world. The crop helps earn valuable foreign exchange (Rs. 62000 millions in 2012-13) by way of soya meal exports. Soybean has largely been responsible in uplifting farmer's economic status in many pockets of the country. It usually fetches higher income to the farmers owing to the huge export market for soybean de-oiled cake. Agriculture in Maharashtra including allied activities, accounted for 12.4% of the Gross State Domestic Product at current prices in 2011-12 but its role

in State's economy is much wider as agriculture continues to be the main occupation of the state. Around 64.14% of the people are employed in agriculture and allied activities.

Matreials And Methods:

Seeds of these soybean cultivars JS- 335 and DS-228 used in the present investigation were procured from Krishi vidnyan Kendra Baleshwar Taluka –Rahata, District Ahmednagar (Maharashtra) these two cultivar are widely cultivated in Maharashtra. To begin with pilot experiments were conducted to determine the lethal dose (LD_{50}), suitable concentration of the mutagens and duration of treatment for this cultivar of soybean. JS-335 and DS-228 variety of soybean were treated separately with chemical EMS and physical (Gamma radiation) from such experiments it was finally established that concentration of 0.05mM, 10, 15 and 20mM for duration of 12 hours are best suitable for mutagenic treatments for the cultivars of soybean for chemical mutagen treatments, seeds were presoaked in distilled water for 6 hours and subjected to freshly prepared mutagen solutions for 12 hrs. At 25± 2^0C with intermediate shaking. The volume of mutagenic solutions was about 5 times to that of seeds. The seeds, treated with chemical mutagens were thoroughly washed under running tap water for an hour to terminate the reaction of the chemical. For physical mutagen treatment, dry seeds with a moisture content of 10-12% were irradiated with 5KR, 10KR, 15KR 20KR and 25KR from a CO^{60} source available in the department of Biophysics, Government institute of science, Aurangabad (M.S.India).

Every treatment was carried out for 200 seeds. The treated seeds along with control were sown in the field in randomized block design (RBD) in three replications at spacing of 25 cm in rows and 50 cm between rows to rise M_1 generation during Kharif season of 2020. The individually harvested M_1 plants were soon in the field to rise M_2 generation during Kharif season of 2021 in separate rows. The M_2 progeny was raised along with parental varieties (Control) following randomized block design with 3 replication. Each treatment comprised of 2020. M_1 plant progenies and each M_2 progeny row consisted of 10 to 25 plants in three replications. The cultural operation and application of FYM were done as per schedule.

Reseults and Discussion:

Mutation breeding is valuable supplement to the other method of plant breeding in the improvement of crop plants of new architecture, superior biochemical constitutions, suitable growth and development rhythms. Induced mutants have been directly released as new varieties worldwide in several crops. A number of crop varieties have been developed through mutagenesis in India in crop like wheat, rice, soybean, groundnut, cotton, jute, vegetable and ornamental crops. The important aspects of mutation breeding include enhancement of mutation frequency and the alteration of mutation spectrum, which would increase the probability of isolating mutants of economic interest. For the enhancement of mutation frequency and spectrum, the basic information regarding mutagenic sensitivity of the various genotypes, effectiveness of efficiency of physical and chemical mutagens becomes necessary.

Description of Mutants:

At maturity, the plant height in case JS-335 mutant was 67.96% cm. with s spreading habit and no. of branches were the productivity in terms of pod per plants in such mutants was slightly better than the control plants but in case of varieties DS-228 mutant was 61.24 with a spreading habit and no. of branches 6.20 having productivity in terms of pots per plant in such mutants was slightly better than the control plant.Similar result showed by Kaw and Memon

(1979). Kouda & Godoladze (1979) and Nawracala and Konleczny (1991) while Chen (1982) Halvankar (1987) and Harer (1990) observed good amount of hetrosis for this characters

1. Tall Mutant: Tall mutant were recorded in both the cultivars of Soybean. At maturity the cultivar JS-335 attained the mean height 67.96 cm and another cultivar DS-228 attained the mean height 61.24 cm took almost similar number of days for maturity and no. of pod per plant as that of control in M2 generation. The branching of plant result also similar to Rao et.al. (1978) Halvarkar (1987), Root et.al. (1988) and Taware et.al. (1990).

2. Dwarf with erect habit: These mutants shoed an erect habit which made easy them for harvesting the cultivar like DS-335 attained the height of 27.92 cm and having 4-6 branches and other cultivar DS-228 attained the height 27.46 and 3-6 branches. They had short stature and a non-spreading habit. They took comparatively lesser number of days for maturity and showed reduction in number of pod per plants.The dwarf's plant showed in treatment (T_{10}) i.e. 27.46. Similar result showed by Kawand Menon (1979) Kouda & Godoladze (1979) and Nawracale and Konieczay (1991) while Chen (1982) Halvankar (1987) and Harer (1990) observed good amount of neutrons reduced from this characters.

3. Early maturing: There mutants demonstrated a feature of early maturity of plants. In JS-335 mutant attained maturity in 90 to 100 days as against 105 to 115 days in control likewise the varieties DS-228 mutant attained maturity in 85 to 95 days against 90 to 105 days in control. They acquired flowering quite earlier. The productivity in terms of pods per plant was slightly less in mutant than the control plants.

4. High yielding: The Soybean, these mutants showed larger number of pod per plant. In varieties JS-335 an average pod numbers 68.53 and other varieties DS-228 the average pod number per plant was 64.02. Both cultivars with spreading habit. These mutants' revealed slight early flowering as compared with control Ala and Ala (1987b) reported increase in seed weight/plant in M_2 derived from Krapinkon treated with 0.25 dES, but reduced yield in M_3 was observed following 0.01% treated vacancies.

5. Late maturing: These late maturing mutant in Soybean took more number of days to reach maturity as compared with control. The cultivar like JS-335 mutant showed in maturity 105 to 115 days as compared with 100 to 105 days in control plants. The another varieties DS-228 mutant matured in 115 to 120 days as compared with 100 to 110 days in control. They had better height and more number of pods per plant (70 to 100) leading to better productivity.

6. Early Flowering: Flowering is character which plays significant role in altering the life cycle of any plant. The Soybean cultivar JS-335 some mutant's flowers early flowering character in that variety first flowering comes on 28th days from sowing.

7. Late Flowering: Late flowering is another support and mutant due to chemical and physical mutagen. The value of for day to flowering increase on the concentration increased in both varieties. In JS-335 variety the late flowering is obtained the treatment 15 KR & 20 KR was big flowers. But DS-228 variety the late flowering is obtained in treatment EMS-18 hr. 0.10 to 0.15% for 68 hours. So the late maturity is depends on the concentration of mutagen. Delay in flowering has been attributed to delay in germination. (Bianchi et.al. 1968) or slowness in growth of the plant (Iqbal 1972).

8. Short Pod: Pod is very valuable character of this crop. Short pod is reduces the crop yield and bring the crosses to farmer. In Soybean variety JS-335 treatment EMS-12 Hr. (0.10 & 0.15)

showed no. of short pod mutant but in variety DS-228 is showed the treatment EMS-18 hours (0.15 to 0.20%) had short pod i.e. one seed or two seeded.

9. Bold Seeded Mutant: Bold Seeded Mutant showed another supported character. In the Bold Seed gave light amount of protein and oil content. The Bold Seeded plant observed particularity in both varieties. In JS0-335 variety the treatment Gamma rays (15 & 12 KR) the no. of plant were bold seeded. But in variety DS-228 the EMS treatment 18 hr. (0.05%) and 0.10% showed the no. of Bold Seeded Mutant population.

10. Four Seeded Pod Mutant: Four Seeded character is another most valuable character in production of Soybean. It gives the higher yield as compared to the percent one. In variety JS-335 the treatment Gamma rays (10 KR & 14 KR) showed 4 seeded pod mutant. The frequency of that mutant was (0.05%) 5. The DS-228 variety no. of any charge was observed pod Quantitative Characters in M2 generations no. of grain. In JS-335 variety in 10 KR & 15 KR.

(Control)

Fig 07: Field view JS-335

(Control)

Fig 08: Field view DS-228

(0.15%EMS 12Hrs. JS-335)

Fig 09: Early and late maturing mutant JS-335

(15KR DS-228)

Fig 10: Early and late maturing mutant DS-228

(15kR JS-335)

Fig 11: Branched mutant JS-335

(20kR DS-228)

Fig 12: Branched mutant DS-228

(20 kR JS-335)

Fig 13: High yielding mutant

(0.15% EMS12 Hrs. DS-228)

Fig 14: Dwarf with erect mutant

(0.15% EMS 12Hrs. DS-228)

Fig 15: Bold seeded mutant

(15KR JS-335)

Fig 16: 4 Seeded mutant

(20kR JS-335)

Fig 17: Sterile mutant

(20kR JS-335)

Fig 18: Tall mutant

Conclusion:

The investigation on "Gamma ray and Ethyl methane sulphonate (EMS) induced mutation studies in Soybean (Glycine max (L) Merrill)" of cultivar JS-335 and DS-228 was carried out with the objectives to study the micro and macro mutants were observed in both cultivars. The M2 generation was raised June, 2020at Padmashri Vikhe Patil College, Pravaranagar (Loni). The observations were recorded on in both the cultivars of soybean. Both the cultivars JS-335 and DS-228 were Variable types of mutation were found,Early Flowering Mutants, LateFlowering variant, Plant Height Variant, Dwarf Mutant, High yielding variant, branchedhabitatmutant, Bold Seed Mutant, 4SeededPodMutants.

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Literature Review of *Passiflora Edulis* Linn

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Abstract:

The plant Passiflora edulis is aperennial, climber under the family Passifloraceae. The plant is found in tropical regions of America and Asia, bearing purple-colored fruit of 4-5 cm in diameter and weighing 35-45 kg. It's having therapeutically active compounds used for treating diabetes, cancer, etc. The plant can bear 150-180 fruits per year.The farmers yield the highest number of production of fruits and earn the best profit in this crop cultivation. Therefore, it is very essential to know about the potential of this fruit by researching the growth and economic factors for the sake of increasingthe cultivation and production of this fruit.

Keywords: Passiflora edulis, therapeutically, diabetes, cancer.

Introduction:

Passiflora edulis is commonly known as Passion fruit or Passiflora under the family of *Passiflora ceae*originated in Brazil and grown well up to 2000 m in height with an annual rainfall of 1000 mm to 2000 mm in the tropical and sub-tropical regions of America and Asia. In India, passion fruit is found in the states of Himachal Pradesh, Kerala, Manipur, Meghalaya, Mizoram, and Nagaland.

The plant is herbaceous, perennial, healthy and climber producing rounded or ovoid-shapedattractive fruit. It produces solitary flowers located in the leaf axils. The fruit is mostly having tough, soft dark purple-hued rind and faint white specks. Inside, it has orange-colored pulpy juice with 200 to 250 small brown-colored pitted seeds. (Thokchom and Mandal, 2017).It is also known as the climactic fruit, ripening takes place off the plant (***Singh et al., 2006***). It is used in juice, jelly, and ice cream. It is a high-value plant having export potential because of the flavor of its juice (***Patel et al., 2014***).

Biology and Ecology:

Genetics:

The chromosome number reported for *Passiflora edulis* is 2n=18.

Reproduction Biology:

The *Passifloraedulis* opens in the spring season. The fruit is produced in the second year of the plant.*P. edulis* is known as the self-pollinated fruit having a dominant diploid (2n) sporophyte phase in its life cycle.

Physiology:

Passiflora edulis plants can reproduce within after the two years of theirplantation.

Preferred Scientific Name:

Passiflora edulis

Other Scientific Names

- *Passiflora edulis*
- *Passifloraedulisflavicarpa*
- *Passiflora edulis Sims*
- *Passiflora ligularis*
- *Passiflora quadrangularis L.*
- *Passifloramaliformis*

International Common Names

- **India:** Krishna phal
- **Brazil:** Maracuja`
- **Spanish:** Maracuya`
- **Hawaiians:**Liliko`i
- **French:**Grenadille

Local Common Names

Grenadella, Grenadine, Passion flower, Purple granadilla, Purple passion fruit.

Taxonomic Classification of Passion Fruit

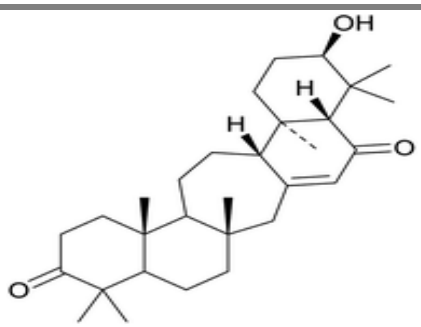
- **Domain:** Eukaryote
- **Kingdom:** Plantae
- **Sub-kingdom:** Tracheobionta
- **Superdivision:** Spermatophyta
- **Division:** Magnoliophyta
- **Class:** Magnaliopsida
- **Sub- class:** Dilleniidae
- **Order:** Malpighiales / Violales
- **Family:** Passifloraceae
- **Genus:** *Passiflora*
- **Species:** *edulis*

Cultivation Condition

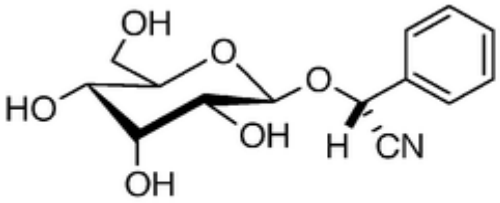
For the cultivation of *P. edulis,*thesub-tropical climatic condition is preferred.It requires an ideal temperature of 20° to 30° C and annual rainfall from 1000 mm to 2000 mm for its growth and flowering. The pH of the soil must be neutral. The propagation is doneby seeds, cuttings, and grafting on immune rootstocks. The nutrition required for the fruit growth is N 150, P 100, and K 200 kg/ha. The nutrition must be applied in the splits after the fruit is harvested.
There is Cross-pollination which takes place by the honeybees after the 1 to 2 hours of the anthesis, which takes place in the early morning. The fruit blooms in the early summer and is matured between 70-80 days of flowering. The yielding of the fruits starts after the 1 – 2 years of the plantation. The very healthy plant can produce a maximum of 150 – 180 fruits per year. (Thokchom and Mandal,2017)

Chemical Composition

The plant P.edulis is reported to have chemical constituents likecitric acid, malic acid, polyphenols, triterpenes, amino acids, flavonoids, and triterpenoids(Xu *et al.,*2013; Zhang *etal.,* 2013; Yuan *et al.,*2017; Hu *et al.,*2018). It also containsbenzylic β-D-allopyranosides **1** and 2.



Triterpenoids



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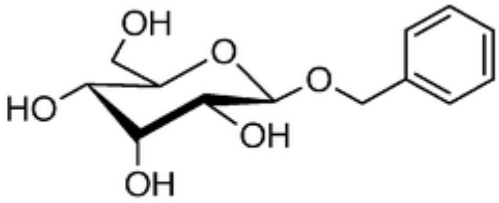

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Uses

P. edulis is a medicinal plant, known as the good anxiolytic. It is very beneficial for health and balanced nutrition. Recently, more than 110 phytochemical constituents are found in the different parts of the plant, flavonoids and triterpenoids held the largest share. (He *et al.,*2020). This fruit species is sold in fresh fruit markets and then used in juice processing (Zas and John,2016). This plant consists of anticancer, antimicrobial, antidiabetic, antisedative, antioxidant properties, and various remedial measures for curing conditions like respiratory disorder called asthma. The plant parts also help in treating ulcers,and hemorrhoids, such as sedatives.

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Review of *Hylocereus Undatus* Haworth (Dragon Fruit) : Medicinal Approach

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Abstract:

Our environment is filled with a broad range of plants, many of which have therapeutic capabilities. The evolution of human culture has benefited greatly from the use of these therapeutic herbs. Hylocereus Undatus Haworth belongs to the family Cactaceae, it is frequently referred to as "dragon fruit" or "pitaya." It was initially used as an ornamental plant but later became a new fruit crop due to its market value and health advantages. It is becoming more and more well-known as a sugar fruit due to its high nutrient content and antioxidant properties. It helps in the prevention of cardiovascular diseases, and controlling blood sugar levels thus considered to be important fruit for diabetic patients. It plays a vital role in fighting against cough, asthma, wound healing, etc.

Keywords: Hylocereus Undatus, Asthma, Antioxidant, dragon fruit.

Introduction:

The sugared fruit known as dragon fruit, which was just recently introduced to India, is seen as a potential and lucrative fruit crop. Originating in Mexico and South America as a fruit crop. Since at least 100 years ago, it has been grown in Vietnam, then by the French. It is a long-day plant known as "Nobel Woman" or "Queen of the Night" because of its lovely night-blooming flower. The fruit is also known as Jesus in the Cradle, Night Blooming Cereus, Dragon fruit, Pithaya, Strawberry Pear, and Bell of the Night. Because of the bracts or scales on the fruit's skin, it is called a pitaya. Pitaya is a name that means "the scaly fruit." It has decorative significance because of the grandeur of its big (25 cm), creamy-white flowers that bloom at night. The biggest advantage of this crop is that once planted, it will grow for about 20 years, and 1 hectare could accommodate about 800 dragon fruit plants. It is being grown commercially in Israel, Vietnam, Taiwan, Nicaragua, Australia, the United States, and recently in India. (Perween *et al.,*2018, Carrillo-Salazar, 2012, Hitendraprasad et al., 2020)

Recently, dragon fruit farming was established in India, which is heavily reliant on imports of ordinary fruits and vegetables in India to satisfy their nutrient requirements. This fruit is also recognized for its antioxidant and antiproliferation capabilities with phenolic and polyphenolic substances (Tenore *et al.,* 2012, Wu,2006, Nurliyana *et al.,*2010)

Biology and Ecology

Genetics

It is a diploid species and the chromosome number reported for it is 2n=22 (Tel-Zur *et al.,* 2004)

Reproduction Biology

Hylocereus Undatus Haworth is a hermaphroditic flower. They open at the Mexico nocturnal visitors include the nectar-feeding bats *Leptonycteris curasoe* and *Choeronycteris mexicana* which are the main pollinators of this species. (Kakade *et al.,* 2019).

Flowers are hermaphroditic; nevertheless, some pitaya species and cultivars self-incompatible. The extremely showy, edible, white flowers are very large, very fragrant, nocturnal, bell-formed, and maybe 3-4 inches long and 8-9 inches wide. Cream-colored stamens and lobed stigmas Normally, 3 to 5 spherical buttons form on the stem border; two to three of them can develop into flower buds in around 13 days. After 16-17 days, when anthesis occurs, the light green, cylindrical flower buds grow to be around 11 inches long. (Pushpakumara *et al.,* 2006, N'Guyen, 1996)

The dragon fruit itself has an oval shape, is 4 to 9 cm thick, and is 6 to 12 cm long. It is normally red in color and contains numerous bracteoles. Dragon fruit has a physical structure that is loaded with areola (protrusions) where the thorns develop, with 2 to 5 spines ranging in size from 1-3 cm in each areola. Dragon fruit contains extremely few seeds that are black in the flesh. Dragon fruit typically weighs between 150 to 600 g. Dragon fruit flesh is pink, white, red, or yellow in hue and tastes tart and sweet. Dragon fruit thrives in arid, tropical, and subtropical areas with temperatures reaching 40 degrees Celsius. Even in moist tropical settings, this dragon fruit plant will thrive, but at a higher risk. This dragon fruit will appear on plants with physical shapes, such as cacti, 30-50 days following the initial blossoming. This dragon fruit plant is often harvested 5-6 times each year. (Sonawane, 2017, Xu *et al.,* 2016)

Preferred Scientific Name

- *Hylocereus Undatus* Haworth

Other Scientific Names:

- Cactus triangularis
- Cereus triangularis
- Cereus undatus
- Cereus tricostatus
- Hylocereus tricostat (Mizrahi and Nerd, 1999)

International Common Names

- **English:** belle-of-the-night, dragon-fruit, moonlight cactus, night-blooming cereus, queen-of-the-night, red pitaya, strawberry-pear
- **French:** pitahaya rouge, pitaya
- **German:** Distelbirne
- **Spanish:** chacam, chak-wob, junco tapatio, pitahaya, pitahaya dulce, pitahaya orejona, reina de la noche, tasajo, zacamb.

Local Common Names

Dragon fruit, Pitaya, pitahaya, night-blooming cereus, strawberry pear, Belle of the night, Cinderella plant.

Taxonomic Classification of Dragon Fruit

- Domain: Eukaryota
- Kingdom: Plantae
- Subkingdom: Tracheobionta
- Superdivision: Spermatophyta
- Division: Magnoliopsida

- Subclass: Caryophyllidae
- Order: Caryophyllales
- Family: Cactaceae
- Subfamily: Cereoideae
- Genus: *Hylocereus*

Nutrients Composition in Dragon Fruits:

Particulars	Average value (g/100g edible portion)	Particulars	Average value (mg/100g edible portion)
Moisture	85.30	Vitamin C	3.0
Crude protein	1.10	Thiamin	0.028-0.043
Fat	0.57	Riboflavin	0.043-0.045
Glucose	5.70	Niacin	2.8
Fructose	3.20	Vitamin A	0.0111
Sucrose	Not detected	Calcium	10.2
Maltose	Not detected	Iron	3.37
Sorbitol	0.33	Magnecium	38.9
Carbohydrate	11.20	Phosphorus	27.5
crude fibre	1.34	Potasium	272.0
Ash	0.56	Sodium	8.9
Energy	67.70kcal	Zinc	0.35

Cultivation Technique of Dragon Fruit:

Cultivation of Dragon fruit already started in a different part of West Bengal with many success stories of the farmer from different regions. However, it was first successfully grown in Gujrat state. Many nurserymen started propagation for raising planting material of Dragon fruit. High density commercial plantings are possible with 1100–1350 plants per hectare. The full commercial production of a plant can take up to five years, at which point yields of 20 to 30 tons per hectare can be anticipated. *Hylocereus* is specifically designed to measure in tropical settings with little or no rain. After flowering, the cactus-like trees that bear dragon fruit set 30 to 50 days later and may normally go through 5 to 6 rounds of harvesting annually. It may be grown as a weed for free in many places, and some nations consider it an invasive cuckoo weed. (Pandya *et al.,* 2020).

Photochemistry:

Initial phytochemical analysis revealed the presence of alkaloids, saponins, terpenoids, oils, flavonoids, tannins, phenols, carbohydrates, coumarins, and proteins in the methanol and water extract of pitaya or dragon fruit seeds (Sushmitha *et al.,* 2018). Vitamin B1, B2, B3, and vitamin C, as well as protein, fat, carbohydrate, crude fiber, thiamin, niacin, pyridoxine, cobalamin, glucose, phenolic, betacyanins, polyphenol, carotene, phosphorus, iron, and Phyto-

albumin, are all abundant in *Hylocereus undatus* (Le Bellec *et al.,* 2006). It has a high concentration of Phyto-albumins, which are highly prized for their antioxidant effects. (Mahattanatawee *et al.,* 2006, Tenore *et al.,* 2012). Pitaya includes phenolic chemicals, alkaloids, tannins, flavonoids, steroids, proteins, and carbohydrates. (Mahdi *et al.,* 2018)

There are cholinesterase inhibitor alkaloids like donepezil, tacrine, rivastigmine, and quinacrine that can be used to treat Alzheimer's disease. Like phenylpropanoids, which are also contained in both extracts, coumarins have anti-inflammatory, antioxidant, anti-bacterial, anti-tubercular, anti-fungal, and anti-viral properties. Lupane glycine, betulinic acid, and oleanolic acid are examples of saponins that can be utilized to treat type 2 diabetes as well as chronic kidney disease. Omega-3 fatty acids, conjugated linoleic acids, phytosterols, and medium-chain triglycerides are present in the oil of pitaya seeds and are helpful in the treatment of obesity and bone health. (Joshi and Prabhakar, 2020)

Conclusion:

Dragon fruit owing to its rich nutrient contents and antioxidant properties is gaining popularity as a super fruit. The burgeoning population and the health concern people are showing interest in this fruit due to its medicinal property and health benefits. It requires very less water for growth and development. The fruit of *H. undatus* is a potentially useful source of complementary medicine that works as an antioxidant, anticancer, hypocholesterolemic, cardio-protective, antibacterial, and prebiotic agent. The fruit is made up of several different chemical components, including sugar, crude fiber, flavonoids, thiamin, niacin, pyridoxine, cobalamin, glucose, phenolics, betacyanins, polyphenols, carotene, phosphorus, iron, and Phyto-albumin.

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Selection of Physiologically and Genetically Superior F_1progenies of Rice for Drought Tolerance Under Flooding and Moisture Condition

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Abstract:

In this study, a number of 143 F_1 rice seeds derived from a cross between ADT37 and CR Dhan 801 were used for evaluating their performance to drought stress at seedling stage under flooding and moisture condition. More number of F_1 seedlings grown under moisture condition were noted to be tolerant to drought stress when compare to seedlings of flooding. The value of drought tolerance degree was high in F_1 seedlings of moisture condition. Heterosis percentagealsowas recorded as high in many F_1 seedlings for mid and better parent value under moisture condition. In genetic analysis, percentage of genetic (Vg) and phenotypic variation(Vp) was found to be high in tolerant seedlings of moisture condition.In case of genotypic (GCV) and phenotypic coefficient of variance (PCV)high percentage was registered in susceptible and tolerant seedlings of flooding and moisture condition, respectively. Heredity percentage was high in susceptible and moderate tolerant seedlings of flooding and moisture condition, respectively. In this study, it is found that more number of F_1 seedlings is associated with drought tolerance at physiological and genetical level under moisture condition when compare to flooding. These superior rice lines could be used for further drought improvement programme.

Keywords: ADT37, CR Dhan 801, Drought stress, Heterosis, Heredity, drought tolerance degree.

Introduction:

Rice crop (*Oryza sativa* L.) is cultivated in a wide range of varying environments worldwide and therefore, effect of variable rainfall is associated with impact of drought on rice production. Since rice is highly vulnerable to water stress, it accounts for several morphological changes such as plant height reduction, leaf rolling, leaf senescence, etc. at different growth stages in response to drought stress (Henry *et al.,* 2016; Kumar *et al.,* 2015). Potentially, the most critical stage of rice growth is at the time of seed germination and early seedling growth for water stress (Ahmad *et al.,* 2009). Nowadays more than 80 percent of available water is used only for irrigated agriculture sector worldwide. However, over the years, pressures are starting to mount demands from other stakeholders also for more water than the use of water in agriculture. This situation will affect the production of food, fodder and feed adversely. In many developing countries, global water resources are dwindling at an alarming rate recently. In Tamil Nadu state of India, the Cauvery delta areas face a cycle of drought and flood intensively and there was a report on decline in the overall rainfall between 1974 and 2014 in these areas. And, these areas have received only 168 mm instead of 1000 mm per year in 2016. Hence, only way to manage agricultural drought for increasing agricultural production is genetic improvement of crops for drought tolerance. Here, performance of F_1 rice lines derived from a cross (ADT 37 x CR Dhan 801) to drought stress at seedling stage was evaluated under flooding and moisture condition.

Materials and Methods:

Source of rice seeds

A small quantity of rice seeds of ADT 37 from Tamilnadu Rice Research Institute (TRRI), Aduthurai, Tamilnadu state and CR Dhan 801rice seeds from National Rice Research Institute (NRRI), Cuttack, Odisha state were obtained.

Development of F_1 generation:

In the cross-pollination, a rice variety, ADT37 was used as female parent (recurrent parent) and CR Dhan 801 as male parent (donor). The male parent contains drought tolerant three quantitative trait locus (QTLs), DTY 1.1, 2.1 and 3.1. The F_1 generation was derived through cross-pollination by transferring anthers from male parent to female parent.

Experiment design and Evaluation for drought tolerance at seedling stage:

In this study, some amount seeds from F_1 generation were germinated along with both parental lines in cupsand the seedlings were transferred to pots. Here, two types of experiments were conducted in Net house of college campus. In one experiment, seedlings of F_1 and parental lines were grown under flooding condition and in another experiment, these seedlings were grown under moisture condition in big plastic pots. At 30 days-old-seedlings stage, drought stress was imposed on seedlings by withholding water irrigation in both experiments for 15 days. After stress period, seedlings were re-irrigated and drought scoring was done according to IRRI standard scale for drought tolerance (IRRI, 1996) (0-Highly tolerance; 1-Toerance; 3-Moderately tolerance; 5-Moderately susceptible; 7-Susceptibe; 9-Highly susceptible).

Drought tolerant degree (DTD) :

DTD is defined as the mean of the ratios of green leaf length to total leaf length of the top three leaves in every plant after severe drought treatment. DTD values thus vary from zero to one. The green leaf length and the total leaf length of the first leaf are designated as F1 and F2, respectively. Similarly, the green leaf length and the total leaf length of the second leaf are separately designated as S1 and S2, and those of the third leaf as T1 and T2. The untreated control cultivars were handled in the same way to obtain their DTD values(Xiaofeng, et al., 2018). The DTD value ofeach material was calculated by the following formula:

$$Xj = \frac{1}{N} \sum_{i=1}^{n} [(F1/F2 + S1/S2 + T1/T2)/3]$$

$$\text{DTD value} = (X_I + X_{II} + X_{III})/3$$

Heterosis:

Study of Heterosis was done according to Turner (1953) for drought tolerance and grain yield characters as follows:

Heterosis over mid parent (H1) $HMP(\%) = \frac{F1 - MP}{MP} \times 100$

Heterosis over better parent (H2) $HBP(\%) = \frac{F1 - BP}{BP} \times 100$

Where, $F1$ = mean of $F1$, MP = mean of the two parents and BP = mean of the better parent.

Heredity:

The GCV (Genotypic coefficient of variance) and PCV (Phenotypic coefficient of variance) values were computed as per Burton and De vane (1953).

Genotypic and phenotypic variances were calculated as follows:

$\sigma 2\ g = \frac{MS1 - MS2}{r}$

$\sigma 2\ ph = \frac{MS1}{r}$

where $\sigma^2 g$ is genotypic variance; $\sigma^2 ph$ is phenotypic variance; MS1 is mean square for the entries; MS2 is mean square for the residuals; and r is replication.

Genotypic coefficient of variance (GCV) and phenotypic coefficient of variance (PCV) were determined as follows:

$GCV\% = \frac{\sqrt{\sigma 2 g}}{X} * 100,$

$PCV\% = \frac{\sqrt{\sigma 2\ ph}}{X} * 100,$

where GCV is genotypic coefficient of variance; PCV is phenotypic coefficient of variance; $\sigma 2\ g$ is genotypic variance; $\sigma 2$ ph is phenotypic variance; and X is sample mean.Heritability as per cent of mean was estimated following the method of Johnson *et al.* (1955).

Results:

Development of F_1 generation:

A number of 289F_1 seeds were derived through a cross between ADT37 and CR Dhan 801. Among them, a 50% of seeds were used for evaluating their performance under drought stress condition at seedling stage.

Drought tolerance Score:

In drought screening, seedlings of F_1generation and parental lines grown under flooding and moisture condition showed adifferential reaction to drought stress in the first three leaves of the plant (Table-1; Fig.1). Under flooding, 5.17% of F_1 plants was noted to score 9 (highly susceptible) followed by 15.51% to score 7 (susceptible), 34.48%to score 5 (moderately susceptible), 15.51% to score 3 (moderately tolerance), 22.41%to score 1 (tolerance) and 6.89% to score 0 (highly tolerance)1st leaf from top of the plant among 54 F_1 plants.For 2nd leaf, 25.86%of F1 plants to score 9, 27.58% to score 7, 31.03% to score 5, 8.62% to score 3. 3.44% to score 1 and 3.44% to score 0 were noted. For 3rd leaf, 84.48% F_1 plants accounted to score 9 followed by 0% toscore 0% to score 5, 0% to score 3, 0% to score 1 and 0% to score 0.Under moisture condition, in 84 F_1 plants, 98.82%, 0%, 0%,1.17%, 0% and 0% seedlings were registered to score 0, 1, 3, 5, 7 and 9, respectively, for 1st leaf. For 2nd leaf, 18.82%, 0%, 12.94%, 16.47%, 35.29%, and 16.47%, to score 0, 1, 3, 5, 7 and 9, respectively, For 3rd leaf, all 84 seedlings were grouped to score 9 (Fig.2).

DTD value for drought tolerance:

Drought score of F_1 seedlings and parental lines are interpreted with drought tolerance degree as shown in the Table-1. Under flooding condition, the DTD value in donor and recurrent parent was in the value of 0.31 and 0.62, respectively and the DTD value of F_1 population ranged from 0.10 to 0.74.Among 58 F1 progenies, 68.96% and 13.79% F_1 progenieswere more valuethan ADT37 and CR Dhan 801, respectively. Under moisture condition, the DTD value was 0.50 in ADT37 and 0.76 CR Dhan 801. In F1 progenies, this value ranged from 0.33 to 0.72 and

among them, 42.85% progenies had higher value than ADT37, but no one to CR Dhan 801 (Table-1; Fig.3).

Heterosis:

Heterosis study conducted for drought tolerant and susceptible rice seedlings is mentioned in the Table-1. Under flooding, highest percent of heterosis for mid and better parentin F_1 population was 60.86 and 138.70, respectively and the lowest percent was -78.26 for mid parent and-67.74 for better parent. Under moisture condition, the maximum percent of mid-parent heterosis was 18.03 and the minimum percent was -63.93. In better parent heterosis, highest and lowest percent was registered to44.0 and -56.0, respectively.

Heredity:

Data for the analysis of genetic variations in the F_1 population is given in the Table-2. In the present investigation for drought tolerance in the F_1 populationof flooding, the percent of genetic variation (Vg) ranged from 0.23 to 5.26 and the highest and lowest variation was noted in between 0.0 and 0.10 and 0.31 and 0.40 DTD value, respectively.Under moisture condition, the percent of genetic variation (Vg) ranged from -2.04 to 16.95 in F_1 population and the highest and lowest variation was noted in between 0.71-0.80 and 0.41-0.50 DTD value, respectively. In the phenotypic variation (Vp) under flooding, the maximum and minimum percent was 7.64 and 0.63between 0.01and 0.10 and 0.31and 0.40 DTD value, respectively.Under moisture condition, the maximum percent of phenotypic variation (Vp) of F_1 population was 18.33in between 0.41and 0.50 and minimum percent was 1.07 between 0.21 and 0.30 DTD value.

In case of GCV, highest percent in F_1 population under flooding was noted to 47.95in between 0.0and 0.10 DTD valueand lowest percent was 0.0 inbetween 0.71 and 0.80 DTD value.Under moisture condition, highest and lowest percent of GCV was noted to 94.80 % and 0.0% in F_1progenies having DTD value in the range of 0.21 - 0.30and 0.71-0.80 value, respectively. The percentage of PCV was high (96.95%) in the range of 0.71-0.80 DTD values andlow (18.42) in between 0.31 and 0.40 under flooding.Under moisture condition,maximum PCV percentwas notedto 101.98in F_1 plants with DTD value in the range of 0.21-0.30 and minimum percentwas noted to 15.29 in between 0.41and 0.50. In heredity study in F_1 population under flooding, high percentage was noted to 68.84 in F_1 plants having DTD values between 0.31-0.40 and low to -54.25in plants with DTD values between 0.71 and 0.80.Under moisture condition, maximum heredity percent was noted to 92.19% in between 0.41-0.50 and minimum percent (17.75) in between 0.21and 0.30 DTD value.

Discussion:

Drought scoring is an one of the primary criteria for selection of drought tolerant rice genotypes (IRRI, 2014) and leaf rolling with tip drying is used for scoring drought tolerance as one of the acclimation responses of rice as well as a criterion for scoring drought tolerance (Kadioglu and Terzi, 2007). In this study, the performance of F_1 rice seedlings in response to drought stress was unique as well as similar under flooding and moisture condition. In the evaluation of three leaves, it was noticed that there was difference in the drought response among F_1progenies grown under flooding and moisture condition in 1st and 2nd leaf compared to 3rd leaf. Here, more than 90 per cent of the F_1 progenies along with both parental lines have showed highly susceptible reaction to the 3rd leaf under both conditions. The impact of drought stress might be stronger in the older leaves when compare to young leaves and it was difficult to

identify number of tolerance plants in older leaf. Besides, we found the differential reactions of F_1progenies to drought stress in 1st and 2nd leaf for flooding and moisture condition, respectively. In this case, the F_1 progeniescould easily be grouped into highly tolerance, tolerance and moderately tolerance, susceptible and highly susceptible. Moreover, in this evaluation, we could select more number of highly tolerant plants from F_1 plants grown under moisture condition rather than flooding.In the DTD evaluation, F_1 progeniesaccounted for highly tolerant and susceptible reaction are correlated with high and low DTD value, respectively. For example, F_1 plant (#F1-57) having lowest DTD value (0.10) is matched with score 7-9-9 (S-HS-HS) of 3 leaves and F_1 plant (#F_1-11) having highest DTD value (0.74) with score 1-3-7 (T-MT-S). Thus, it reveals that the lowest and highest DTD value correlates with plant susceptibility and tolerance, respectively. This result coincides with a previous study on screening of rice genotypes for drought tolerance (Xiaofeng, et al. 2017). In this study, more number of F_1 plants with high DTD value was noted under moisture condition when compare to flooding.

Heterosis is described as the superiority of an F_1 hybrid over its both parents. In this study, heterosis study was carried out for each F_1 plant andamong 58 F_1 progenies under flooding, 36.20 % and 72.41 % of F_1 plants showed positiveheterosis to mid-parent and better parent, respectively. Under moisture condition, 28.23 % and 48.23 % of F_1 plants among 85 F_1 plants accounted for positive heterosisto mid and better parent, respectively. Here, the positive percentage of heterosis was high for better parent rather than mid parent under both conditions. Positive heterosisindicatesclose relationship with drought stress tolerance when compare to negative heterosis. The number of F_1 plants with positive heterosis of both mid and better parents was higher under moisture condition rather than flooding condition. Moreover, it is observed that the negative and positive heterosis is associated with less and more DTD value, respectively.

In this study, percent of phenotypic variation is recorded to be more than that of genotypic variation under both conditions and the variation of Vg and Vp is noted to be higher in F_1 population grown under moisture condition than that of flooding condition. According to Adhikari, et al. (2018), high phenotypic values are associated with high genotypic variations and less environmental variations and low values are vice-versa. Here, high value of PCV and GCV is correlated with less DTD values under both conditions and high value for drought tolerance is associated with the wide variability for the trait.In a previous study, it is reported that the higher percentage of PCV is associated with the environment influence on the expression of character rather than genes, whereas the higher percent of GCV is a significant contribution of environment and genotypes for grain yield (Massaoudou, et al., 2018). The higher PCV versus GCV indicates a significant contribution of environment and genotypes by environment interaction in the expression of drought tolerance in both conditions. Similar results have been reported on cultivated sorghum by Bello et al. (2007) in Nigeria. The estimates of heritability reflect the values of phenotypic variations and therefore, low heritability helps to remove the ineffective rice line for a particular character. In this study, we found that F_1 progenies having more DTD value (0.41 and 0.60) have accounted for low heritability percentage (0.0-14) and high heritability (60-86%) was in plants having less DTD value (in between 0.0 and 0.40) under flooding. In case of moisture condition, the percent of heritability was high in plants having both more DTD values (0.31-0.70). The high heritability observed for drought tolerance character indicates the predominance of both additive and dominant gene effects in the inheritance of the character. High heritability is revealed the major role of additive gene action in the genetic

control of this trait. Similar results were also reported by Revathi, et al. 2016, Nandeshwaret al.(2010) and Adhikari, et al. (2018). In this study, the percentage of genetic inheritance is more or less similar in F_1 progenies having more and low DTD value under flooding whereas, under moisture conditionit is high in F_1 progenies associated with more DTD value and vice-versa. The determination of the heritability is very important one than the coefficient of variation which is only associated with the extent of total variability present for a character (Lakshmana et al. 2009; Govindaraj, et al. 2011).

In the present study, these results reveal that rice seedlings grown under water limited (moisture) condition could able to improve its genetics in response to drought stress rather than seedlings in flood. In conclusion, most of the F_1 seedlings grown under flooding and moisture condition were susceptible and tolerant to drought stress, respectively. In case of DTD value, Vp, Vg, PCV, GCV and Heredity, F_1 seedlings grown under moisture condition have accounted for higher value rather than that of grown under flooding. This is one of the ways to selected superior rice line at early stage of rice growth and further molecular confirmation of selected seedlings may be utilized for future breeding program for development of drought tolerance lines.

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Table-1 shows the IRRI SES Score, DTD value and Heterosis for drought tolerance in F_1 population under flooding and moisture condition.

Geno type	Flooding				Heterosis		Geno type	Moisture				Heterosis	
	Leaf Position				MP	BP		Leaf Position				MP	BP
	1st Leaf score	2nd Leaf score	3rd Leaf score	DTD Value				1st Leaf score	2nd Leaf score	3rd Leaf score	DTD Value		
D	5	7	9	0.31			D	0	5	9	0.50		

RP	0	5	7	0.62			RP	0	0	5	0.76		
F_{1-1}	7	7	9	0.27	-41.30	-12.90	F_{1-59}	0	5	9	0.51	-16.39	2
F_{1-2}	3	9	9	0.37	-19.56	19.35	F_{1-60}	0	7	9	0.46	-24.59	-8
F_{1-3}	5	5	9	0.46	0.0	48.38	F_{1-61}	0	3	9	0.61	0	22
F_{1-4}	1	7	9	0.48	4.34	54.83	F_{1-62}	0	7	9	0.43	-29.50	-14
F_{1-5}	3	7	9	0.44	-4.34	41.93	F_{1-63}	0	7	9	0.43	-29.50	-14
F_{1-6}	3	7	9	0.43	-6.52	38.70	F_{1-64}	0	0	9	0.66	8.19	32
F_{1-7}	5	7	9	0.37	-19.56	19.35	F_{1-65}	0	7	9	0.46	-24.59	-8
F_{1-8}	5	7	9	0.27	-41.30	-12.90	F_{1-66}	0	5	9	0.56	-8.19	12
F_{1-9}	1	3	7	0.69	50.00	122.58	F_{1-67}	0	7	9	0.49	-19.67	-2
F_{1-10}	5	5	9	0.34	-26.08	9.67	F_{1-68}	0	7	9	0.44	-27.86	-12
F_{1-11}	1	3	7	0.74	60.86	138.70	F_{1-69}	0	0	9	0.66	8.19	32
F_{1-12}	5	5	7	0.53	15.21	70.96	F_{1-70}	0	0	9	0.66	8.19	32
F_{1-13}	1	7	9	0.47	2.17	51.61	F_{1-71}	0	3	9	0.64	4.91	28
F_{1-14}	1	5	7	0.71	54.34	129.03	F_{1-72}	0	7	9	0.48	-21.31	-4
F_{1-15}	5	5	9	0.41	-10.86	32.25	F_{1-73}	0	3	9	0.65	6.55	30
F_{1-16}	1	5	9	0.52	13.04	67.74	F_{1-74}	0	0	9	0.66	8.19	32
F_{1-17}	1	7	7	0.63	36.95	103.22	F_{1-75}	0	0	9	0.66	8.19	32
F_{1-18}	5	5	9	0.38	-17.39	22.58	F_{1-76}	0	0	9	0.66	8.19	32
F_{1-19}	1	7	9	0.45	-2.17	45.16	F_{1-77}	0	9	9	0.33	-45.90	-34
F_{1-20}	1	5	7	0.67	45.65	116.12	F_{1-78}	0	5	9	0.52	-14.75	4
F_{1-21}	1	5	9	0.59	28.26	90.32	F_{1-79}	0	9	9	0.40	-34.42	-20
F_{1-22}	0	5	7	0.70	52.17	125.80	F_{1-80}	0	3	9	0.60	-1.63	20
F_{1-23}	0	5	9	0.56	21.73	80.64	F_{1-81}	0	5	9	0.50	-18.03	0
F_{1-24}	0	5	9	0.52	13.04	67.74	F_{1-82}	0	7	9	0.45	-26.22	-10
F_{1-25}	5	5	9	0.41	-10.86	32.25	F_{1-83}	0	5	9	0.52	-14.75	4
F_{1-26}	1	3	7	0.67	45.65	116.12	F_{1-84}	0	7	9	0.41	-32.78	-18
F_{1-27}	0	1	9	0.70	52.17	125.80	F_{1-85}	0	7	9	0.46	-24.59	-8
F_{1-28}	9	0	7	0.18	-60.86	-41.93	F_{1-86}	0	9	9	0.41	-32.78	-18
F_{1-29}	3	9	9	0.35	-23.91	12.90	F_{1-87}	5	7	9	0.33	-45.90	-34
F_{1-30}	9	1	9	0.34	-26.08	9.67	F_{1-88}	0	3	9	0.61	0	22
F_{1-31}	3	5	9	0.51	10.86	64.51	F_{1-89}	0	7	9	0.41	-32.78	-18
F_{1-32}	7	9	9	0.13	-71.73	-58.06	F_{1-90}	0	5	9	0.57	-6.55	14
F_{1-33}	7	7	9	0.23	-50.00	-25.80	F_{1-91}	0	7	9	0.44	-27.86	-12
F_{1-34}	7	9	9	0.24	-47.82	-22.58	F_{1-92}	0	9	9	0.33	-45.90	-34

F_{1-35}	3	9	9	0.32	-30.43	3.22	F_{1-93}	0	5	9	0.52	-14.75	4
F_{1-36}	5	3	9	0.42	-8.69	35.48	F_{1-94}	7	7	9	0.22	-63.93	-56
F_{1-37}	5	7	9	0.39	-15.21	25.80	F_{1-95}	0	5	9	0.54	-11.47	8
F_{1-38}	5	7	9	0.31	-32.60	0.00	F_{1-96}	0	0	9	0.66	8.19	32
F_{1-39}	5	0	9	0.53	15.21	70.96	F_{1-97}	0	9	9	0.40	-34.42	-20
F_{1-40}	5	3	9	0.48	4.34	54.83	F_{1-98}	0	7	9	0.47	-22.95	-6
F_{1-41}	5	7	9	0.39	-15.21	25.80	F_{1-99}	0	7	9	0.47	-22.95	-6
F_{1-42}	3	5	9	0.44	-4.34	41.93	F_{1-100}	0	0	9	0.66	8.19	32
F_{1-43}	5	9	9	0.16	-65.21	-48.38	F_{1-101}	0	3	9	0.58	-4.91	16
F_{1-44}	3	7	9	0.40	-13.04	29.03	F_{1-102}	0	0	9	0.66	8.19	32
F_{1-45}	7	9	9	0.21	-54.34	-32.25	F_{1-103}	0	3	9	0.65	6.55	30
F_{1-46}	9	5	9	0.23	-50.00	-25.80	F_{1-104}	0	3	9	0.65	6.55	30
F_{1-47}	5	7	9	0.32	-30.43	3.22	F_{1-105}	0	7	9	0.44	-27.86	-12
F_{1-48}	7	9	9	0.20	-56.52	-35.48	F_{1-106}	0	0	9	0.72	18.03	44
F_{1-49}	1	9	9	0.32	-30.43	3.22	F_{1-107}	0	5	9	0.50	-18.03	0
F_{1-50}	1	7	9	0.50	8.69	61.29	F_{1-108}	0	7	9	0.44	-27.86	-12
F_{1-51}	7	9	9	0.14	-69.56	-54.83	F_{1-109}	0	7	9	0.44	-27.86	-12
F_{1-52}	3	5	9	0.47	2.17	51.61	F_{1-110}	0	5	9	0.55	-9.83	10
F_{1-53}	5	5	9	0.38	-17.39	22.58	F_{1-111}	0	3	9	0.64	4.91	28
F_{1-54}	5	9	9	0.27	-41.30	-12.90	F_{1-112}	0	0	9	0.66	8.19	32
F_{1-55}	7	9	9	0.13	-71.73	-58.06	F_{1-113}	0	3	9	0.61	0	22
F_{1-56}	5	9	9	0.18	-60.86	-41.93	F_{1-114}	0	0	9	0.66	8.19	32
F_{1-57}	7	9	9	0.10	-78.26	-67.74	F_{1-115}	0	7	9	0.44	-27.86	-12
F_{1-58}	5	9	9	0.22	-52.17	-29.03	F_{1-116}	0	9	9	0.35	-42.62	-30
	-	-	-	-			F_{1-117}	0	3	9	0.59	-3.27	18
	-	-	-	-			F_{1-118}	0	0	9	0.71	16.39	42
	-	-	-	-			F_{1-119}	0	0	9	0.66	8.19	32
	-	-	-	-			F_{1-120}	0	0	9	0.66	8.19	32
	-	-	-	-			F_{1-121}	0	7	9	0.45	-26.22	-10
	-	-	-	-			F_{1-122}	0	7	9	0.48	-21.31	-4
	-	-	-	-			F_{1-123}	0	5	9	0.51	-16.39	2
	-	-	-	-			F_{1-124}	0	7	9	0.42	-31.14	-16

	-	-	-	-			F_{1-125}	0	7	9	0.43	-29.50	-14
	-	-	-	-			F_{1-126}	0	9	9	0.37	-39.34	-26
	-	-	-	-			F_{1-127}	0	7	9	0.42	-31.14	-16
	-	-	-	-			F_{1-128}	0	5	9	0.53	-13.11	6
	-	-	-	-			F_{1-129}	0	9	9	0.33	-45.90	-34
	-	-	-	-			F_{1-130}	0	9	9	0.34	-44.26	-32
	-	-	-	-			F_{1-131}	0	9	9	0.38	-37.70	-24
	-	-	-	-			F_{1-132}	0	9	9	0.40	-34.42	-20
	-	-	-	-			F_{1-133}	0	7	9	0.46	-24.59	-8
	-	-	-	-			F_{1-134}	0	7	9	0.46	-24.59	-8
	-	-	-	-			F_{1-135}	0	5	9	0.51	-16.39	2
	-	-	-	-			F_{1-136}	0	5	9	0.51	-16.39	2
	-	-	-	-			F_{1-137}	0	7	9	0.42	-31.14	-16
	-	-	-	-			F_{1-138}	0	9	9	0.40	-34.42	-20
	-	-	-	-			F_{1-139}	0	9	9	0.37	-39.34	-26
	-	-	-	-			F_{1-140}	0	9	9	0.38	-37.70	-24
	-	-	-	-			F_{1-141}	0	7	9	0.46	-24.59	-8
	-	-	-	-			F_{1-142}	0	0	9	0.66	8.19	32
	-	-	-	-			F_{1-143}	0	7	9	0.48	-21.31	-4

Table-2 shows the percentage of genetic variations under flooding and moisture condition

Range of DTD value	Vg %	Vp %	GCV %	PCV %	h^2 %
	Flooding				
0.0 - 0.10	0.23	0.63	47.95	79.37	36.50
0.11 - 0.20	2.45	3.57	22.36	26.99	68.62
0.21 - 0.30	2.67	4.21	20.42	25.64	56.29
0.31 - 0.40	5.26	7.64	15.28	18.42	68.84
0.41 - 0.50	4.13	7.05	15.63	20.42	58.58
0.51 - 0.60	1.13	4.89	15.18	31.59	26.58
0.61 - 0.70	0.85	4.91	15.36	56.93	17.31
0.71 - 0.80	2.04	3.76	0.0	96.95	-54.25
0.81 - 0.90	-	-	-	-	-
0.91 - 1.0	-	-	-	-	-
	Moisture				
0.0 - 0.10	-	-	-	-	-
0.11- 0.20	-	-	-	-	-
0.21 - 0.30	0.19	1.07	94.80	101.98	17.75
0.31 - 0.40	9.38	10.78	19.14	20.52	87.01
0.41 - 0.50	16.95	18.33	14.70	15.29	92.19
0.51 - 0.60	5.41	7.19	23.25	26.81	75.24
0.61 - 0.70	11.52	13.68	16.97	18.49	84.21
0.71 - 0.80	-2.04	3.76	0.0	96.05	54.25
0.81 - 0.90	-	-	-	-	-
0.91 - 1.0	-	-	-	-	-

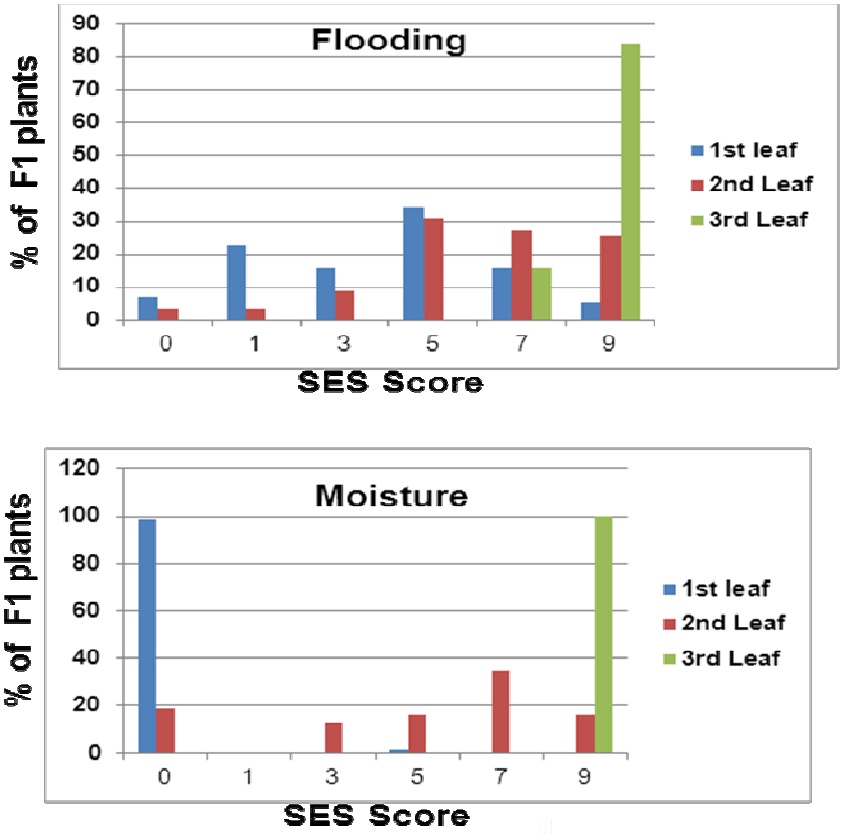

Fig.1 shows the percentage of F1 progenies with different drought score.

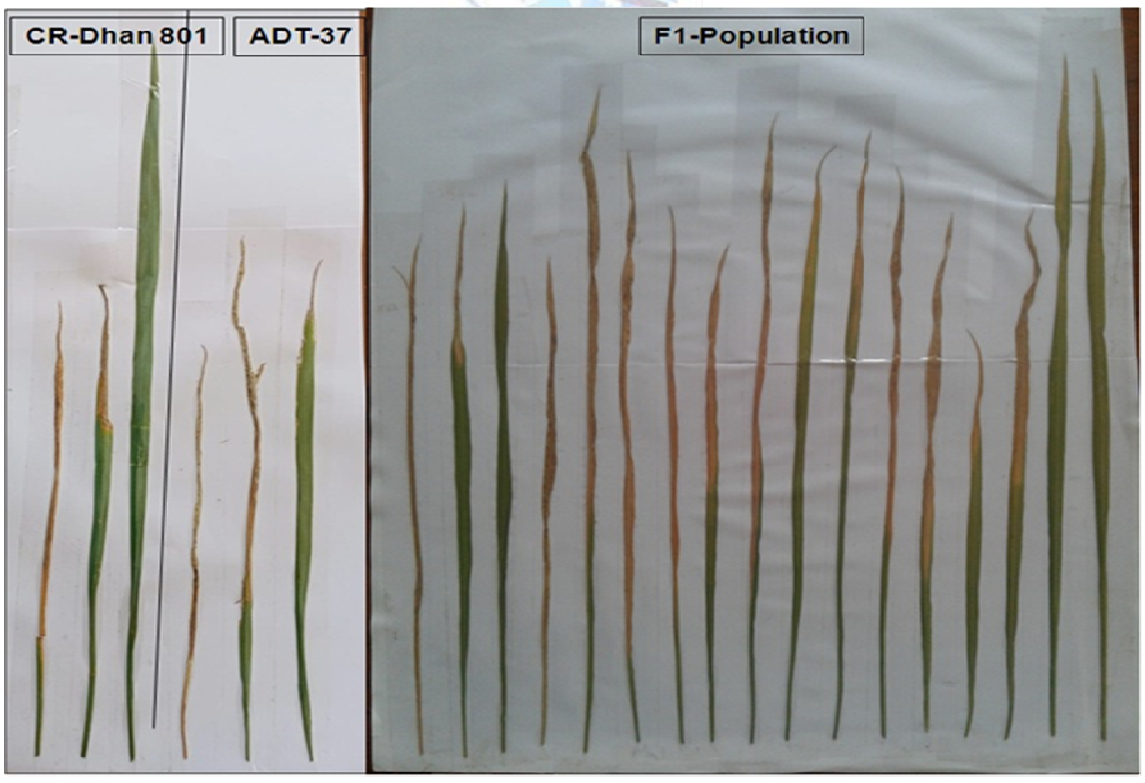

Fig.2 shows differential reactions of F1 progenies and parental lines Drought stress.

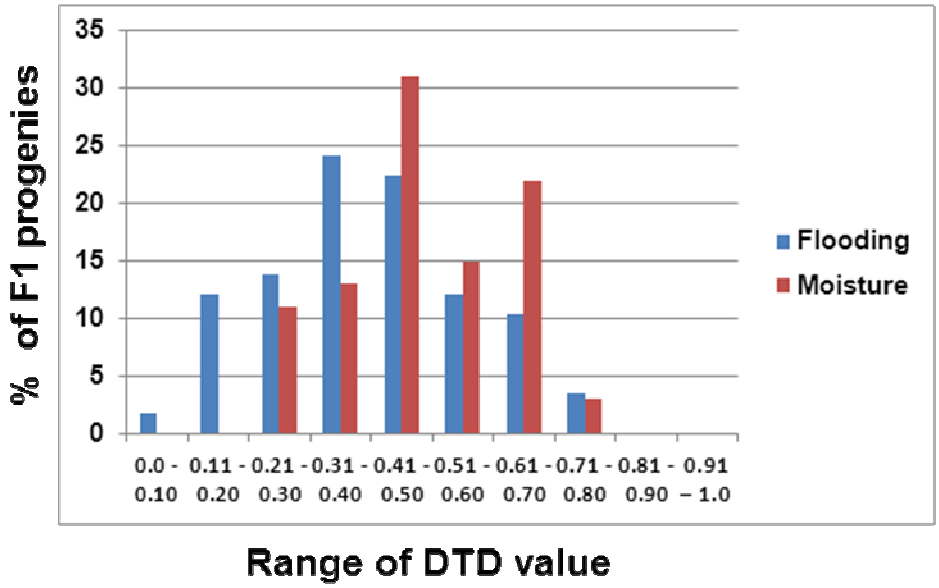

Fig.3 shows the percentage of F1 progenies with different DTD score

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Prevalence of Wilt Complex Incidence on Black Pepper in Karnataka, India

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Abstract:

An intensive roving survey was undertaken to know the occurrence of the burrowing nematode, of Radopholus similis and fungus, Phytophthora capsici associated with the wilt complex disease in black pepper in disease suspected pepper vine gardens of black pepper growing districts of malnad areas viz., Chickmagalur, Shimoga, Coorg, Uttara Kannada and Hassan districts of Karnataka during Kharif 2020-21.The wilt complex was noticed in all the locations surveyed with a range of 27.28 per cent to 35.23 per cent. In Chickmagalur district, maximum wilt complex incidence in Mudigere taluk (16.66 % to 63.40 %) followed by Koppa taluk (14.58 % to 51.50 %), N. R. Pura (16.05 % to 51.20 %) respectively, whereas lowest wilt complex incidence in Chickmagalur taluk as recorded (17.33 % to 43.50 %) followed by Sringeri (22.13 % to 48.50 %) respectively.

In Shivamogga district, maximum wilt complex incidence was recorded in Shikaripura (18.36 % to 45.68 %) followed by Hosanagara (19.63 % to 41.10 %) and Soraba (22.35 % to 40.25 %) respectively, whereas the lowest incidence was recorded in Bhadravathy (18.50 % to 34.50 %) followed by Thirthahalli (18.25 % to 35.50 %).The survey conducted in 270 locations from selected five districts viz., Chickmagalur, Coorg, Shivamogga, Hassan and Uttara Kannada during 2013-14. The wilt complex noticed in all locations surveyed, with a range of 16.05 % to 63.40 % in Chickmagalur district followed by Shivamogga (18.25 % to 45.68 %), Coorg (16.22 % to 44.50 %) and Uttara Kannada (20.68 % to 43.55 %), whereas least was noticed in Hassan district with a range of 16.18 per cent to 32.16 per cent. Maximum complex incidence was recorded in Bilimalligesara (33.86 %) followed by Kalluvally (32.23 %), Paniyur-2 (31.84 %), Paniyur–3 (31.05 %), Paniyur-1 (30.12 %), whereas lowest wilt complex incidence was recorded in Karimunda (17.41 %) followed by Karimalligesara (24.10 %) and Paniyur – 5 (27.19 %).

Key words: Wilt complex, Black pepper, Phytophthora capsici, Radopholus similis

Introduction:

Black pepper (Piper nigrum L.), (Family Piperaceae) known as the "King of Spices" has remained most precious and valuable spice in the world. It is also called as "Black gold" due its durability and value. It is playing a vital role in International trade. It is said that the European invaded India primarily for this very spice. Black pepper is native to India and is extensively cultivated in tropical regions. Currently, Vietnam is the world's largest producer and exporter of black pepper, producing 34 per cent of the world's demand (Anon., 2005).

In India, black pepper is being cultivated in an area of 118 million ha with a production of 45 million tonnes. In Karnataka, black pepper is cultivated in an area of 10,690 ha with a production of 12 million tonnes during 2014-15 (Anon., 2015).

The main objective of the survey is to get the information about the interaction of nematodes and pathogens in causing complex disease in black pepper growing areas of Karnataka.

Review Of Literature And Rationale:

Panniyur-1, Panniyur-3 and Panniyur-8 are hybrids evolved at the Pepper Research Station, Panniyur (Kerala Agricultural University). IISR Girimunda and IISR Malabar excel are the two hybrids released from ICAR-Indian Institute of Spices Research, Kozhikode, Kerala (Devasahayam et al., 2015).

Association of the burrowing nematode R. similis with the so called "yellow(s) disease" of black pepper plants was first reported in 1936 in Indonesia. This disease caused the loss of 22 million black pepper plants within 20 years in Bangka Island, Indonesia (Christie, 1959). Later, R. similis was also reported on black pepper plants in India, Sri Lanka, Malaysia and Thailand (Koshy et al., 2005).

In Kerala, more than 90 per cent of black pepper gardens were infested with root- knot nematode infestation (Ramana and Mohandas, 1987).

By keeping in view the above gaps in research, the present investigation was carried out to know the status of wilt complex in black pepper.

The foot rot or quick decline or quick wilt caused by Phytophthora capsici was a soil borne disease which attacks leaves, roots, branches and fruit spikes of black pepper and the fungus was spread by soil during cultivation operations in pepper gardens. The roots and collar regions were most adversely affected parts leading to rapid wilting and death of vines (Anandaraj et al., 1989).

Slow decline (slow wilt or yellows disease) caused up to 32 per cent crop loss in Indonesia (Sitepu and Kasim, 1991).

The root gall development and population build up of M. incognita was suppressed in black pepper on inoculation with R. similis in succession in sterile soil under pot culture conditions (Sheela and Venkitesan, 1981). Synergistic interaction has been noticed between M. incognita and Fusarium spp. too (Sheela and Venkitesan, 1993).

R. similis and M. incognita were considered to cause serious damage to black pepper crops (Koshy et al., 2005) with annual economic loss of 38.5 to 64.6 per cent.

In Vietnam, farmers were not very well aware of the occurrence of plant parasitic nematodes in their fields. They often confused with symptoms caused by nematodes with those caused by other plant pathogens, resulted in control measures not being applied properly or not being applied at all (Thuy, 2010).

Methodology:

Collection of soil and root samples

Soil and root samples from 5 to 10 spots were collected randomly with the aid of shovel in the root zone of standing black pepper crop. Later, a composite sample of 200 cc soil and 5 g roots were put in a polythene bag with proper labeling. Information pertaining to the crop, locality soil conditions etc., were also collected along with the samples as per Appendix – I. The soil and root samples were processed on the same day or kept in the refrigerator at 4°C for a couple of days.

Processing of soil samples and estimation of nematode population

Soil samples collected from the field were brought to the laboratory and stored in refrigerator at 4°C. Soil sample of 200 cc was washed thoroughly and processed using combined Cobb Sieving and Baermann's funnel technique (Ayoub, 1977). The total number of plants

showing foliar yellowing symptoms and defoliation were recorded by using the following scale (Mohandas and Ramana, 1991).

Foliar Yellowing Index (FYI): 1-4 scale

Sl. No.	Scale	Descriptions
1	1	No leaves showing yellowing
2	2	Up to 20 per cent of leaves showing yellowing
3	3	20-60 per cent leaves showing yellowing
4	4	More than 60 per cent leaves showing yellowing

Defoliation Index (DFI): 1-4 scale

Sl. No.	Scale	Descriptions
1	1	Less than 10 per cent defoliation
2	2	More than 10 per cent upto 30 per cent defoliation
3	3	More than 30 per cent upto 60 per cent defoliation
4	4	More than 60 per cent defoliation

While collecting soil and root samples lesion characters were also recorded. The wilt disease incidence in the fields was calculated by using following formula.

$$\text{Disease incidence (\%)} = \frac{\text{Number of plants infected}}{\text{Total Number of plants observed}} \times 100$$

Results And Discussion:

An extensive roving survey was carried out in selected black pepper growing areas in malnad districts during Kharif - 2020-21 to find out the incidence of nematode fungal wilt complex in black pepper. The soil and root samples were collected from all the places and were brought to the laboratory for analysis.

All the 135 soils and root samples were found positive for plant parasitic nematodes. A total of five major genera of plant parasitic nematodes were recorded from rhizosphere of black pepper plantations in five districts of malnad regions of Karnataka. The plant parasitic nematodes recorded during present study were Radopholus similis, Meloidogyne incognita, Pratylenchus coffeae, Helicotylenchus multicinctus, Rotylenchulus reniformis and other parasitic and free living nematodes (Table 1).

During survey, the highest nematode population of 1,23,798 per 200 cc soil and 5 g roots was recorded in Chickmagalur district followed by Shivamogga district with 1,07,560 nematodes per 200 cc soil and 5 g roots and Coorg district with 79,922 nematodes per 200 cc soil and 5 g roots. The lowest nematode population was recorded in Hassan district with 25,902 per 200 cc soil and 5 g roots followed by Uttara Kannada, which recorded 27,866 nematodes per 200 cc soil and 5 g roots.

During the survey, maximum wilt complex incidence was recorded in Chickmagalur district with 31.28 per cent followed by Coorg (30.94 %), Uttara Kannada (29.33 %) and Shivamogga (29.07 %) respectively, whereas least wilt complex incidence was recorded in Hassan district (25.77 %) (Table1).

In Chickmagalur district, five taluks were surveyed for nematode occurrence. Among them, Mudigere taluk recorded the highest number of nematode population of 805, 30 per 200 cc soil and 5 g roots followed by Chickmagalur with 27,598 nematodes per 200 cc soil and 5 g roots. Lowest nematode population was recorded in Koppa taluk with 310, 19 nematodes per 200

cc soil and 5 g roots followed by N. R. Pura taluk with 22, 140 nematodes per 200 cc soil and 5 g roots.

In Mudigere taluk, the highest nematode population per 200 cc soil was recorded in G. Hosally (6064) followed by Phalghuni (4745) and Banakal (4302). The lowest nematode population was recorded in Kunduru (2602) followed by Bettadamane (2602).

In Chickmagalur taluk, the highest nematode population (4134) was recorded in Kunduru followed by Attigere (3858) and Aldur (3848) per 200 cc of soil and 5g roots. The lowest nematode population was recorded in Vastare (2672) followed by Mavinakere (3012) per 200 cc soil and 5 g roots respectively.

In Koppa taluk, maximum wilt complex incidence was recorded in Addadda (51.50 %) with total nematode population of 4050 followed by Kagga (43.50 %) with 3444 nematodes per 200 cc soil and 5 g roots and least incidence was recorded in Belagola (14.58 %) followed by Gunavanthe (16.30 %) and Jayapura (18.53 %) with 1430 and 464nematodes per 200 cc soil and 5 g roots respectively.

Among the villages of Sringeri taluk, maximum wilt complex incidence was recorded in Heruru (48.50 %) followed by Kavadi (43.66 %) and Beguru (42.50 %). However, the lowest wilt complex incidence was recorded in Nemmaru village (18.79 %) followed by Hadi (22.13 %) respectively.

In Shivamogga district, 7 taluks were surveyed for the presence of plant parasitic nematodes. Highest nematode population was recorded in Soraba taluk (29971) followed by Thirthahalli (26628) per 200 cc soil and 5 g roots. The lowest nematode population was recorded in Bhadravathi (11142) followed by Shivamogga (13986) per 200 cc soil and 5 g roots respectively.

With respect to wilt complex incidence in Shivamogga district, maximum wilt complex incidence was recorded in Sagara taluk (40.10 %) followed by Shivamogga (30.41 %). The lowest wilt complex incidence was recorded in Thirthahalli (27.60 %) followed by Bhadravathi (27.80 %).

In Shivamogga taluk, highest number of plant parasitic nematodes was recorded in Aladahalli (2876) followed by Hittiru (2842) and the lowest was recorded in Gajanuru (918) followed by Ayanuru (1250) per 200 cc soil and 5 g roots respectively.

In Shivamogga taluk, maximum wilt complex incidence was recorded in Hitturu (39.80 %) followed by Lakshmipura (36.13 %) and the lowest wilt incidence was recorded in Gajanuru (18.64 %) followed by Anesara (22.05 %) respectively.

Table 1: Incidence of wilt complex in malnad regions of Karnataka

Location		Village name	Soil type	Cultivar	FYI	DFI	Wilt incidence (%)
Chickmagalur	Mudigere	G.Hosally	Sandy loam	Panniyur 1	3	3	63.40
		Banakal	Sandy loam	Panniyur-1,2	3	2	40.10
		Bettadamane	Sandy loam	Panniyur2	3	1	33.92
		Gowdahally	Sandy	Panniyur 1	2	1	23.61
		Kalasa	Sandy loam	Panniyur 2	2	1	17.33

	Kenjige	Sandy loam	Panniyur 2	2	2	28.57
	Kunduru	Sandy loam	Panniyur 1	3	1	16.66
	Phalghuni	Sandy loam	Panniyur 2	3	3	59.00
				Mean		**35.23**
Chickmagalur	Aldur	Red Sandy	Panniyur 1	3	1	36.10
	Belawadi	Sandy loam	Panniyur 1	3	1	28.57
	Basagal	Sandy clay loam	Panniyur 2	2	3	34.63
	Bidare	Sandy loam	Panniyur 1	2	2	22.13
	Attigere	Sandy loam	Panniyur 2	3	3	43.50
	Vastare	Sandy clay loam	Panniyur 1	3	1	26.33
	Kunduru	Sandy loam	Panniyur 2	3	2	41.66
	Mavinakere	Sandy loam	Panniyur 5	2	1	17.33
				Mean		**31.28**
N.R.Pura	Aduvally	Sandy loam	Karimunda	3	1	16.66
	Badagabylu	Sandy loam	Panniyur 1	3	2	43.62
	Echikere	Sandy loam	Panniyur 2	2	1	22.13
	Shimse	Sandy loam	Panniyur 1	3	2	33.43
	Varkate	Sandy loam	Panniyur 1	2	1	17.86
	Gubbiga	Sandy loam	Panniyur 2	3	3	51.20
	Ballekoppa	Sandy loam	Panniyur 1	2	1	16.05
	Bannuru	Sandy loam	Panniyur 1	2	1	17.33
					Mean	**27.28**
Koppa	Addadda	Sandy loam	Panniyur 2	3	3	51.50
	Belagola	Sandy loam	Panniyur 2	2	1	14.58
	Gunavanthe	Red Sandy	Karimunda	1	1	16.30
	Jayapura	Red Sandy	Panniyur 1	2	2	18.53
	Kagga	Sandy	Karimalligesara	3	2	43.50

			loam				
		Nilavagilu	Red Sandy	Panniyur 2	2	1	21.60
		Shanuvally	Sandy loam	Kari Malligesara	3	2	39.61
		Situru	Sandy loam	Panniyur 1	3	2	36.85
						Mean	**30.30**
	Sringeri	Addagadde	Sandy clay	Panniyur 2	2	1	22.61
		Beguru	Sandy loam	Panniyur 2	3	3	42.50
		Hadi	Clay loam	Karimalligesara	2	1	22.13
		Menase	Clay loam	Panniyur 1	2	2	22.80
		Heruru	Sandy loam	Panniyur 1	3	3	48.50
		Honnavally	Sandy loam	Bilimalligesara	2	3	36.66
		Kavadi	Sandy loam	Panniyur 1	3	3	43.66
		Nemmaru	Red Sandy	Panniyur 2	2	1	18.79
						Mean	**30.23**
Shivamogga	**Shivamogga**	Aladahalli	Sandy loam	Panniyur 1	3	1	33.21
		Anesara	Sandy clay loam	Panniyur 1	2	1	22.05
		Arenakoppa	Sandy loam	Panniyur 2	3	1	36.13
		Ayanuru	Sandy loam	Kaluvalli, Panniyur-1	3	2	33.09
		Balenakoppa	Red sandy	Kaluvalli	2	1	24.05
		Gajanuru	Red Sandy	Karimalligesara	2	1	18.64
		Hitturu	Sandy loam	Bilmalligesara Panniyur 1	3	2	39.80
		Lakshmipura	Sandy loam	Panniyur 2	3	1	36.33
						Mean	**30.41**
	Hosanagara	Balur	Red Sandy	Panniyur 1	2	2	18.66
		Kalsae	Red sandy	Bilimalligesara	3	2	29.20
		Magodu	Red sandy	Kaluvalli Panniyur 1	3	2	24.80
		Nanjavally	Sandy loam	Panniyur-1	3	3	41.10
		Yadur	Sandy loam	Panniyur 1	3	2	36.00
		Begadally	Red sandy	Panniyur-1	2	1	19.63
		Ginikallu	Sandy loam	Kaluvalli, Panniyur-1	3	3	39.80
		Malali	Red sandy		3	2	29.64
						Mean	**29.85**
	Shikaripura	Gogga	Sandy loam	Panniyur 1	3	2	32.33
		Thogarasi	Red Sandy	Panniyur-2	3	1	18.65
		Hittal	Red sandy	Panniyur 1	3	2	23.13

		Annapura	Clay loam	Panniyur-2	2	1	19.63
		Kaniy	Sandy clay	Panniyur 1	2	2	18.36
		Jakkanahally	Sandy	Panniyur 1	3	2	26.31
		Sampally	Sandy loam	Panniyur-1	3	3	45.68
		Malla	Sandy loam	Panniyur-1	3	2	39.61
						Mean	**27.96**
	Bhadravathi	Anaveri	Sandy loam	Panniyur 1	2	1	33.70
		Aradottilu	Sandy	Panniyur 5	2	2	29.80
		Hallikere	Sandy loam	Kaluvalli	3	2	34.50
		Matthighatta	Clay loam	Panniyur 1	3	1	22.50
		Shanklipura	Red Sandy	Panniyur-1	2	1	18.50
						Mean	**27.80**
	Sagara	Adur	Clay loam	Kaluvalli Panniyur 2	3	2	32.86
		Besur Gijaga	Red Sandy	Panniyur 1	3	1	22.66
		Kalmane	Sandy clay loam	Panniyur 1	2	2	26.86
		Heggodu	Sandy	Karimunda	2	1	18.36
		Kippadi	Sandy loam	Panniyur 1	2	1	22.16
		Udri	Sandy	Panniyur 1,2,3	2	2	21.50
		Valur	Sandy loam	Panniyur 1	3	3	40.10
		Hebbase	Sandy loam	Kaluvalli	3	2	38.50
						Mean	**27.87**
	Thirthahally	Alageri	Sandy loam	Kaluvalli Panniyur-1 Bilimalligesara	3	1	31.50
		Alur	Sandy loam	Panniyur 1,2,	3	2	33.50
		Demlapura	Sandy loam	Panniyur 1	2	2	29.36
		Shiruru	Red Sandy	Karimunda	2	1	18.25
		Yadehally	Red Sandy	Panniyur 1	2	1	21.50
		Thalale	Sandy loam	Panniyur 1,3	3	2	31.75
		Karadiga	Red Sandy	Panniyur 1	2	1	19.50
		Kalavati	Sandy loam	Panniyur 5	3	2	35.50
						Mean	**27.60**
						Mean	**32.00**
Coorg	**Somavarpete**	Abbimata	Sandy loam	Panniyur 1	3	2	38.25
		Agalli	Sandy loam	Panniyur 1	3	1	32.50
		Bettadahally	Sandy loam	Panniyur 3	3	2	33.86
		Doddakodi	Sandy loam	Panniyur 1	2	2	28.65
		Honnekodi	Red Sandy	Panniyur 1	2	1	25.50
		Kirkodli	Sandy loam	Panniyur 1	3	3	44.50
		Koothi	Sandy loam	Panniyur 2	3	2	38.50
		Hulase	Sandy loam	Panniyur 1	3	2	39.25
						Mean	**35.12**
	Madike	Balemuri	Sandy loam	Panniyur 5	2	2	23.13
		Biligere	Red Sandy	Panniyur 1	2	1	16.22

		Kakathuru	Clay loam	Panniyur 2	3	2	32.33
		Kiggalu	Red Sandy	Panniyur 2	2	1	16.88
		Made	Sandy loam	Panniyur 1	3	2	37.10
		Palooru	Sandy loam	Panniyur 1	3	3	39.61
		Sampaje	Sandy loam	Panniyur 2, 3	3	1	37.10
		Yevakapadi	Sandy loam	Panniyur 1	3	1	32.16
						Mean	**29.31**
	Veerajapete	Ammathi	Sandy loam	Panniyur 1	3	3	43.55
		Beguru	Sandy loam	Panniyur 1	2	2	28.12
		Huchinad	Red Sandy	Paniyur 2	3	1	24.05
		Kadanur	Red Sandy	Panniyur 5	2	2	18.75
		Yedur	Sandy loam	Panniyur 2	3	3	39.61
		Nalkeri	Red Sandy	Panniyur 2	3	1	22.13
		Theralu	Sandy loam	Panniyur 1	3	1	32.16
		Yedur	Sandy clay loam	Panniyur 1	2	2	18.64
						Mean	**28.37**
Hassan	**Sakaleshpura**	Balagodu	Sandy laom	Panniyur 1	2	2	28.57
		Devihally	Red Sandy	Panniyur 1	2	1	18.50
		Ibbadi	Sandy loam	Panniyur 1	2	3	32.16
		Igoor	Red Sandy	Karimunda Panniyur - 1	2	1	16.18
						Mean	**27.77**
Uttara kannada	**Sirsi**	Ajjibal	Sandy loam	Panniyur 1	2	2	29.33
		Heggar	Sandy loam	Panniyur 1	3	2	38.68
		Kalve	Sandy loam	Panniyur 1	3	3	43.55
		Kannalli	Sandy loam	Karimalligesara	3	2	39.61
		Belale	Red Sandy	Karimalligesara	2	1	20.68
						Mean	**30.23**
	Siddapura	Akkunji	Sandy loam	Karimunda	3	2	36.13
		Begar	Red Sandy	Panniyur 1	2	2	18.28
		Hegge	Sandy loam	Panniyur 1	2	3	32.16
		Murur	Red sandy	Panniyur 5	3	1	22.13
		Kastur	Sandy loam	Bilimalligesara	3	2	33.43
						Mean	**28.43**

An extensive roving survey was carried out in black pepper growing regions of malnad districts during 2013 to find out the incidence of Radopholus similis and Phytophthora capsici wilt complex in black pepper. The data collected among the survey revealed that, incidence of wilt complex severity varied in different localities. The wilt complex was noticed in all the locations surveyed with a range of 27.28 per cent to 35.23 per cent.

In Chickmagalur district, maximum wilt complex incidence in Mudigere taluk (16.66 % to 63.40 %) followed by Koppa taluk (14.58 % to 51.50 %), N. R. Pura (16.05 % to 51.20 %) respectively, whereas the lowest wilt complex incidence in Chickmagalur taluk as recorded (17.33 % to 43.50 %) followed by Sringeri (22.13 % to 48.50 %) respectively.

The survey was conducted in 270 locations from selected five districts viz., Chickmagalur, Coorg, Shivamogga, Hassan and Uttara Kannada during 2013-14. The wilt complex was noticed in all the locations surveyed, with a range of 16.05 % to 63.40 % in Chickmagalur district followed by Shivamogga (18.25 % to 45.68 %), Coorg (16.22 % to 44.50 %) and Uttara

Kannada (20.68 % to 43.55 %), whereas the least was noticed in Hassan district with a range of 16.18 per cent to 32.16 per cent.

Maximum complex incidence was recorded in Bilimalligesara (33.86 %) followed by Kalluvally (32.23 %), Panniyur-2 (31.84 %), Panniyur–3 (31.05 %), Panniyur-1 (30.12 %), whereas the lowest wilt complex incidence was recorded in Karimunda (17.41 %) followed by Karimalligesara (24.10 %) and Panniyur – 5 (27.19 %).

The present findings are in confirmation with the reports of: Abraham Jose et al. (1996): Jahagirdar (1998): Koshy et al. (2005): Aravind et al. (2011) and Rashid and Eapen (2014).

Jahagirdar (1998) reported that, maximum wilt incidence (68.50 %) was recorded in Karalikoppa (64.40%) village of Shivamogga district followed by Neeranakki (64.40 %), Devarakoppa (62.30 %) of Sirsi and Gaddemane (61.30 %) of Mudigere taluk.

Plant-parasitic nematodes could also cause substantial damage to black pepper plants. Yellowing of the leaves of black pepper plants caused by R. similis and Meloidogyne spp. has been described. R. similis could cause "yellow(s) disease" and "slow wilt disease" of black pepper plants (Koshy et al., 2005).

Aravind et al. (2011) opined that, foot rot and slow decline diseases caused by P. capsici or R. similis pose major economic threat to black pepper production. The movement of pathogens and the consequent disease outbreak was largely due to latently infected plantlets and the contaminated nursery medium.

Slow decline disease of black pepper was mainly due to feeder root damage caused by R. similis and M. incognita either alone or in association with Fusarium spp. and P. capsici. There is a gradual reduction in the vigor and productivity of the vine which lead to death over a period of few years and hence called slow decline (Rashid and Eapen, 2014).

The present study brought about a detailed account on the incidence of wilt complex in major pepper growing areas of state, compared to earlier studies and helps to identify the hotspots of pepper wilt complex in Karnataka state and formulation of preventive management strategies.

The disease incidence varied from location to location, which might be due to cropping patterns, agronomic practices followed, environmental conditions and build up of inoculum. The higher disease incidence could be attributed to the use of susceptible cultivars from the infected field, apart from monocropping and mismanagement that has also aggravated the disease situation. Practicing improper management practices by farmers in the initial period of the crop also makes it difficult to manage the wilt complex.

In the present study, it has been observed that, farmers are spraying Bordeaux mixture by unscientific preparation, bad agronomic practices followed, not using any nematicides for control of nematodes and non judicious use of fertilizers and pesticides for other crops in the orchards. The efficacy of these fertilizers and pesticides might be lost in short durations because of heavy rainfall and hence, provides protection for a short period. These situations lead to the increased population of nematodes and causes considerable yield loss. This aggravated wilt complex might lead to severe loss to the black pepper growers.

The prophylactic management practices were not followed by farmers to manage P. capsici in black pepper in almost all the locations surveyed. The selection of infected vines, use of soil without proper sterilization for nurseries and planting of vines in infested soil might lead to the increased wilt incidence in the areas surveyed (Devasahayam et al., 2015).

Conclusion :

Black pepper is one of the most widely used spices, because of piperine content of 5-10 % in commercial white and black pepper. Among the different diseases affecting black pepper, burrowing nematode and wilt disease complex caused by Radopholus similis and Phytophthora capsici were observed in severe form. The information available on this disease complex as well as pathogens in Karnataka is very meager. Hence, studies were undertaken to survey study, pathogenecity, interaction studies, screening of popular varieties for resistance, various factors affecting disease development and management of wilt complex with suitable management practices.

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Synthesis of Zinc Oxidenano Particles Using Plant Leaf Extract of Asphodelus Macrocarpus.

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Abstract:

Modern science, Nanotechnology is an ablaze field for the researchers. Zinc oxide nanoparticles (ZnONPs)are known to be one of the most multifunctional inorganic nanoparticleswithitsapplicationin Treatment of urinary tract infection. Nanoparticles were synthesized using Asphodelus Macrocarpus fresh leafExtract and were characterized by UV-visible spectroscopy (UV–vis), X-ray diffractometer (XRD), FourierTransform infrared spectroscopy (FT-IR), Scanning electron microscopy (SEM), Energy dispersive analysisofx-ray (EDAX),Atomicforcemicroscopy(AFM).Therefore,the studyrevealsanefficient,eco-friendlyand simple method for the green synthesis of multifunctional ZnO NPs using Asphodelus Macrocarpus. Urinary tract Infection causing micro beswere isolated from the disease affected patient urine sample. The synthesized Nanoparticles have been tested against the pathogenic culture showed a very good zone of inhibition Compared with plant extract. It indica test the bio medical capability of ZnO NPs

INTRODUCTION:

Nanotechnology involves the use of materials havingnanoscale dimension in the range of 1-100 nm.Operating with researchers to have much better understanding of biology . The green synthesis ofnanoparticle has greatly reduce the use of physical and chemical method . various chemical methodhave been proposed for the synthesis of zinc oxide nanoparticles , such as reaction of zinc with alcohol ,vapourtransport, hydrothermalSynthesis, precipitationmethod[1-4].

Theusegreensynthesismethodbytheuseofresearcherisrapidlyincreasingduetolessusagesofchemical, eco-friendlynatureand onestep synthesisofzincoxidenanoparticles[5]. They also have potential application in the field of medicine Like drug delivery,biological activities such as antimicrobial, an-Tioxidant, etc., and diagnosis ofdiseases. Antimicrobial activity of ZnO NPs against various pathogens such as B.subtilis, Salmonella, Listeria monocytogenes, Staphylococcus aureus and E. coliusing disc Diffusion method has been reported . Also reported simiLar results byPunicagranatum mediated synthesized ZnO NPsSome of the proposedmechanism responsible for antibacterialactivity Of ZnO NPs includes disruptionof the cell membrane, oxIdative stress induction and generation of reactiveoxygen (ROS). It was reported that ZnO NP has showed high antibacterialActivity against urinary infection disease . Further the antibacTerial activity of the se biological synthesized ZnONP swas evaluated against different pathogenic microorganisms. Our aim of the Study is to synthesis ZnO NPs fromthe plant Asphodelus Macrocarpus and their Antibacterial activity against pathogens causing urinary tract infections.

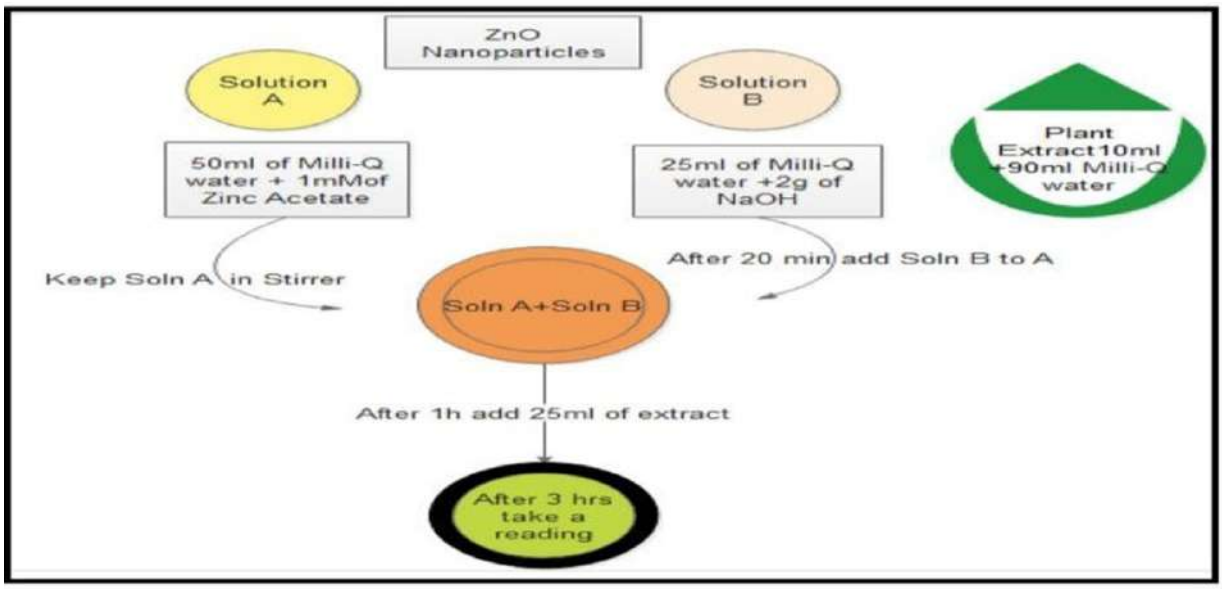


Fig.1)schematicrepresentationofSynthesisofzincoxidenanoparticles.

1) Plantcollection:

The leaves of Asphodelus Macrocarpus are collected from natural source .It is medicinally important plant . fresh green leaves and flowers are harvested during the month June to September.

2) Preparation of plan textract:

5 g of fresh leaves were washed with tap water followed by distilled water and then cut andsoakedin250mlbeaker containing 100ml distilled water. The solution was boiled at 70 degrees Celsius for 8 minutes. The leaf extract was allowed to cool room temperature , filtered through Whatmannumber2filter paper and filter was stored for further experimentaluse.

3) SynthesisofZnoNps:

1 mM of zinc acetate was dissolved in 50 ml distilled water and kept in stirrer for 1 hrsrespectively [4]. Then 20 ml NaoH solutions was slowly added into the zinc acetate solution and 25ml of plant extract was added to the same. The colour of the reaction mixture was changed after 1hr incubation time . The solution was left in a stirrer for 3 hrs yellow colour appeared after theincubation time confirm the synthesis of zinc oxide nanoparticles . The precipitate was separatedfrom the reaction solution by centrifugation at 8000 rpm at 60 degree Celsius for 15 min and pellets was collected. Pellets were dried using hot air ovenat 80^0 for 2 hr and preserved in air tight bottle of further studies.

Application of zincoxide nano particles

1) ZincoxideNpusedascatalystinBigineli Reaction

Biginellireactionismulticomponentreaction.WeusedZnONP's asCatalystinBiginellireaction . At room temperature , it gives product 3,4-dihydropyrimidime from the Aldehyde and Beta-dike to esterandurea.

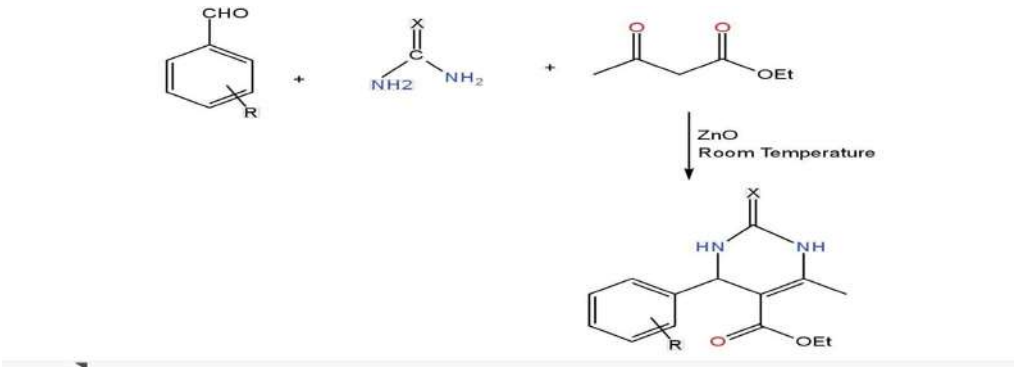
Dihydropyrimidimes heterocyclic units and widely used in natural and Syntheticorganic chemistryduetotheirwidespectrum ofbiologicalactivity.

- GeneralProcedureforSynthesisof3,4-dihydropyrimidinone:

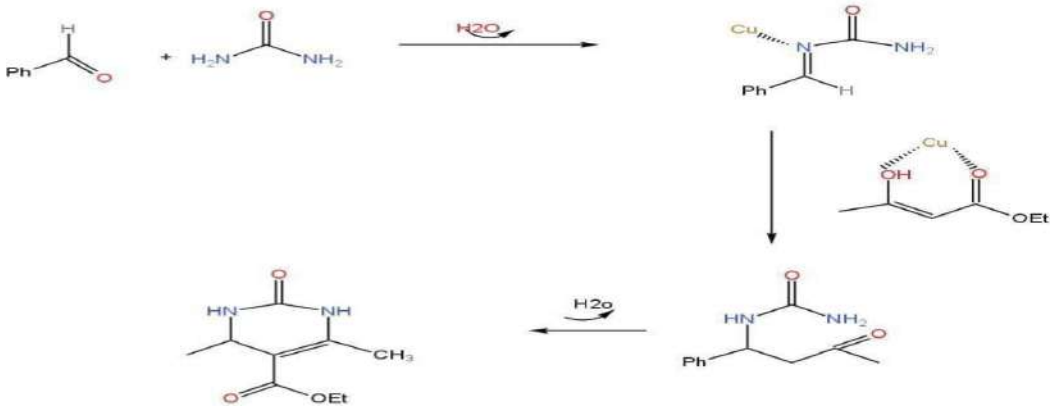
A mixture of benzaldehyde (1 ml), β-diketoester (ethylacetoacetate) (1.24 ml)andurea(0.88 gm) wasstirredfor30Minutes in the presence of 20 mg of highly dispersed

reaction mixture Zincnanoparticlesfromthepreviousexperiment.ThereactionwasMonitoredbythin layer chromatography using ethylacetate/hexane (2:3) as eluent. Themixturewasthen recrystallized.Recordthemp,tlc.

Reaction:



Mechanism:



Results:

1.Theresultleadsdownbytheexperimentcoppernanoparticleacts As catalysts for the synthesis of biologically active 3,4Dihydropyrimidinone.

2.Theproductswereobtainedrapidlywithhighyieldatroom Temperature.

3.Theyieldsofthisreactionis85%.

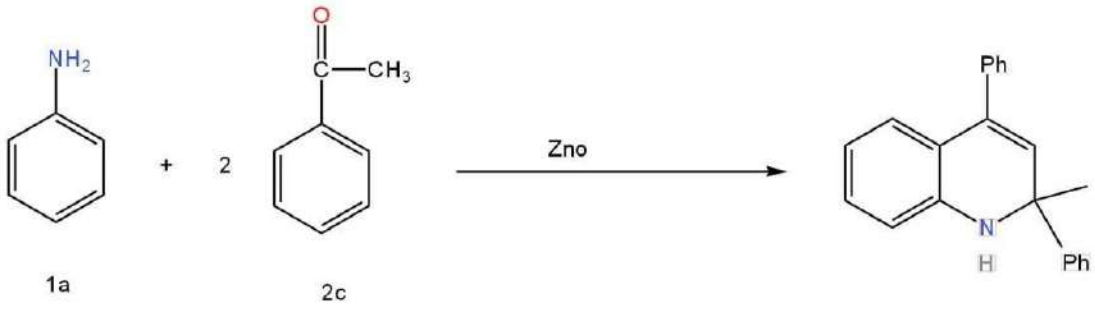
ZnoNpsusedasCatalystinSynthesisofDihydroquinoline

Generalprocedure:

1 mol of aniline ,10 mol of ketone and 0.01 gm zno particle in 1 mlToluenewasheatedat80^{0}Cfor6 hr.

Progress of reaction mixture monitored by TLC. After the completionof the reaction theCatalyst can be easily removed by filtrations. The filtrate was evaporated. Pure product is obtained.

Reaction:



Results:

TheobtainedproductshaveBP210^{0}Cand yieldisabout84.50%.

Resultsanddiscussion:

Zinc oxide nanoparticles has attracted great attention because of their suspension opticalproperties. Visual colour change is the preliminary test for nanoparticle synthesis. The colourchangesfromhaifwhite to yellowrepresentthesynthesisof ZnoNps.

Conclusion:

Thegreensynthesisofnanoparticleusedinthisexperimentfound To be eco-friendly , non- toxic and less usages of chemical comparedtoPhysical and chemical method.

ThepresenceofphytochemicalsintheleafextractitselfhelpintheSynthesis of metal oxide nanoparticles by inducing oxidation andreductionreaction.

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Green Synthesis of Indole Derivatives

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Abstract:

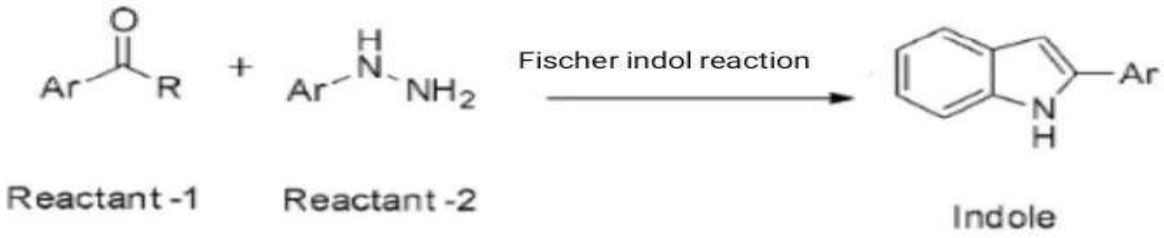
To synthesis of different substituted indole derivative possess a number of biological activities like antimicrobial, antioxidant, antimalarial etc. rather than conventional method the reagent hereby are replaced by Garlic & Ginger Juice. The formed compounds have been evaluated by physical methods like melting point, thin layer chromatography, elemental analysis and functional group analysis.

Keywords: Indolederivatives,aldehyde,antimicrobial,antioxidant,antimalarial

Introduction:

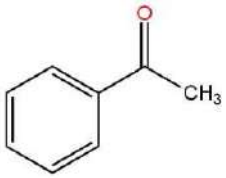
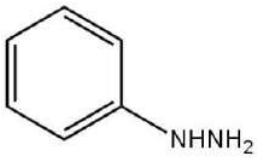
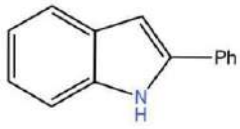
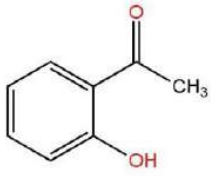
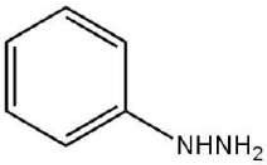
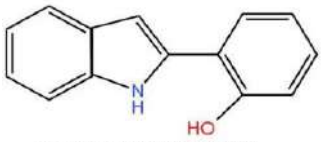
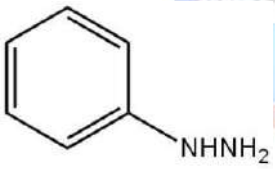
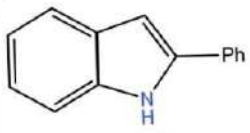
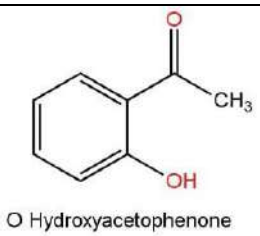
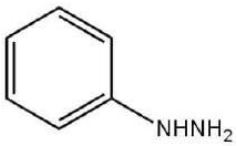
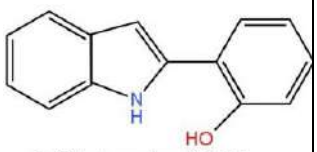
The indole ring system is present in many biologically active medicinal agents and natural products. The first synthesis of substituted indoles was conducted by Fischer and Jourdan as early as 1883, and since then the bicyclic heteroaromatic core has been the target of many synthetic approaches and reactivity studies. Indoles are also prominent structural elements in the neurotransmitter serotonin, the anti-inflammatory drug indomethacin and other molecules showing promise in the treatment of cardiovascular disease, erectile dysfunction, cancer and neurological conditions.Indole derivatives are prepared by conventional methods by reaction of various ketones with phenyl hydrazine in presence of acid and organic solvents. To minimize the use of hazardous chemicals, the same reactions are performed using Garlic & Ginger Juice

General Reaction-



Procedure

The reaction was carried out by mixing the phenyl hydrazine (1.6ml) .Add the Ketone(2ml) and Garlic or ginger juice (acid) (5ml) add to it. Then add ethanol (4.5ml), PPA (2ml) in a beaker.Themixturewasstirred with the help of magnetic stirrer at R.T. 1hr stirrer the mixture. The Progress of reaction mixture was monitored by TLC.Crude product is obtained.Recrystalisation with ethanol.Pure product is obtained

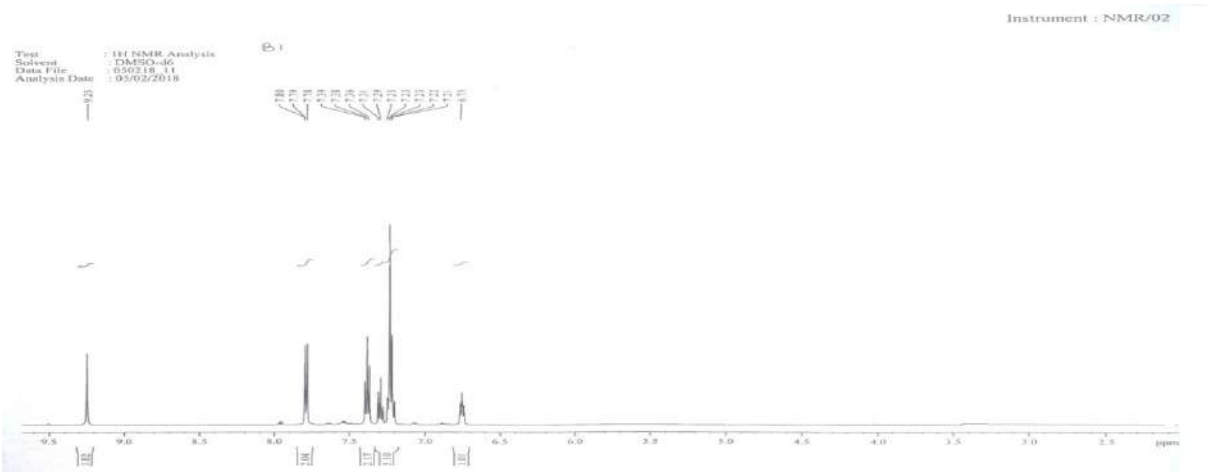
	Reactant-1	Reactant-2	Catalyst	Product	Temp conditon
A	 Acetophenone	 phenylhydrazine	Ginger	 2-Phenyl indole	R.T
B	 O Hydroxyacetophenone	 phenylhydrazine	Garlic	 2-(2-hydroxyphenyl)-indole	R.T
C	 Acetophenone	 phenylhydrazine	Ginger	 2-Phenyl indole	R.T
D	 O Hydroxyacetophenone	 phenylhydrazine	Garlic	 2-(2-hydroxyphenyl)-indole	R.T

Result Table:

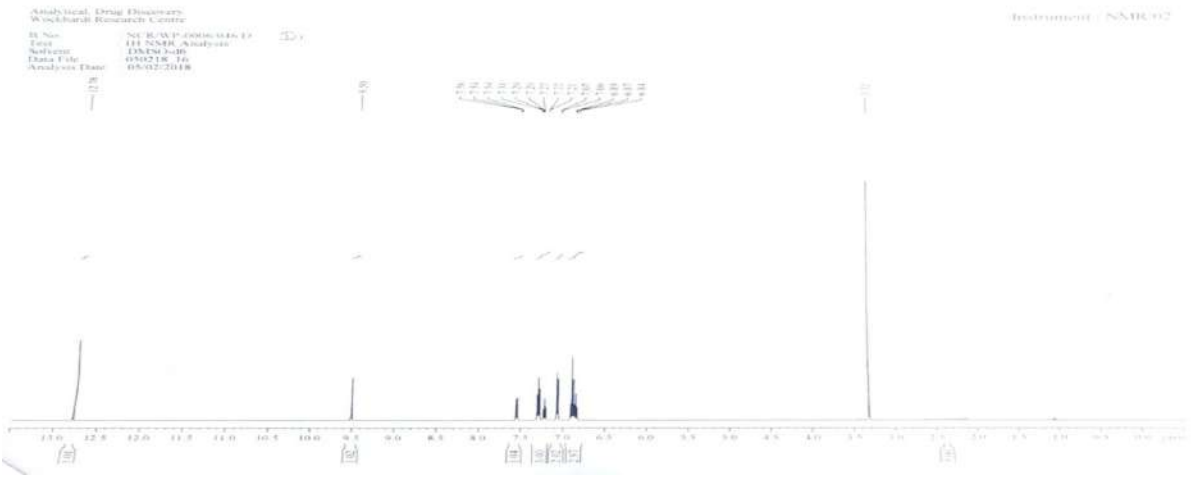
The Melting Point, % of yield, molecular formula of synthesized compounds

Sr.No	Product	Yeild	Sr.No
	2-phenylindol	75.70%	A
B	2-(2hydroxyphenyl)-indol	75.91%	B
C	2-phenylindol	5.10%	C
	2-(2hydroxyphenyl)-indol	5.79%	D

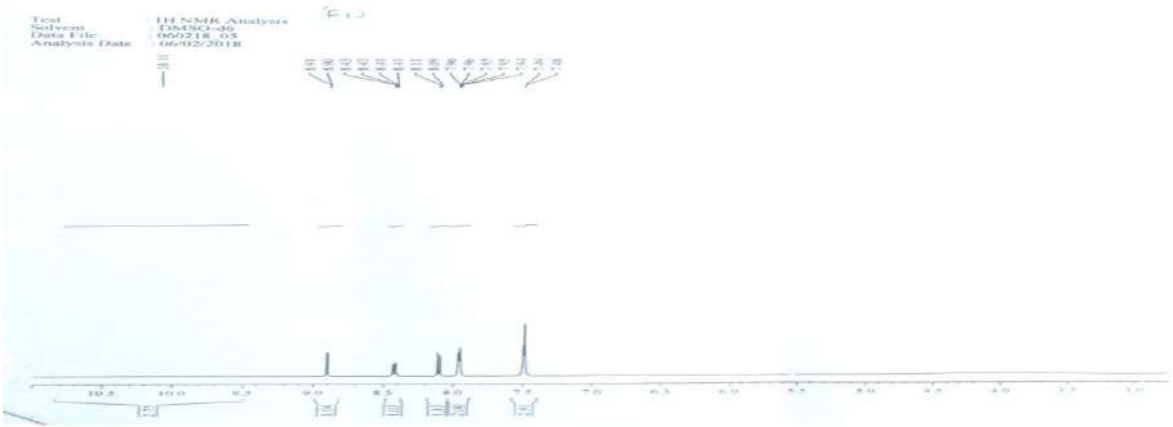
(1)2-phenyl-1H-indole-3-carbaldehyde



(2) 2-(2-hydroxyphenyl)-1H-indole-3-carbaldehyde



(3)5,7-dinitro-2-phenyl-1H-indole-3-carbaldehyde



Discussion:

The synthesis of the different substituted indole derivatives A,B,C,D has done.The formation Derivative A has yield 75.70%, B has yield 75.91%,C has yield 75.10% and D has

yield 75.79%. The synthesis of substituted indole derivatives A has high yield than other substituted indole derivatives B,C,D

Conclusion:

The indole ring system is present in many biologically active medicinal agents and natural productscan be synthesized by using green catalyst

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Silver Nanoparticles: A Review on Green Synthesis of Silver Nanoparticles by Using Plant Extract, Characterization and Their Antioxidant Activity by Different Methods

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Abstract:

The idea of nanoparticles, which display singular and remarkably different properties from their bulk, was first introduced by nanotechnology. Particles with one or more dimensions and sizes between one and one hundred nanometers are known as nanoparticles. In the field of medical science and disease treatment, the environmentally friendly synthesis of silver nanoparticles has received considerable global attention. The green synthesis of silver nanoparticles using plant extracts is thought to be an alternative to the chemical method of synthesizing nanoparticles. The data obtained using the green method were analysed using a variety of methods, including UV-Vis., FT-IR, XRD, TEM, AFM, and DLS. This review focuses on the plant mediated silver nanoparticles, Characterization and their antioxidant activities using various methods.

Keywords:- Green synthesis, Silver nanoparticles, Plant extracts, Antioxidant activity.

1. Introduction:

With promising future developments, nanotechnology has a significant impact on current research and product development. Particles up to 100 nm in size are considered nanoparticles (Keerawelle & Thiripuranathar, 2019). The need to create environmentally safe nanoparticle synthesis protocols without the use of toxic chemicals is currently on the rise. As a result, scientists who study the synthesis and assembly of nanoparticles are now interested in biological systems (Sivaraj & Vanathi, 2017). Because the properties of the nanoparticles are different from those of their bulk (Flieger et al., 2021),they have a wide range of applications in various industries, including drug delivery targeting and biosensors (N. Kumar et al., 2018).One of the most recent applications of nanomaterials in the analytical chemistry area was the determination of antioxidant activity in metal nanoparticles (Vilela et al., 2014).

In general, either a "top down" or "bottom up" approach is used to produce and stabilise nanoparticles. In the "top down" strategy, bulk material is reduced in size using a variety of physical and chemical methods(Rajeshkumar & Bharath, 2017), whereas in the "bottom up" strategy, nanoparticles are created through the self-assembly of atoms into nuclei that then develop into nanoscale particles (Rafique et al., 2020).

The use of excess energy, various hazardous compounds that create biological hazards, heavy equipment, and other resources are required for the chemical and physical methods, which are frequently not eco-friendly or safely sound. Aside from these methods, plant-mediated AgNPs synthesis appears to be very fast, simple,non-toxic, and environmentally friendly. In contrast to other biological synthesis techniques, which involve difficult procedures such as maintaining microbiological cultures, the use of plant extracts in the synthesis of metal nanoparticles has more advantages (Hasan, 2014; Rajeshkumar & Bharath, 2017).

This review article summarises the publications based on the research done all over the world and focuses primarily on the study of plant mediated silver NP synthesis, characterization techniques, and the antioxidant activity of AgNPs by different methods.

2.Mechanism Of Plant Mediated Silver Nanoparticles:

Synthesis Of Silver Nanoparticles By Plants :

When compared to microbial synthesis, plant assisted synthesis of NPs is more effective in terms of yield. Numerous studies have been done on the green synthesis of AgNPs using various flora and fauna extracts. The majority of the literature review revealed that the researchers' first preference for synthesising silver nanoparticles from plants was leaf extract. In the process of creating AgNPs through plant-mediated synthesis, plant extractions are added to an aqueous $AgNO_3$ solution, where the Ag ions in the solution go through a reduction process to create Ag NPs. Many biochemicals and metabolites found in plants can act as reducing and stabilising agents in the synthesis of biogenic substances. Silver ions serve as electron acceptors, and the biomolecules found in plant extracts serve as reducing agents, allowing silver ions to be reduced to silver metal more easily (Ansari, 2018). Since it takes knowledge of the specific phytochemical required for the synthesis of stabilised NPs, phytochemical-mediated NP synthesis is a rare process (Journal et al., 2016;Shaikh et al 2020; Singh et al., 2020).The schematic diagram of synthesis of silver nanoparticles are shown below-

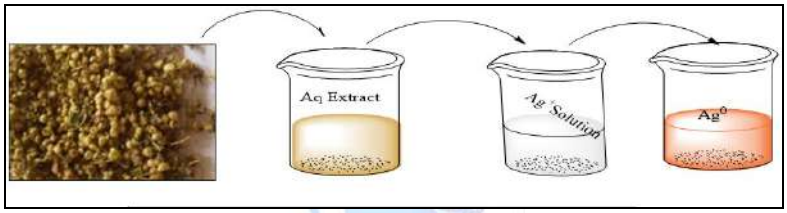

FIGURE 1.SYNTHESIS OF SILVER NANOPARTICLE BY PLANT EXTRACT

3. CHARACTERIZATION OF SILVER NANOPARTICLES:

Silver nanoparticles require sophisticated techniques for characterization because they are in the nanoscale dimension. It is crucial to characteriseAgNPs in order to learn about their size, shape, morphology, structure, surface chemistry, surface charge, dispersity, and surface area. The following discussion covers several methods for characterization of silver nanoparticles.

3.1. Uv-Visible Spectrophotometry :

One of the most popular methods for characterisingsynthesised nanoparticles is UV-vis spectrophotometry, which is also used to check the stability and synthesis of AgNPs.Furthermore, UV-Vis spectrophotometry is concise, quick, sensitive, and selective for various kinds of nanoparticles.It involves calculating how much ultraviolet or visible light a constituent in solution has absorbed. In the UV- Visible range, UV-Vis measures the ratio, or function of ratio or the intensity of two light beams. The valence band and conduction band in AgNPs are very close to one another, allowing for free electron movement. AgNPscombined oscillation of its electrons in resonance with the incident light wave causes these electrons to produce a surface plasmon resonance (SPR) band(Elamawi et al.) . The dielectric medium, morphology, shape, size, and chemical surroundings of synthesized nanoparticles are all factors that affect the absorption spectra of AgNPs. According to numerous studies, AgNPs produces absorption bands in the UV-Visible spectrum at wavelengths between 200 and 800 nm, and it is used to characterise nanoparticles with a range of 2-100 nm.(Joshi et al., 2018)

3.2. X-Ray Diffraction Analysis (Xrd):

Toexamine the crystal or polycrystalline structures, analytical methods like X-ray diffraction have been used(Bagherzade et al., 2017), andidentify the different chemical species qualitatively, resolve chemical compounds quantitatively (Cabral et al., 2013) ,particle sizes and assess the degree of crystallinity(Dey et al., 2009), and so on. When an X-ray beam is projected onto a crystal and the incident beam is scattered by the atoms, diffraction patterns form. The scattered x-rays interact with one another. This interference could be observed by employing Bragg's Law to determine various properties of the crystal or polycrystalline material. As a result, XRD can be used to investigate the structural properties of a wide range of materials, including biomolecules, polymers, superconductors, glasses, and so on. Diffraction patterns are crucial for the analysis of these materials. Diffraction patterns that have been created may reflect the crystal's chemical and physical properties. Since measurements are typically made in Angstroms, crystallite size (information on unit cell dimensions), strain, and crystal structure can all be determined using X-ray diffraction as a primary characterization tool. The overall oxidation state of the particles as a function of time is used by XRD spectra to identify the crystalline nature of the silver nanoparticles(Vasireddy et al., 2012).

3.3.Transmission Electron Microscope (Tem):

A powerful and effective tool for characterising the nanoparticles is the transmission electron microscope (TEM). It is used to obtain quantitative measurements of the synthesised nanoparticles' size distribution, particle size, and morphology. A sample is interacted with by an electron beam in TEM, which creates an image on a photographic plate (Asoro et al., 2013). The ability of TEM to identify and measure the chemical and electronic structure of individual nanoparticles is unique. Compared to SEM, TEM has some advantages, including better spatial resolution and more analytical measurements of nanoparticles. (Ren et al., 2019)

3.4. Fourier Transform Infrared Spectroscopy (Ftir):

The surface chemistry of metal nanoparticles is studied using FTIR spectroscopy, and it is also used to determine whether biomolecules are involved in the synthesis of the nanoparticles (Kudle et al., 2013). Additionally, the catalytic interactions between an enzyme and its substrate have been examined using FTIR and the confirmation of functional molecules that have been covalently grafted onto silver (S. Kumar & Barth, 2010). A portion of the infrared radiation that is transmitted through a sample is absorbed by it while the remaining is transmitted through it. The resulting spectrum represents the absorption and transmission by generating a molecular fingerprint for the sample, which represents the identity of the sample. The investigation of the part played by biomolecules in the reduction of $AgNO_3$ to silver can be done easily, inexpensively, and non-invasively using FTIR (Rajeshkumar & Bharath, 2017).

3.5.Atomic Force Microscopy:

Atomic force microscopy is based on physical scanning of samples at the sub-micron level with an atomic scale probe tip and provides ultra-high resolution in particle size measurement (Shi et al., 2003). Samples are typically scanned in either contact or noncontact mode, depending on their properties. In contact mode, the topographical map is generated by tapping the probe on the surface across the sample, while in non-contact mode, the probe hovers over the conducting surface. One of the most significant advantages of AFM is its ability to image non-conducting samples without any special preparation. This capability enables imaging of delicate biological and polymeric nano and microstructures.Furthermore, provides the most

accurate description of size, size distribution, and real-world picture, which aids in understanding the effect of various biological conditions(Zur Mühlen et al., 1996).

3.6. Dynamiclight Scattering (Dls) Spectroscopy:

Another quick, simple, and nondestructive method for measuring particle size in the micrometre and nanometer regimes is dynamic light scattering (DLS). In this method, a monochromatic light source, such as a laser, is passed through a suspension of nanoparticles, which scatter light at various intensities due to Brownian motion, and size is calculated using the Stokes-Einstein relationship. It functions best with monodisperse nanoparticles and typically measures the hydrodynamic diameter of nanoparticles affected by the surfactant, stabilising, and capping agents as well as the presence of an electrical double layer adsorbed on the surface of nanoparticles. AgNPs zeta potential is also measured by the DLS, a large magnitude value denotes electrostatically stabilised nanoparticles(Dove Press, 2018; Dawadi et al., 2021).

4. Antioxidant Activity:

In addition to the numerous applications of AgNPs, an abundance of articles focusing on the silver nanoparticles antioxidant properties have been published over the past ten years. Here, we've compiled a list of recent techniques for determining the antioxidant capacity of silver nanoparticles as well as their methods of production. As can be seen, biosynthesis (especially using plant extract) has generated more publications than any other method of creating AgNPs, which may be explained by its simplicity, availability, and low cost.

1) Dpphassay

The purple stable free radical DPPH (2,2-diphenyl-1-picrylhydrazyl) reacts with a hydrogen donor. The existence of delocalized spare electrons on the whole molecule prevents dimerization and imparts colour to the DPPH molecule, with absorption maximum at roughly 520 nm in UV/Vis spectra. After reaction, the DPPH radical yields the reduced form DPPH (hydrazine form), resulting in a colour change from purple to pale yellow. The degree to which the purple colour fades is determined on the antioxidant concentration. The scavenging capability is often measured in organic solvents rather than aqueous media.(Devanathadesikan et al., 2020; Vilela et al., 2014).

2) Ferric Reducing Power Assay

In an acidic medium, the colourless Fe^{3+}-2,4,6-tripyridyl-s-triazine complex is reduced to the intensely blue Fe^{2+}. 2,4,6-tripyridyl-s-triazine complex to perform the FRAP (ferric reducing antioxidant power). Increasing absorbances measured at 593 nm are used to calculate FRAP values. The FRAP methods have a number of drawbacks. Even without antioxidant properties, substances that have a lower redox potential than the Fe^{3+}/Fe^{2+} pair's redox potential may convert Fe^{3+} to Fe^{2+} and raise the FRAP value to produce falsely high results. However, not all antioxidants decrease Fe^{3+} quickly enough to be measured.

3) Hydroxyl Radical Scavenging Activity

This test is based on quantifying the breakdown product of 2-deoxyribose by condensation with TBA. The reaction mixture contained 2-deoxy-2-ribose (2.8 mM), KH_2PO_4-KOH buffer (20 mM, pH 7.4), $FeCl_3$ (100 mM), EDTA (100 mM), H_2O_2 (1.0 mM), ascorbic acid (100 mM), and various amounts of the test sample or reference substance (0-200 g/ml).(Shete et al., 2014).

From the literature survey it is also clear that the most commonly used method of AgNPs antioxidant capacity determination is DPPH assay. Authors usually compare the antioxidant capacity of extract with that of prepared silver nanoparticles.

5. Conclusion:

Nanotechnology is improving our everyday lives by enhancing the performance and efficiency of everyday objects. It provides a clean environment by providing safer air and water, and clean renewable energy for a sustainable future. Nanotechnology has gained a wide attention where more investment is made for the research and development by top institutions, industries and organisations. Nanotechnology has established to be an advanced field of science where extensive research is carried out to implement the technology. It is being tested for various new applications to increase the efficiency and performance of the object or process and subsequently reduce the cost so that it is accessible for everyone. Because of their tunable properties, Ag NPs have long piqued the interest of researchers. Silver nanoparticles are typically produced by reducing silver salts with plant extract. Antioxidant properties of AgNPs. This action is caused by the presence of functional groups on the surface. Because of their high efficacy, non-toxicity, eco-friendliness, and low cost, AgNPs may be used as antioxidants in the future. As a result, our discovery will open up new avenues for the widespread production and application of these AgNPs in a variety of fields.

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Competing Interests:

All authors certify that thay have no affilations with or involvement in any organization or entity with any financial interest or non- financial interests in the subject matter or materials discussed in this manuscript.

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Algal Dominance in Contaminated Water Region of Godavari River

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Abstract:

The Godavari River is running all over the city of Nanded, and we found that some of the sites of river which is directly come in contact with anthropogenic activity are highly contaminated. To find out the actual pathogens, its identifications and characterizations, we took some of the water samples from different locations of Godavari River.Green mat of algal bloom on running and stagnant water can be easily observed by just a single look from the bridge. Godavari river is full of water and it is evergreen whole year. We observed that, the zone or sites where these green mats of algal blooms are highly contaminated regions, it can be easily can recognized by its really bad odor.

The sample taken from contaminated river site are analysed through several microbiological identifications test. In the present investigations we found that the collected samples were contaminated with Bacillus megaterium, Escherichia coli, Kleibsiellaand sometime presence of Vibrio also detected. Among all collected samples B. megateriumis most dominant bacterium species.

Keywords: Pathogens, water-borne diseases, Godavari River

Introduction:

The microbial contaminations and pathogens responsible for human diseases are enormously present in River water which is stagnant. The water current which is continuously in flowing can carry everything along with the current. The water which is kept undisturbed for long time can be responsible for the growth of enormous pathogens responsible for several human diseases. Not only these causal organisms can grow but in such environment, the microbes which can able to secrete toxin also can be inhabited. The water present in such water body is not potable and responsible poisoning and diseases of pet animals.

The pathogens along with all sorts of microbes are the one of the important part of biotic factor of ecosystem. The microbial pathogens generated because of anthropogenic activity like faecal contaminations are considered to be the vital factor for the health of people drinking the river water (BayoumiHamuda&Patko, 2012). In developing countries contaminated water is the major cause of several diseases. Quality assuarance of surface and ground water is could major issue in developing countries (Pekárová et al., 2009). The pathogenic microbes present in river water are the major issue with respect to public health and can be reason to have health protections with respect microbial contaminations in river water (Fey et al., 2004; Straub & Chandler, 2003; WHO, 2002).

Materials And Methods:

Media:

Different types of media were used for selective growth, enrichment culture, and indication of specific properties. Media preparation and sterilization were done according to the

protocol and standard recipe.

Sample collection:

Water samples were collected from different contaminated sites of Godavari River water body. The collected samples were serially diluted by microbiological techniques and spread and streaked on nutrient agar plates. Isolated colonies obtained were further purified and processed for biochemical analysis for their identifications. Initially the rough outline of microbes regarding their identity is to be done by colony characterizations like size, pigmentation, form, margin, elevation and texture (Cappuccino & Sherman, 2005).

Gram stain:

Gram staining was done to differentiate between two principal groups of bacteria: gram positive and gram negative.

Biochemical characterization of the bacteria:

Once we got the broad outline with respect to identifications of microbes we have gone throuch several biochemical chacteracterization for the confirmation of bacteria. The biochemical tests performed were Triple sugar iron agar test, IMViC test (Indole production test, Methyl red test, Voges- Proskauer test, Citrate utilization test), MIU test (Motility test, Indole test and Urease test), Nitrate reduction test, Catalase test, Oxidase test, Casein hydrolysis test, Gelatin hydrolysis test, Starch hydrolysis, Blood agar, MacConkeys Agar and Mannitol Agar.

Species Diversity:

Diversity of species was calculated by richness and evenness of species by Shannon-Weiner index (Shannon and Weiner, 1963), species dominance was calculated by Simpson's index (Simpson, 1949) and Margalef (1958).

Results And Discussion:

For present investigation water samples were collected from Godavari Rivers and further analyzed for microbial contaminations (Table 1). Godavari River is very holly place and present near to Kaleshwar temple. Also we found water purifier plant over there to make potable water for nearby villages.

The samples were collected from different locations of Godavari river and co-ordinates for sampling sites are as follows:

Table 1: Sampling sites and its coordinates

Sample Code	Longitude	Latitude	No. of Microbes
S1 (Kaleshwar temple)	$19^0$7'20.44	$77^0$17'1.66	06
S2 (NaginaGhat)	$19^0$8'37.4"	$77^0$18'28.27"	06
S3 (GovardhanGhat)	$19^0$8'39.62"	$77^0$18'41.19"	04

Diversity indices were calculated manually and compared with standard software (Microsoft Excel), and we found thatBerger Parker Index (37.5%), Shannon-Weiner (1.0822), andSimpson Dominance (34.4 %)(Table 2).

Table 2(a): Measurement of diversity indices from sampling sites with respect to one another

No	Category	Value	x	x^2	-x ln(x)
1	S-1	6	37.5%	0.141	0.368
2	S-2	6	37.5%	0.141	0.368

3	S-3	4	25.0%	0.062	0.347
R1	**Simpson Dominance**			0.3438	
R2	**Shannon Entropy**				1.0822

Table 2(b): Measurement of diversity indices from sampling sites with respect to one another

Diversity Indices	
Index	**Value**
Number of Sites *N*	3
Richness *R*	3
Berger Parker Index p_{imax}	37.5%
Shannon Entropy[1)] *H* (nat)	1.0822
Shannon Entropy[1)] *H* (bit)	1.5613
Number Eq. ^1D (True Diversity)	3.0
Shannon Equitability *H*/ln*N*	98.5%
Simpson Dominance *SD*	34.4%
SD (unbiased - finite samples)	30.0%
True Diversity ^2D (Order 2)	2.9
Gini-Simpson Index 1-*SD*	65.6%
Gini-Simpson Equitability	98.4%
[1)]**sometimes referred to as Shannon-Weaver or Shannon-Wiener Index**	

Location 1(S1): Sampling sites for microbial investigations of Godavari River

Location 2 (S2): Sampling sites for microbial investigations of Godavari River

Location 3 (S3): Sampling sites for microbial investigations of Godavari River

We have taken some water samples to find out contaminating microbes. The taken samples were serially diluted and spread on nutrient agar plates and we found that (See Fig. 1 and 2), numerous bacteria are there, which are responsible for water contaminations.

Table 3: Obtained isolates were tested for colony characteristics

Isolate No.	Isolate	Colour	Shape	Margin
1	SC1	White	Oval	Straight,entire
2	SC2	Creamy	Round	Entire, Smooth
3	SC3	White	Oval	Discontinues
4	SC4	Off White	Round	Smooth
5	SC5	White	Round	Smooth
6	SC6	Creamy	Irregular	Curled
7	SC7	Orange, milky	Round	Entire
8	SC8	White	Round	Continues
9	SC9	White	Irregular	Curled
10	SC10	Off, White	Circular	Entire
11	SC11	White	Round	Smooth
12	SC12	White	Round	Smooth
13	SC13	White	Irregular	Discontinues
14	SC14	White	Round	Entire
15	SC15	Creamy	Oval	Irregular
16	SC16	Milky	Oval	Rough

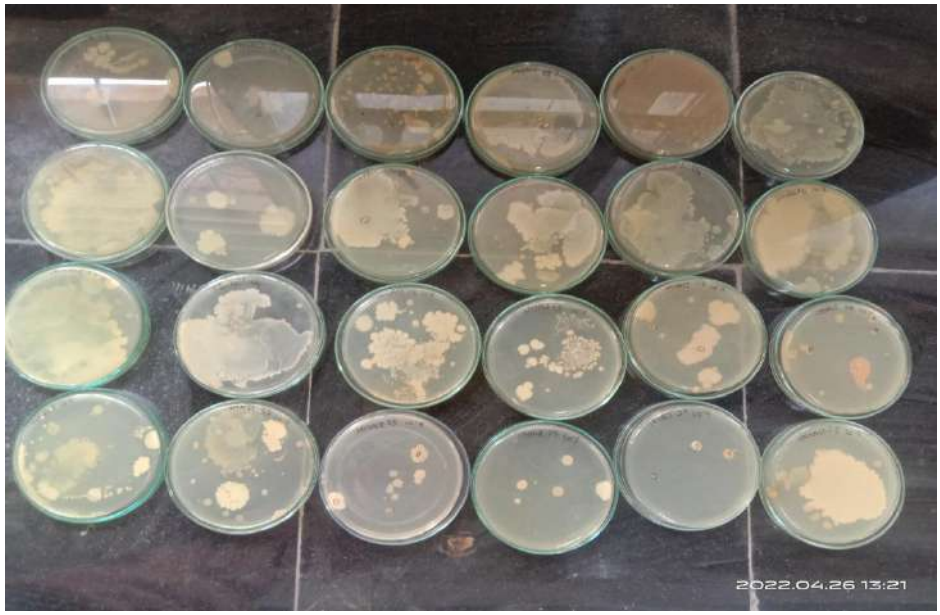

Figure 1: Bacterial colonies obtained after serial dilutions and spread plate techniques.

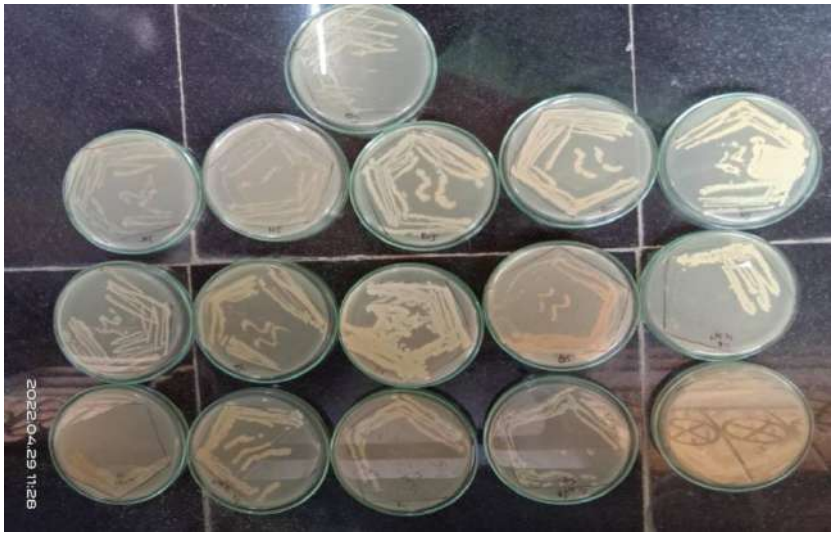

Figure 2: Bacterial colonies obtained after serial dilutions and streak plate techniques.

Figure 3: Isolates were tested for triple iron sugar test

Figure 4: Isolates tested for Voges-Proskaur test

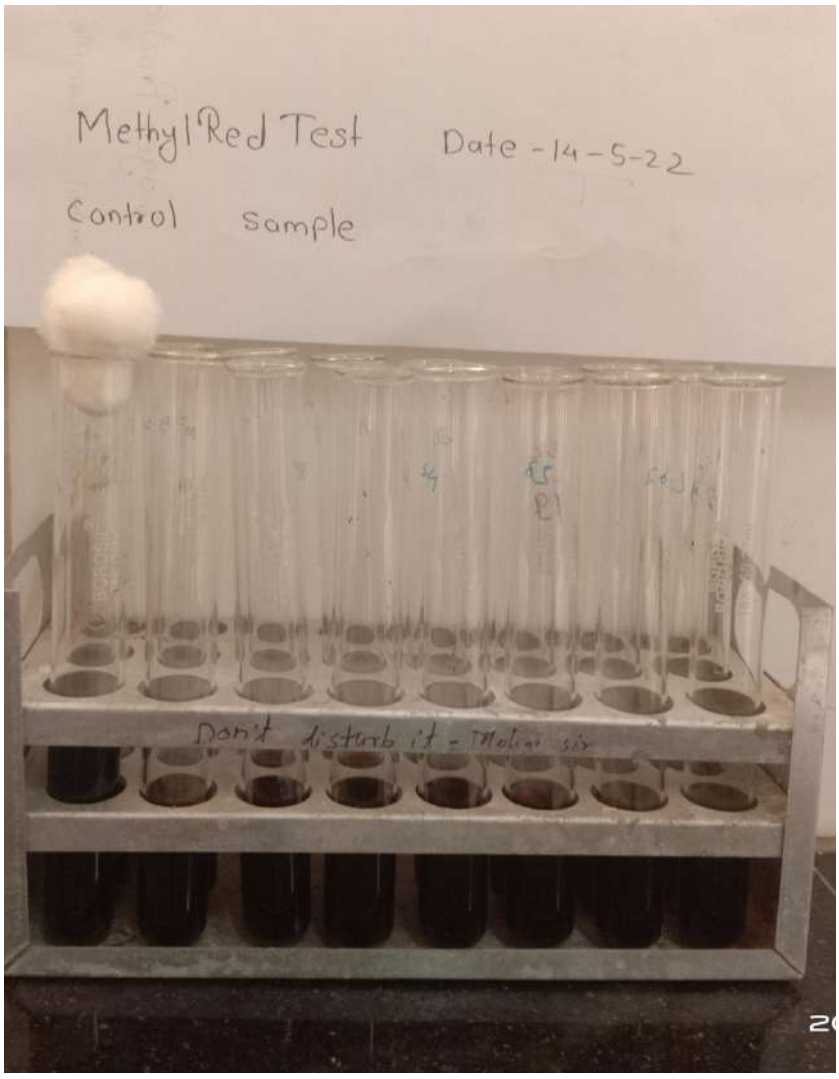

Figure 5: Bacteria tested for Methyl red test

Figure 6: Isolates tested for Indole test

Figure 7: Isolates tested for H2S production

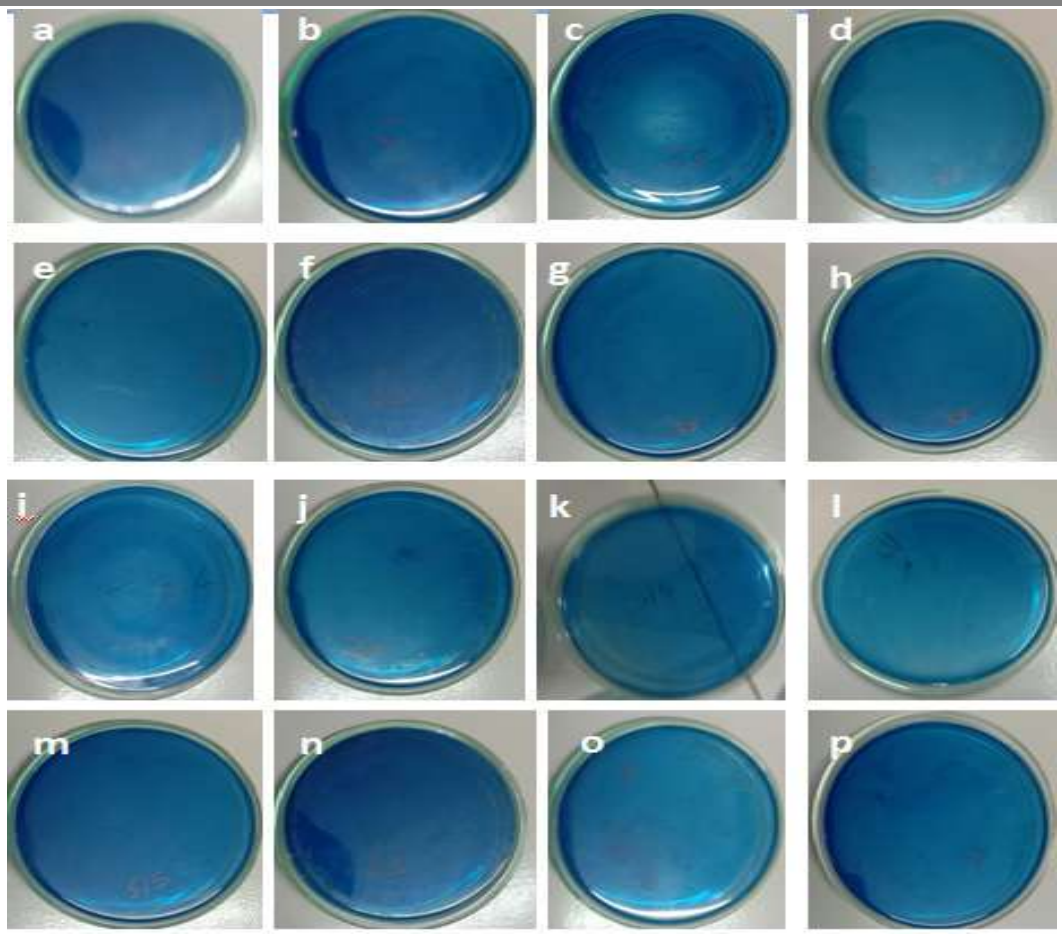

Figure 8: Isolates tested for Simmons Citrate Agar test

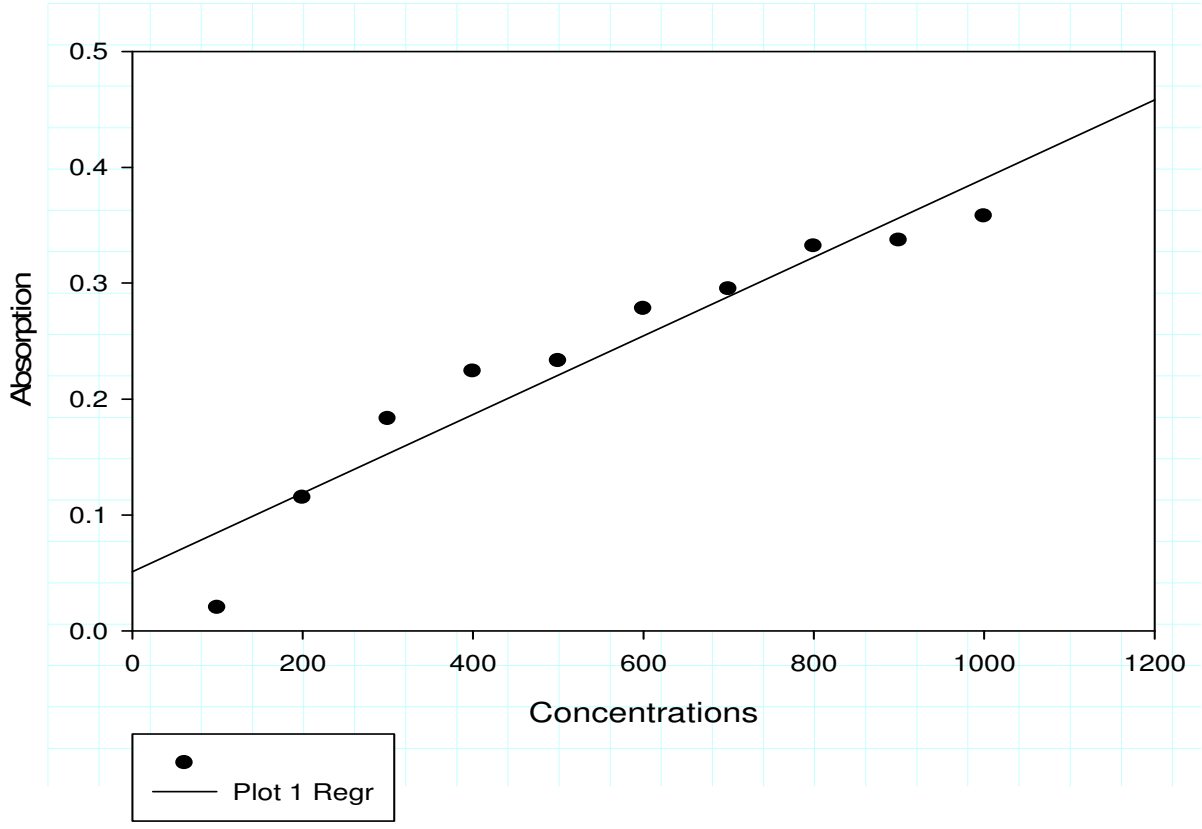

Figure 9: Standard graph for protein estimations by taking Bovine Serum albumin as standard.

The protein estimation has been done to find live microbial activity in water bodies. We found protein concentrations in collected samples are like 130 mg/L, 6.145 mg/L and 36.31 mg/L from S3, S2 and S1 samples respectively. From this data we can interpret that the sample S3 is having more microbial activity in comparison to others. As the efflux of sewage water is directly released over there, which makes it more contaminated.

In the present investigations we found that the collected samples were contaminated with *Klebsiellaaerogenes, Escherichia coli and Preteus vulgaris*. Among all collected samples*Klebsiellaaerogenes*is most dominant bacterium species (Table 4).

Table 4 : Biochemical analysis of obtained isolates and identifications of microbes

Sr. No.	Isolates	GS	IT	MR	VP	SC	TSA	H_2S	Identified Microbes
1	SC1	-	+	+	-	-	+	-	*Escherichia coli*
2	SC2	-	+	+	-	-	+	-	*Escherichia coli*
3	SC3	-	+	+	-	-	+	+	*Proteus vulgaris*
4	SC4	-	+	+	-	-	+	-	*Klebsiellaaerogenes*
5	SC5	-	+	+	-	-	+	-	*Escherichia coli*
6	SC6	-	+	+	-	-	+	-	*Klebsiellaaerogenes*
7	SC7	-	+	+	-	-	+	-	*Escherichia coli*
8	SC8	-	+	-	-	-	+	+	*Proteus vulgaris*
9	SC9	-	+	+	-	-	+	-	*Escherichia coli*
10	SC10	-	+	+	-	-	+	-	*Escherichia coli*
11	SC11	-	+	+	-	-	+	-	*Klebsiellaaerogenes*
12	SC12	-	+	+	-	-	+	+	*Proteus vulgaris*
13	SC13	-	+	+	-	-	+	-	*Klebsiellaaerogenes*
14	SC14	-	+	+	-	-	+	-	*Klebsiellaaerogenes*
15	SC15	-	+	+	-	-	+	-	*Klebsiellaaerogenes*
16	SC16	-	+	+	-	-	+	-	*Klebsiellaaerogenes*

GS: Gram Staining, IT: Indole test, MR: Methyl Red Test, VP: VogesProskaur Test, SC: Simmons Citrate Agar test, TSA: Triple iron sugar Test

The bacterial isolates detected in contaminated water samples are highly sensitive to plant extracts and blooming algal extracts. We made extractions of algal secondary metabolites, collected from locations of Godavari Rivers and found that the bacteria can easily prevented upto 15 fold activity. The microbes identified in present investigations are highly sensitive to algal toxins secreted during algal bloom formations (Fig. 10). During the antimicrobial assay we observed that the, region where algal contaminations is predominant, there were another microbial flora exist because of continuous secretions of algal toxins into river water. In assay we found multifold inhibitions of microbial flora because of algal extracts.

Figure 10: Growth inhibitions of bacterial isolates by toxins secreted by algal blooms.

Conclusion:

The contamination of microbial pathogens coming from drinking water which is taken from running river water current is the major concern of health issues of human beings and animals. In present investigations we observed microbes which are pathogenic as well toxic to animals. Here we have taken water from different locations and we observed some the water bodies contains faecal contamination in some of water bodies there is dominance of algal blooms responsible for secretions of algal toxins which are deadly poisonous and neurotoxic. The whole Nanded city is covered by Godavari River and efflux of anthropogenic activity is directly release into water bodies which results in the eutrophications and generations of algal blooms. The faecal contaminations are in some of locations are directly released into water body, we can detect by the presence of enteric bacteria.

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Study on Food Biopreservative Application of Bacteriocin by *Lactobacillus Pentosus* B25 on Raw and Pasteurized Milk

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Abstract:

Bacteriocin is employed as a food preservative thanks to its medicine activity. It principally used for increase the period of time of food. It works as natural preservative similarly as mix with chemical preservatives. In study, we tend to use the 5% bacteriocin in raw milk and pasteurized milk. The raw milk extend their life up to eight days and pasteurized milk extending up to forty two days. The preservative activities of the bacteriocins tested on milk showed that the bacteriocin B25 had most reduction of microorganism population and thereby extending the period of time and enhancing the protection of food merchandise.

Keywords: Bacteriocin, Milk sample, Preservatives, MBRT Test

1. Introduction:

Lactobacillus species are primarily employed in the food trade in probiotics like Yakult and Vitagen, however also can be found in yoghurts and alternative hard dairy farm merchandise like cheese, wherever they're used as starter cultures. Daeschel, (1989) declared that in some food system carboxylic acid microorganism represent the dominant micro flora. The organisms are ready to manufacture antimicrobial compounds against competitive flora, as well as food borne spoilage and morbific microorganism. The antimicrobial impact exerted by carboxylic acid microorganism is that the production of carboxylic acid and reduction of hydrogen ion concentration, and lactic acid, diacetyl, oxide, fatty acids, aldehydes and alternative compounds. Fuller, (1989) according that lactic acid microorganism are used as adjuncts in food to supply a good selection a health advantages. The establishment of the gut by probiotic microorganism prevents the expansion of harmful microorganism by competitive exclusion and by the assembly of matter viz., organic acids and antimicrobial compounds. Piard and Desmazeaud, (1991) had made antimicrobial compounds from the lactic acid microorganism, which may be classified as low mass compounds like oxide, greenhouse emission, diacetyl and high mass compounds like bacteriocins. Agar well diffusion methodology and neutral living thing culture filtrate obtained from isolates of *L. acidophilus, L. delbrueckii spp. bulgaricus, L. salivarius and Lactococcuslactis spp. lactis* from Dahi showed weak to moderate inhibition of *Staphylpcoccus aureus, Bacillus caryophylloid dicot genus, E. coli, Bacillus brevis, Bacillus circulans, Bacillus coagulans, Bacillus laterosporus, Bacillus,* and *P. aeruginosa* and according the potential of exploitation neutral living thing cellular filtrate of lactic acid microorganism within the bio preservation of foods. Yoneyama*et al*., (2004) showed that nisin and a few of the recently isolated novel bacteriocins were effective bio-preservatives in sure food systems during which focused bacteriocin preparations or the bacteriocin manufacturing strains had been used. The Lactic acid microorganism strains owe their antagonistic activity to either decrease within the hydrogen ion concentration or to bacteriocin production creating them ideal for cheese creating and preventing the expansion of *S. aureus*. In 2007, Vuyst and Leroy, according that bacteriocins

may be used as food additives and as an alternate to the addition of bacteriocins to foods, bacteriocins could also be made directly within the food as a results of starter culture or co-culture activity.

In present study, we tend to confirm the period of time of milk by exploitation bacteriocin that is made by true bacteria pentosus (B25) as a food preservative.

2. Materials And Methods:

The bio preservative potency of the bacteriocins B25 obtained from *L.pentosus* B25 made up our minds as represented by Joshi et al., protocol with slight modification. Every flask contained 50 ml raw milk and pasteurized milk, out of that one is management i.e. while not bacteriocin and one is sample i.e. with bacteriocin. for every sort 50 ml sample used and bacteriocin was side at 5ml and analysed for 2, 4, 6, eight and ten days (Raw milk) and most up to two months (Pasteurized milk). For raw milk, after every 1 day and for pasteurized milk, after every 6 days, the quality and stability of milk was studied with respect to (1) colony count (2) pH (3) Clotting test (4) Alcohol test (5) Acidity test (6) Resazurin test and (7) Methylene blue reductase test.

2.1 a Determination of colony count:

The residual activities were taken every 2 days interval and serially diluted at 10^{-6} were made and the plated on nutrient agar and was incubated at 37^0C for 24 hours. The colony count was recorded and compared with the control (without bacteriocin).

2.2 b Quality control test of Milk:

2.2 b(i) pH Determination:

The pH of medium was determined using pH probe (Lab Serv, AcuStar$^+$ V, pH/ Conductivity Meter).

2.2. b(ii) Clot on boiling (C.O.B) test:

The test is quick and simple. It is one of the old tests for too acid milk (pH<5.8) or abnormal milk (e.g. colostral or mastitis milk). If a milk sample fails in the test, the milk must contain many acid or rennet producing microorganisms or the milk has an abnormal high percentage of proteins like colostral milk. Such milk cannot stand the heat treatment in milk processing and must therefore be rejected. Boil a small amount of milk in a spoon, test tube or other suitable container. If there is clotting, coagulation or precipitation, the milk has failed the test.

2.3 The alcohol test:

The test is quick and simple. It is based on instability of the proteins when the levels of acid and/or rennet are increased and acted upon by the alcohol. Also increased levels of albumen (colostrum milk) and salt concentrates (mastitis) results in a positive test.

The test is carried out by mixing equal amounts of milk and 68% of ethanol solution in a small bottle or test tube. (68 % Ethanol solution is prepared from 68 mL 96% (absolute) alcohol and 28 ml distilled water). If the tested milk is of good quality, there will be no coagulation, clotting or precipitation, but it is necessary to look for small lumps. The first clotting due to acid development can first be seen at 0.21-0.23% Lactic acid. For routine testing 2 ml milk is mixed with 2 ml 68% alcohol.

2.4 Acidity test:

Bacteria that normally develop in raw milk produce more or less of lactic acid. In the acidity test the acid is neutralised with 0.1 N Sodium hydroxide and the amount of alkaline is

measured. From this, the percentage of lactic acid can be calculated. Fresh milk contains in this test also "natural acidity" which is due to the natural ability to resist pH changes .The natural acidity of milk is 0.16 - 0.18%. Figures higher than this signifies developed acidity due to the action of bacteria on milk sugar.

To 9 ml of the milk measured into the porcelain dish/conical flask, 1 ml Phenolphthalein is added and then slowly titrated again 0.1 N Sodium hydroxide present in the burette under continuous mixing, until a faint pink colour appears. The amount of ml of Sodium hydroxide solution required was noted and % lactic acid was estimated.

2.5 Resazurin test:

Resazurin test is the most widely used test for hygiene and the potential keeping quality of raw milk. Resazurin is a dye indicator. Under specified conditions Resazurin is dissolved in distilled boiled water. The Resazurin solution can later be used to test the microbial activity in a given milk sample. Resazurin can be carried out as 10 min test, 1 h test, 3 h test. The 10 min Resazurin test is useful and rapid, screening test used at the milk platform. The 1 h test and 3 h tests provide more accurate information about the milk quality, but after a fairy long time. They are usually carried out in the laboratory.

10 ml of milk and 1 ml of Resazurin was added in test tube, mixed the dye thoroughly and incubated in water bath and response was observed as change in colour and quality of milk was decided. Following table 1 has shown the reading and result of this test.

Table 1: Readings and Results (10 Minute Resazurin Test)

Resazurin Test	Colour	Grade of milk	Action
1	Blue	Excellent	Accept
2	Light blue	v. good	Accept
3	Purple	Good	Accept
4	Purple pink	Fair	Separate
5	Light pink	Poor	Separate
6	Pink	Bad	Reject
7	White	Very bad	Reject

2.6 Methylene blue reductase test:

Transfer 10 ml of each milk sample into appropriately labelled test tube. Add 1 ml of redox indicator, methylene blue to each test tube containing milk sample. Tighten the test tube mouth with stoppers. Gently invert the tubes at about four or five times to ensure proper mixing of the methylene blue solution. Keep the tubes in the water bath at 37^0C. Note the incubation time. That is, the time elapsed for the colour to turn whitish appearance. Stabilize the tubes for 5 minutes.

Table 2: Result of Methylene blue reductase test

Sr. No.	Time in reduction	Quality of milk
1	Within 30 min	Very poor quality
2	Between 30 min and 2 h	Poor
3	Between 2 and 6 h	Fair
4	Between 6 and 8 h	Good
5	Not reduced in 8 h	Excellent

3. Result And Discussion

Application of bacteriocin as a Food bio preservative

3.a Application of bacteriocin as food bio preservative in Raw Milk:

Bacteriocin is employed as a food preservative thanks to its bactericide activity. It principally used for increase the period of time of food. It works as natural preservative likewise as mix with chemical preservatives. The milk extend their life up to eight days and milk extending up to forty two days (photoplate 1). The preservative activities of the bacteriocins tested on milk showed that the bacteriocin B25 had most reduction of microorganism population and thereby extending the period of time and enhancing the protection of food merchandise.

Table 3a, b represents the clotting formation, odour, clotting, colour modification in Resazurin take a look at, you look after carboxylic acid and thiazine enzyme take a look at of milk (photoplate two and 3). Figure one represents the colony count, hydrogen ion concentration and carboxylic acid concentration of milk.

Table 3a: Quality control studies of Raw Milk

Sr. No.	Coagulation Formation		Odour		Clot on Boiling test		Alcohol Test	
Day	C	S	C	S	C	S	C	S
1	No	No	N	N	-	-	-	-
2	No	No	N	N	-	-	-	-
3	No	No	Ab	N	+	-	+	-
4	Y	No	Ab	N	+	-	+	-
5	Y	No	Ab	N	+	-	+	-
6	Y	No	Aci	N	++	-	++	-
7	Y	No	H. Aci	N	++	+	++	+
8	Y	Yes	H. Aca	Ab	++	+	++	+

Legends: N-Normal, Ab.-Abnormal

Table 3b: Quality control studies of Raw Milk

Sr. No.	Resazurin Test		Lactic Acid Test (%)		MBRT Test (h) Reduction	
Day	C	S	C	S	C	S
1	Blue	Blue	0.58	0.58	8	8
2	Blue	Blue	0.58	0.58	8	8
3	Purple Pink	Blue	0.67	0.58	5	8
4	Light pink	Blue	0.95	0.67	1	8
5	Pink	Purple	1.165	0.67	1	5
6	Pink	Purple	1.506	0.81	½	5
7	White	Purple pink	1.963	0.83	½	5
8	White	Light pink	2.358	1.43	½	3

3.b Application of bacteriocin as a food bio-preservatives in Pasteurized Milk:

Table 4a, b represents the clotting formation, odour, clotting, colour modification in Resazurin take a look at, you look after carboxylic acid and thiazine enzyme take a look at of milk (Photoplate 1 and 2). Figure two represents the colony count, hydrogen ion concentration

and carboxylic acid concentration of milk. Similarly, the bacteriocin of *L.fermentum* had most reduction on microorganism population. These results additional disclosed that microorganism count drastically reduced in each the treated and untreated sample. (Joshi *et al*., 2006). Combined impact of warmth and bacteriocin additionally extended storage lifetime of milk by suppressing growth of various microorganisms (Sharma et al., 2008)). Similar work done by Cao-Hoang *et al.,* (2010); Mills *et al.,(*2011).

Table 4a: Quality control studies of Pasteurized Milk

Sr. No.	Coagulation Formation		Odour		Clot on Boiling test		Alcohol Test	
Day	C	S	C	S	C	S	C	S
1(1)	No	No	Normal	Normal	-	-	-	-
2(6)	No	No	Normal	Normal	-	-	-	-
3(12)	No	No	Abnormal	Normal	+	-	+	-
4(18)	Yes	No	Abnormal	Normal	+	-	+	-
5(24)	Yes	No	Abnormal	Normal	+	-	+	-
6(30	Yes	No	Acidic	Normal	++	-	++	-
7(36)	Yes	No	Highly acidic	Normal	++	+	++	+
8(42)	Yes	Yes	Highly acidic	Abnormal	++	+	++	+

Table 4b: Quality control studies of Pasteurized Milk

Sr. No.	Resazurin Test		Lactic Acid Test (%)		MBRT Test (h) Reduction	
Day	C	S	C	S	C	S
1(1)	Blue	Blue	0.58	0.58	8	8
2(6)	Blue	Blue	0.58	0.58	8	8
3(12)	Purple Pink	Blue	0.67	0.58	5	8
4(18)	Light pink	Blue	0.95	0.67	1	8
5(24)	Pink	Purple	1.165	0.67	1	5
6(30	Pink	Purple	1.506	0.81	½	5
7(36)	White	Purple pink	1.963	0.83	½	5
8(42)	White	Light pink	2.358	1.43	½	3

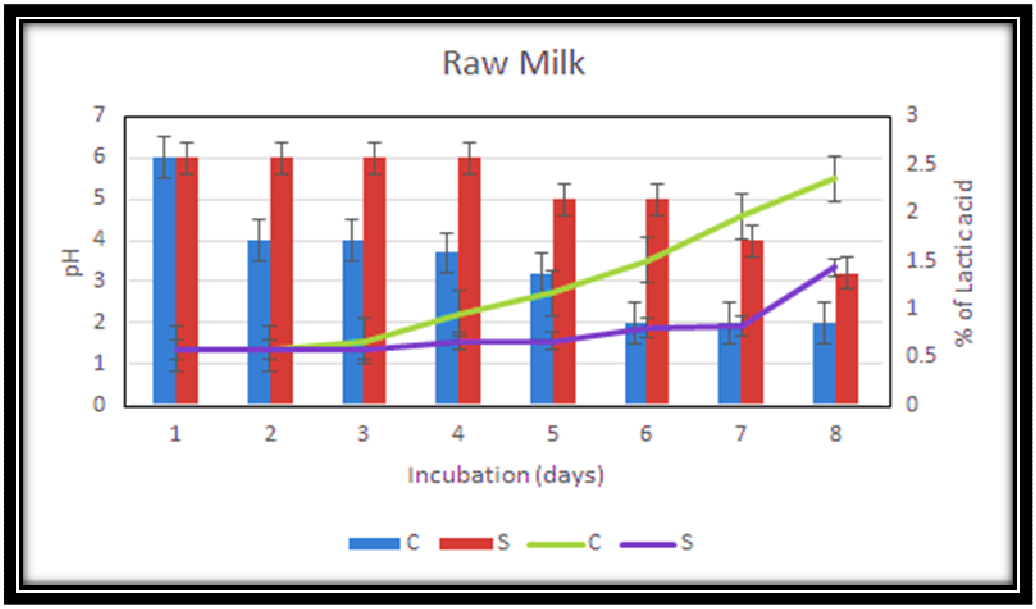


Fig. 1: pH and lactic acid concentration

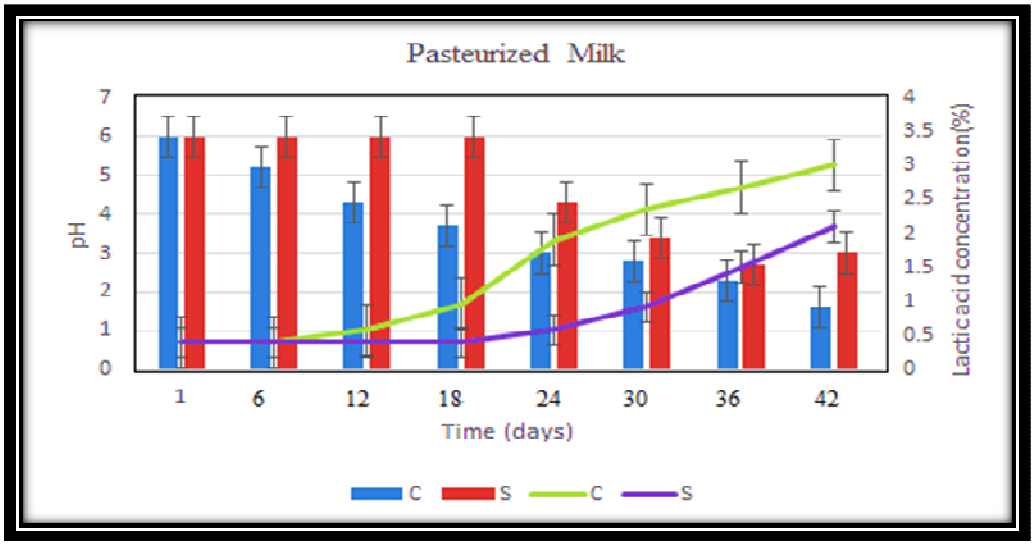
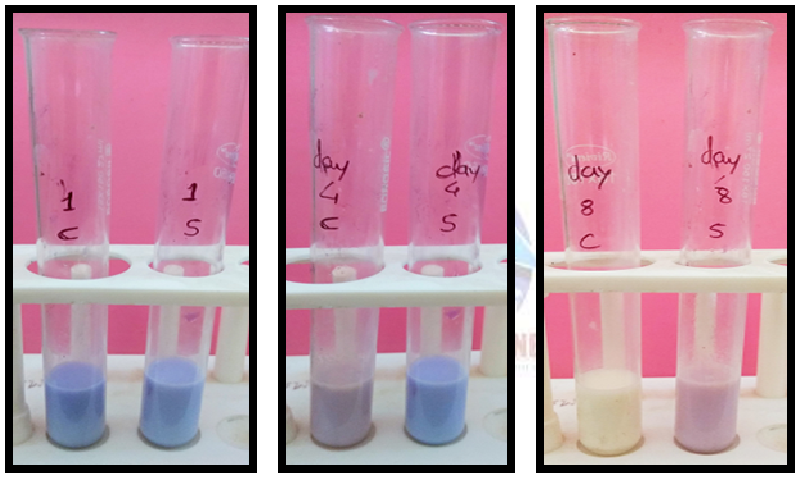
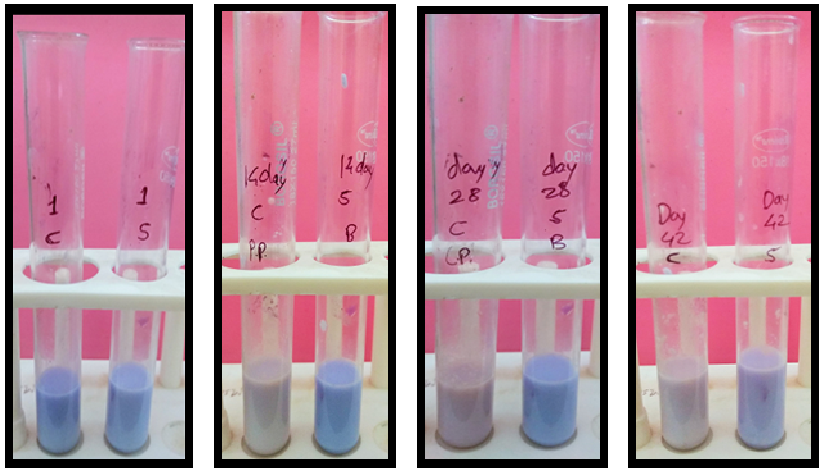


Fig. 2: pH and lactic acid concentration

PHOTOPLATE 1

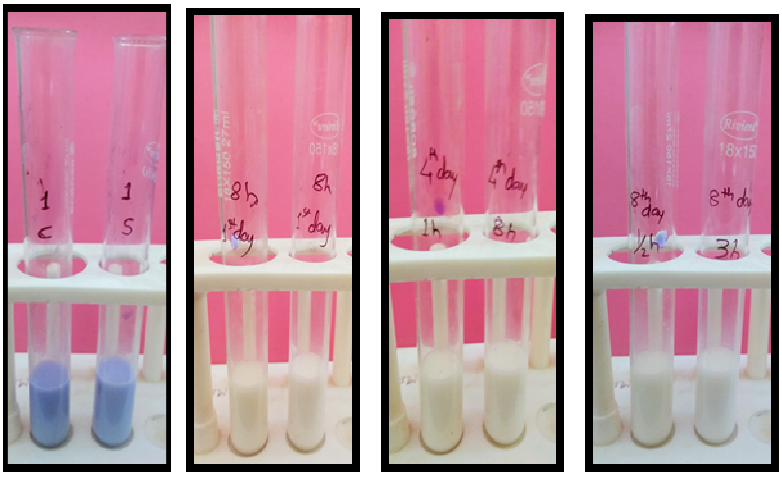


A. Resazurin test of Raw Milk

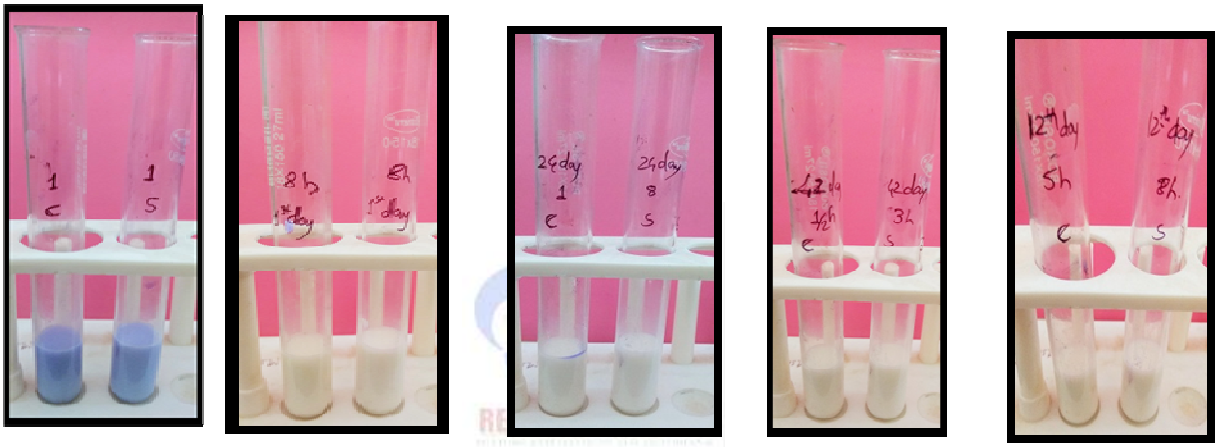


B. Resazurin test of Pasteurized milk

PHOTOPLATE 2



A. Methylene Blue Reductase test of Raw milk –Blue colour reduced in white colour



B. Methylene Blue Reductase test of Pasteurized milk

4. Conclusion:

These bacteriocins have tolerance to wide environmental factors, it can be used as a bio preservative in food industries. Bacteriocin is employed as a food preservative thanks to its bactericide activity. It principally used for increase the period of time of food. It works as natural preservative likewise as mix with chemical preservatives. In this study, we tend to use the 5 % bacteriocin in raw milk and pasteurized milk. The milk extend their life up to eight days and milk extending up to forty two days. The preservative activities of the bacteriocins tested on milk showed that the bacteriocin B25 had most reduction of microorganism population and thereby extending the period of time and enhancing the protection of food merchandise.

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Inorganic Phosphate Solubilizers and Siderophore Producing Rhizobacteria Isolated from *Triticumaestivum* (Wheat) for Sustainable Agriculture

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Abstract:

The rhizosphere is the region of soil that is influenced by root secretions and associated soil microorganisms. Rhizobacteria are root associated bacteria that can have a detrimental, neutral or beneficial effect on plant growth. Here, an attempt has been made to screen and identify phosphate solubilizer and siderophore producing rhizobacteria from rhizospheric soil of wheat field. Samples were collected from rhizosphere of wheat field of different 6 region of Gujrat,India (Kutch, Jamnagar, Junagadh, GirSomnath, Amreli and organic farming field). 34 pure cultures were obtained in solid Nutient Agar Media. Isolates were screened on Pikovskaya's agar plates for phosphate solubilization and chrome azurol S agar medium for siderophore production. The 14% isolates were able for Phosphate solubilization and 17% were positive for siderophore production. This study will facilitate accurate identification of the bacterial types that rhizospheric traits essential in synthesis of plant hormones, soil nutrient solubilization and help in fiulfilment of the iron requirement of plants by causing its solubilization and chelation from organic or inorganic complexes present in soil and in sight an immunological response in the plants, thereby enhancing their capability to overcome diseases.

Introduction:

Cereals such as rice, wheat, chick pea and maize are the major grains that sustain humanity. Wheat grows in temperate climates and shows the staple food for 35% of the world's population and provides more calories and proteins, than any other crop. The population all around the world is on hike while the food production is entirely stagnant. Thus, to meet the increasing demand of the increasing population scientists are now target towards the techniques that can lead to increase in food production. Due to climate change, increased population pressure and adverse environmental impacts on agriculture fields are continually facing many detrimental effects, which finally lead to scarcity of food production. To overcome the situation, new mechanism must be developed to meet the increased food demands with sustainable food production that has the potentiality to provide adequate food nutrition without hampering the fields. One such mechanism that is used to meet the agricultural need is "Biofertilizer". Biofertilizers due to its renewable, cheap and environmentally safe nature has gained increasing popularity in the past one decade in the field of agriculture and food production. The use of chemical fertilizers and pesticides has caused enormous effect to the environment. Biofertilizers will help to solve such problems as increased salinity of soil and chemical run off from the agricultural field.It has been found to minimize the use of chemical fertilizers, improved soil fertility status and enhancing the crop production by their biological activity in the rhizosphere. Extensive research were carried out on the use of bacteria (Azotobacter, Azospirillum,

Rhizobium, phosphobacteria) and VAM fungi as biofertilizers to supplement nitrogen and phosphorus fertilizers.

Objectives:

The present study aims at isolating and characterization the phosphate solubilizing bacteria and siderophore producing bacteria from wheat field in order to improve the agronomic efficacy of Phosphate solubilizers.

Problem statement and Hypothesis:

This work has been taken up to carry out isolation and characterization of Rhizospheric bacteria from wheat field and to perform the comparative study of their phosphate solubilizing and iron chelating traits to help in better understanding of the mechanism of Plant – Rhizobacteria interaction.

We presume that this work will enable the researchers as well the farmers to appreciate the role of Rhizobacteria in the enhancement of pant growth and yield. This work would also throw light on the effect of various factors on the PGPR activities and to optimize the conditions for its best utilization.

Materials And Method:

Bacterial Isolation:

Sample sites

Different region of Gujarat on the bases of different soil types as mention below::

Sandy and saline soil type: Kutch region

Medium black and saline soil type: GirSomnath region

Mixed red and black soil type: Amreli region

Medium black, calcareous soil type: Junagadh region

Medium black, shallow soil type: Jamnagar region

Organic farming soil: Sudavad, (Junagadh) region

For isolation of rhizosphere bacteria, 1.0 gram of the soil was mixed in 9.0 ml of saline solution (0.9% NaCl) (w/v). The soil suspension was vortexed for five minutes to remove soil, stones,debris and dead bacterial cells. Soil suspension were serially diluted (10-1 to 10-6) respectively. 100 µl of supernatant of each dilution of rhizospheric soil solution were transferred onto different prepared NA medium and incubated at the appropriate temperature. The purified bacteria cultures were identified based on their morphology and screened for different PGP traits [Gupta A, Meyer JM, et al, (2002)].

Characterization and identification of bacteria:

Preliminary identification of isolates was performed using morphological characterization. After 24 h of growth on N agar at 30°C, colonies of purified bacteria isolates were characterized for their following traits: size, shape, pigmentation, margin, elevation, opacity, consistency and Gram's nature by KOH string test.

Qualitative estimation of phosphate solubilization bacteria:

Qualitative estimation of Phosphate solubilization done by measuring the P solubilizing index (PSI). Bacterial isolates were screened in vitro for their phosphate solubilizing activity using Pikovaskaya's medium supplemented with Bromothymol Blue (BTB). The cultures were spot-inoculated on the Pikovskaya'swith BTB medium plates and incubated at 30°C for 7 days.

The appearances of the clear zone around bacterial growth were indicated positive results for phosphate solubilization [ZawKoLatt, et al (2017)].

PSI calculated according formula PSI= C+H/C, (C= colony diameter; H= halozone diameter)

Quantitative estimation of phosphate solubilizing bacteria:

Quantitative estimation of P solubilization determined by Vanadomolybdate phosphoric method. Fresh colony was inoculated in Pikovakaya's broth and incubated in shaking condition at 120 rpm/min at 28°C for 7 days. Uninoculated broth medium served as a control. 2 ml of culture was taken and centrifuged at 10,000 rpm for 15 min. the content of soluble P was estimated by using molybdate blue method by spectrophotometer at 882 nm. The pH of medium also measured with a digital pH meter.

Siderophoreproduction:

Detection in plate culture

Siderophore production of each isolate was determined on Chrome Azurol S (CAS) medium following the (Schwyn&Neilands 1987). ME agar medium with Chromo Azurol S (CAS) (blue agar) was inoculated in the plate with 24 hr old bacteria and kept for incubation at 30oC for 72 hr. The blue colour of the medium to orange or presence of yellow to light orange halo surrounding the colony indicates the production of siderophore.

Quantitative estimation

MEB medium was prepared and used for siderophore production. 24 hr old culture of microorganisms were used to inoculate for 24 hr at 30oC with constant shaking at 120r.p.m. Following the inoculation, fermented broth was centrifuged (10,000 r.p.m. for 15 min) and cell free supernatant was subjected to detection and estimation of siderophore. Quantitative estimation was done by CAS – Shuttle assays31,32. In which 0.5 mL of culture supernatant was mixed with 0.5 mL of CAS reagent and absorbance was measured at 630 nm against a reference consisting of 0.5 mL of uninoculated broth and 0.5 mL of CAS reagent. Siderophore content in the liquor were calculated by using following formula:

$$\%\text{Siderophore units} = \frac{Ar - As}{Ar} \times 100$$

Where Ar = Absorbance of reference at 630 nm (CAS reagent)

As = Absorbance of sample at 630 nm.

Results And Discussion:

Qualitative and Quantitative estimation of phosphate solubilizing bacteria:

The results observed in qualitative phosphate solubilizing capacity of isolates are presented in table 1. The clear zone surrounded the bacterial colony on Pikovaskaya'smediun indicated positive result. There were 14% organisms were found as a phosphate solubilizers. Inorganic phosphate released by isolates in TCP broth during 3, 5 and 7 days shown in figure 1.

Table:1 Phosphate Solubilizing Index of isolates on TCP media during 3,5 and 7 DAI

	DAI 3		DAI 5		DAI 7	
Isolate code	ZOS (cm)	PSI	ZOS (cm)	PSI	ZOS (cm)	PSI
SW1	3	4.55	3.2	4.2	3.6	4.6
SW7	3.1	4.1	3.3	4.3	3.5	3.9
SW8	1.2	2.5	1.4	2.1	1.6	2.3
JUW1	3.2	4.2	3.6	4.0	3.8	4.1

JUW3	2.0	2.6	2.6	3.1	2.8	3.1

Key words: ZOS – zone of solubilization, PSI – phosphate solubilizing index

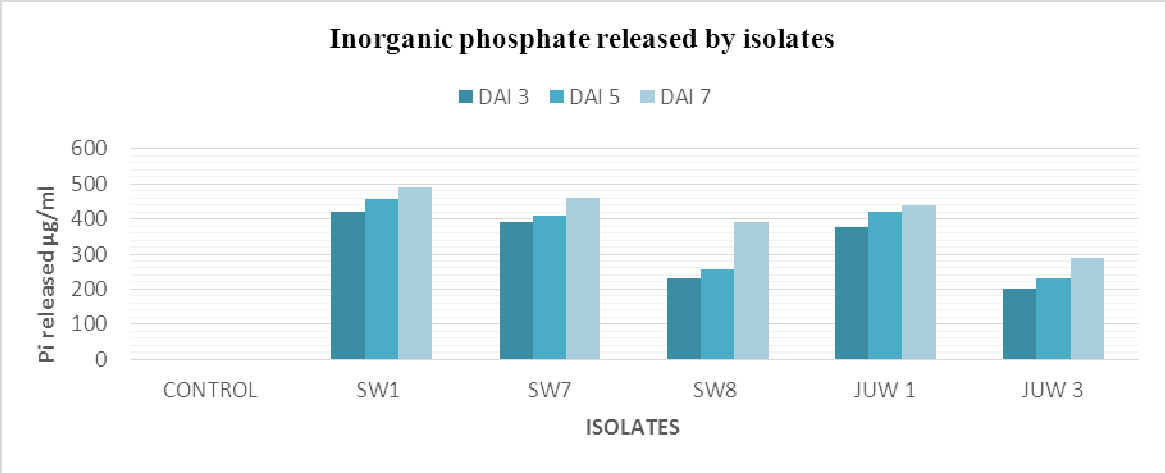

Fig.: 1 Inorganic phosphate released by isolates in TCP broth during 3,5 and 7 days

Siderophoreproduction:

The production of siderophore on CAS agar medium and siderophore unit is shown in table 2.formation of yellow colour zone around the bacterial colonies indicated production of siderophore by bacteria strain. There were 17% isolates positive for siderophore production.

Table 2: siderophore production by isolates:

Isolate code	Yellow zone	Siderophore unit
OW1	+	47.36
OW5	+	153.15
SW6	+	105.7
SW9	+	52.63
JUW 5	+	128.94
JUW 6	+	36.84

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Importance of the Adequate Nutritional Diet and Environment for the Health

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Abstract:

During the COVID Pandemic-19 situation Globally about locally serve and delivery food system are taken very consciously that transformation is necessary to order to ensure the serve and delivery of healthy, safe, and nutritious foods in both sustainable and equitable ways. Now a day people are being aware about intake of fresh healthy diet and fitness for improvement their immunity system. Food systems are complex entities that affect diets, human health, but healthy diet facilities and serve system increasing a range of other outcomes including economic growth, natural resource and environmental resiliency, and socio cultural factors. However, food systems contribute and these are vulnerable to ongoing climate and environmental changes that threaten their sustainability. Although there has been significantly focus on this topic in recent years, many gaps in our knowledge persist on the relation between environmental factors, available traditional food serve and now a recent delivery system and nutritional outcomes about the view of health. In this article, we summarize this emerging field and describe what innovative nurturing environment relationabout nutritious diet, health and fitness. Survey research is needed in order to bring about food policy changes in the era of climate disruption and environmental degradation. As well as Environmental impacts of catering and in-house food consumption and impacts on sectoral and national levels; Use freezer. While there are plenty of benefits to eating fresh food, frozen foods can be just as nutritious. They also stay edible for much longer. A lot of seafood, for example, is frozen before it reaches your supermarket and then thawed and put on display. That means it will only stay fresh for a few days. By buying frozen seafood, we can extend the shelf life of the product considerably. Cooking and freezing food especially produce before it goes bad is a great way to avoid having to toss it. Fight climate change from preventing food and vegetables waste; if it is going to waste, we can use it naturally as a generic fertilizer in the farm and recent era in India utilized polyhouse system to the production of various vegetables and fruits. It is grown in adjustable adequate environment. Therefore it is fresh and edible as well as lot of nutrient content included in it. it is effective use to increasing the product. We can avoid of bad impact of greenhouses. We can best use it also in farm i.e. in the farmhouse or parsbag (Home garden) about view of multipurpose vegetable and fruits production it was to consumption of family or society. Preventing food waste is the most effective way to shrink its impact on the earth and planet. If we avoid producing food that we don't eat, we can save the land, water, and energy that would have been used to make it. And awareness is a good first step; according to Re-FED, educating consumers about food waste could prevent 7.41 million tons of greenhouse gas emissions.Benefits of Fruits and vegetables in Herbal house garden; greens spinach, green chili, cucumber, tomato, onion and fenugreek vegetable we can grow in house garden. They are purely organic. If you go through a lot of greens, it's a good idea to plant in home garden some in the summer to at least supplement your needs and reduce your food budget and prevent spoilage by picking just what you need from the

garden. Edible herbal fresh vegetables and fruits use healthy diet for our health and main aim of the research is to keep always healthy environmental free from pollution. The Main natural sources are being Extinct its reason growth of development and urbanization. It is dangerous for living microbial which is protecting always to the healthy environment. One third of the microbial will be extinct in the future. Its directly effect on environment such as many researcher found in their study. Climate changes impact on biodiversity; globally due to climate warming changes and the season has been also completely changed. Fastly increasing encroachment of the urbanization, for their breaking a lot of tree therefore biodiversity extinct and Increase in pollution.If there such situation has longer, then which cities are situated at the bank of the sea these will being under the sea water till 2050. It is dangerous pointer assembles for all human being. It is global climate warming influences.

Keywords: nurturing environment, sustainable nutritious diets, serve and delivery food systems, Anthropometric changes, climate disruption, COVID-19, fitness and health, healthy diet.
Topic: healthy diet, climate, adequate nutritious diet, food science and nutrition and nurturing environment.
Issue Section: affect of environment about food, nutritional diet on the health and fitness.

Introduction:

About the view of scientifically and clinical nutrition to be beneficial impactful into the healthy environment, it is essential to consider how the broader food system affects diets, nutrition, and health outcomes of populations. Healthy and nutritious diet has boost the immunity power and beneficial to health and fitness during the COVID-19 pandemic as well as considerable always other situation. There is considerable debate on how foods serve and delivery systems can be better positioned to provide safe and healthy diets and support human health in a way that is environmentally sustainable and resilient to climate change, as well as other disruptions and shocks.

1) The many researcher embarks are being focus on Clinical Nutrition (CN) into the view of improvement health and fitness from increasing the immunity power.

2) It is only including about essential content in that relationship between food intake systems and dietary, nutritional, and environmental outcomes. Food systems for intake diet involve the production, processing, packaging, distribution, marketing, purchasing, consumption, and waste of food as well as another view of environmentally beneficial its importance about health and fitness.

3) There were remain many research questions and gaps in the knowledge of evidence on how are available healthy fresh food by serve and deliver to the people via the healthy environment systems so that they benefit both human nutrition and health while protecting ecological resources, supporting livelihoods and affordable foods, and upholding social, cultural, and ethical values. This article will summarize this emerging field, and describe what new science, research, and evidences are needed to bring about food policy changes in the era of climate disruption and environmental degradation.

Impacts of climate and environmental change on nutritious diet, health and fitness:

Climate and environmental changes and will continue to affect human health globally on a vast scale in future. As climate change progresses, the environmental conditions needed for optimal human health will come under threat, including clean air, drinkable water, low pathogen

exposure, and the ability to produce, raise, harvest, and gather crops, animals, seafood, and wild foods in sufficient and safe quantities and/or qualities. Climate change introduces instability into the food processing and its supply, raises prices of food, and ultimately reduces access to nutrient-dense and healthy foods for certain populations; for example, rising sea temperatures are affecting marine life and threatening fish populations, a major source of protein, essential fatty acids, and Omega-3 and micro nutrients for many around the world. The impacts of lost biomass from the oceans are expected to dis-proportionally affect countries in the global South. Some models suggest that changes in food availability due to climate change, specifically reduced availability of fruit and vegetables, are estimated to result in an additional 529,000 deaths by 2050 (20). As well as increasing temperature due to climate changes being prevalence the diseases such like anemia, hypochondria, dehydration etc.

Climate change will likely affect the nutritional status of globally populations, but it will continue to have a disproportionate impact on poor and marginalized populations, widening existing equity gaps in nutrition and health outcomes. Climate change has the potential to increase the prevalence of under nutrition by affecting the immediate, underlying, and basic causes outlined in UNICEF's conceptual framework for maternal and child nutrition. Examples at each level include facilitating optimal conditions for infectious diseases; reducing household food security; and altering livelihoods, particularly of those in the agricultural sector. Nutritionally vulnerable populations, including pregnant and lactating women, infants, and small children, are likely to be the most affected by these trends; the International Food Policy Research Institute's IMPACT model predicts that under conditions with limited intervention to mitigate climate change, there will be an additional 4.8 million undernourished children by 2050. As well as due to increasing the temperature of sea water also its increasing range therefore many city can be sink under the water and create the serious problem of living.

Environmental inputs and food system processes:

Thus far most research on the relation between food systems and nutrition has been focused only on the agricultural production and consumer dietary intake. However, a host of other activities exist between the farm and the fork that affect nutrition and health, which some have referred to as the "missing middle" of the food supply chain (71). Issues such as food processing and packaging, post harvest loss along the supply chain, and food distribution mechanisms all have an important bearing on nutrition and health outcomes.

Most research on the impact of climate change on the nutrient content of crops has been focused on staple crops; to date, very few studies have examined how climate change may influence changes in the production and consumption of non-staple food groups (20, 72). More research is needed on how different kinds of crops particularly those that are nutrient-dense such as fruits, vegetables, cereals and legumes will fare in a +2°C world. Understanding how nutrient content may differ in food grown under various climate change conditions will be vitally important for policies and interventions designed to promote diet quality and reduce the prevalence of micro-nutrient deficiencies. Similarly, there is a need to better understand the relation between climate and food production more widely spread. For example, how is climate resilience in agriculture affected by the scale of food production, the extent of trade, or the amount of biodiversity? Main focus is on less grain production. it has been major effects on the people globally of many country, as well as cause of victim dead to hungry as a lack amount of food. In many country's children are increasing the prevalence of malnutrition. Significantly

increasing the food price due to less grain production therefore purchasing power also reduced. It's depend upon only climate changes where less range rain season, there are create such situation. Many poor countries peoples are living in this situation.

We need more research on policies and interventions that incentivize healthy and sustainable diet both from the view point of consumer choice and from the standpoint of agricultural and food supply chain practices.

The harmful impacts of our diets on the health:

On the earth are alarming and increasing. According to our new estimates, global food demand is now creating more than a third (35%) of all greenhouse emissions and using substantial and rising amounts of environmental resources. Compared to 2010, the environmental impacts of food demand increased by as much as 14%, with animal-source foods responsible for the majority of greenhouse gas emissions and land use. Northern American diets have the greatest environmental impact while African and Asian diets have the least. However, no region is on track to meet the set of Sustainable Development Goals aimed at limiting the health and environmental burdens related to diets and the food system. For example, all regions have diets that, if globally adopted, create impacts that are above sustainable levels if we want to limit global warming to less than 2 degree Celsius. Every region needs large-scale dietary changes to achieve healthy and sustainable diets that tackle malnutrition in all its forms while preserving earth health.

Food Consumption Diversity and its impact on health:

Indian cuisine varies widely across the country according to the region, culture and tradition, characterized by the use of different spices, vegetables, grains, fruits and a variety of animal source foods.

Analyzing all the foods that are consumed in the country is not feasible due to the prohibitive cost involved and thus it is essential to prioritize foods for compositional analysis. One method to set priorities is the 'key foods approach' which is defined as those foods that contribute upto 75% of the nutrients intake by the population. The method combines food consumption data with its nutrient composition, and ranking the foods by applying a scoring system to identify the key foods that contribute significantly to the diet in terms of their nutrients. Therefore, all foods analyzed were selected using the key foods principle for constructing the IFCT 2017.

Lack of progress means unacceptable levels of malnutrition persist. Worldwide, 149.2 million children under 5 years of age are stunted, 45.4 million are wasted and 38.9 million are overweight. Over 40% of all men and women (2.2 billion people) are now overweight or obese. The effects of the Covid-19 pandemic are knocking us further off course. An estimated additional 155 million people are being pushed into extreme poverty globally, as a result of the pandemic, and people who are obese or have other diet-related chronic diseases are more vulnerable to Covid-19. This certainly adds to the challenge of meeting global nutrition targets. The financial costs of addressing poor diets and malnutrition have risen while resources are falling, but the costs of inaction are far greater.

These additional costs would be much larger still if they also included nutrition-sensitive needs and meeting all global nutrition targets, including for obesity and diet-related NCDs. The cost of meeting the SDG 2 targets by 2030 would also be substantial: approximately US$39–50

billion annually to meet both nutrition-specific and nutrition-sensitive needs. At the same time, the total economic gains to society of investing in nutrition could reach US$5.7 trillion a year by 2030 and US$10.5 trillion a year by 2050. Nutrition for Growth (N4G) tracking highlights challenges in delivering commitments and measuring progress.

While there is positive progress towards realizing N4G[3] commitments made in 2013 and 2017, countries are struggling to meet financial and impact goals. We find from the 2020 reporting that over two thirds of donors and civil society organizations reported having reached or being on track to reach their financial commitments. The majority of donor (63%) and civil society (76%) non-financial commitment goals were also on track or had been reached. Only 42% of country financial commitment goals had been reached or were on course, while 41% of country impact commitment goals were on course, with none reported to have been met. Covid-19 has exacerbated challenges, with reporting that progress on 43% of country commitment goals has been severely or highly affected by the pandemic, primarily due to diversion of resources. It is clear that efforts to meet commitments must be intensified, particularly those relating to financing and impact by country stakeholders.

Three actions needed to speed up progress:

There needs to be a step-change in efforts and financial investments to end poor diets and malnutrition, and gain the high social and economic returns we know are possible.

Poor diets and malnutrition can and should be addressed holistically and sustainably to create a healthy future for all.

Better data, greater accountability and systematic monitoring are key to identifying the progress needed and ensuring we stay on track.

India is 'on course' to meet three targets for maternal, infant and young child nutrition (MIYCN)

No progress has been made towards achieving the target of reducing anaemia among women of reproductive age, with 53.0% of women aged 15 to 49 years now affected.

Meanwhile, there is insufficient data to assess the progress that India has made towards achieving the low birth weight target, nor is there adequate prevalence data.

India is 'on course' to meet the target for stunting, but 34.7% of children under 5 years of age are still affected, which is higher than the average for the Asia region (21.8%).

India has made no progress towards achieving the target for wasting, with 17.3% of children less than 5 years of age affected, which is higher than the average for the Asia region (8.9%).

The prevalence of overweight children under 5 years of age is 1.6% and India is 'on course' to prevent from increasing.

India has shown limited progress towards achieving the diet-related non-communicable disease (NCD) targets. The country has shown no progress towards achieving the target for obesity, with an estimated 6.2% of adult (aged 18 years and over) women and 3.5% of adult men living with obesity. India's obesity prevalence is lower than the regional average of 10.3% for women and 7.5% for men. At the same time, diabetes is estimated to affect 9.0% of adult women and 10.2% of adult men.

Food lost and Waste:

Inedible portions include pits, cores, and some seeds and peels that are discarded at the consumer level, and consumer waste includes edible portions of food that are discarded for any

reason, including spoilage, blemishes, spillage, distaste for leftover food, and lack of knowledge about food selection strategies, food preparation, or storage options. The details of this procedure are described elsewhere and depicted in Supplemental its influences on the environment. Finding about the waste foods that in higher income group people has been more than lower income group.

Per-capita amount (grams) of food retail loss, inedible portions, consumer waste, and consumed food were estimated separately, and were summed to estimate Total Food Demand for each food group. The relationship between the amount of Total Food Demand (by loss/waste category and food group) and quintiles of diet quality (HEI-2015 and AHEI-2010) was assessed using simple linear regression models to test for trend, and additional models were adjusted for age (continuous) and sex (male/female). Diet quality estimates were energy adjusted using the density method, where food intake was standardized per 1000 kcal (HEI-2015) or per 1849 kcal (AHEI-2010), as discussed above. Standardized procedures and variables provided by NCHS were used to account for the multistage probability sampling design of NHANES. The relationship between the amount of agricultural resources (agricultural land, fertilizer nutrients, pesticides, and irrigation water) used to produce Total Food Demand and quintiles of diet quality (HEI-2015 and AHEI-2010) was assessed using simple linear regression models to test for trend. Statistical significance was set at $P < 0.05$ for all assessments. SAS 9.4 (SAS Institute; Cary, NC) was used to estimate population-ratio HEI-2015 scores using the modified code and macros provided by the National Cancer Institute (discussed above).

Environmental impacts of catering and in-house food consumption and impacts on sectoral and national levels:

Use your freezer. While there are plenty of benefits to eating fresh food, frozen foods can be just as nutritious. They also stay edible for much longer. A lot of seafood, for example, is frozen before it reaches your supermarket and then thawed and put on display. That means it will only stay fresh for a few days. By buying frozen seafood, you can extend the shelf life of the product considerably. Cooking and freezing food especially produce before it goes bad is a great way to avoid having to toss it.

Fight climate change from preventing food and vegetables waste:

If it is going to waste, we can use it naturally as a generic fertilizer in the farm it is effective use to increasing the product. We can avoid of bad impact of greenhouses. We can best use it also in farm i.e. in the farmhouse multipurpose vegetable and fruits production was to consumption of family or society. Preventing food waste is the most effective way to shrink its impact on the earth and planet. If we avoid producing food that we don't eat, we can save the land, water, and energy that would have been used to make it. And awareness is a good first step; according to Re-FED, educating consumers about food waste could prevent 7.41 million tons of greenhouse gas emissions.

Veggies and harbas you can re-grow with absolutely for safe health: If you like idea of high payoff and low effort, you can almost use this at-home garden requires zero soil, almost no maintenance, and won't cost you a dime. That's because many of the vegetables you eat will re-grow if you put their ends in water. Yes, the bits you normally toss in the trash can be easily transformed into more food. Here, farmer and plant specialists are to provide knowledge by us do this plan actually implement. From it's we can achieved a lot of nutritious essential micro-nutrients which is beneficial to increase the capacity of our body function and as well as boost in

the immunity power. Micro- minerals are the ones you need more of think potassium, calcium, and magnesium. Trace minerals are the ones you need smaller amounts of things like zinc, selenium, iron, copper, and fluoride. Minerals are elements that (in addition to making rocks) build your body parts and help your body carry out internal processes necessary to life. Minerals help your body do what it needs to do, from heart health to hormone production.

The following minerals are essential for human health which in riches quantity in herbal vegetables and fruits: Calcium, phosphorus, potassium, sodium, chloride, magnesium, iron, zinc, iodine, chromium, copper, fluoride, molybdenum, manganese, and selenium. The Main natural sources are being Extinct its reason growth of development and urbanization. It is dangerous for living microbial which is protecting always to the healthy environment. One third of the microbial will be extinct in the future such have on it of the research

Climate changes impact on biodiversity:

Globally due to climate changes the warm increasing. And the season has been also completely changed. Fastly increasing encroachment of the urbanization, for it largely being break the tree, and biodiversity extinct therefore in pollution also increase.Many city which are located at the Bank of the sea also will being under the sea water.

The World Health Organization (WHO) estimates that, in 2012, 12.6 million deaths globally, representing 23% of all deaths, were attributable to the environment (WHO, 2016). When accounting for premature mortality and disability, the fraction of the global burden of disease due to the environment was 22% (95% confidence interval (CI) 13–32%) (WHO, 2016). In children aged below 5 years, up to 26% (95% CI: 16–38%) of all deaths could be prevented if environmental risks were removed. Environmental factors might play a role in more than 80% of major diseases and injuries around the world and are among the biggest killers. Diseases with the largest environmental contribution in children under the age of 5 years include lower respiratory infections (32%), diarrhoeal diseases (22%), neonatal conditions (15%) and parasitic and vector-borne diseases (12%) (WHO, 2017). There are three important categories of infectious diseases sensitive to climate change: (i) water-borne diseases; (ii) food-borne diseases; and (iii) vector-borne diseases (Cissé et al., 2018). Human exposure to water-borne infections occurs by contact with contaminated drinking water, recreational water or food. Water-and food-borne diseases are linked to the ingestion of pathogens via contaminated water or food, while vector-borne diseases are linked to the infections transmitted by arthropods, such as mosquitoes. Climate change related health effects also present a huge inequity dimension, as the risks are linked to the environmental systems and the social conditions (McMichael, 2013).

Food-borne diseases In 2007, the World Health Organization (WHO) established the Food-borne Disease Burden Epidemiology Reference Group (FERG), in order to estimate the global burden of food-borne diseases (WHO, 2015c). The report estimated that 31 selected hazards with food-borne diseases resulted in over 600 million illnesses and 420,000 deaths worldwide. Moreover, it was estimated that the 31 selected hazards induced 33 million DALYs in 2010; and 40% of the food-borne disease burden was among children under 5 years of age. The highest burden per population of food-borne diseases was observed in Africa, and unsafe water used for the cleaning and processing of food was one of the main drivers. Food-borne diseases occur through the ingestion of foodstuffs (including water) contaminated with microorganisms or chemicals. The risks of contamination exist in the food chain, from food production to consumption ("farm to fork"), and involve the pollution of water, soil or air. The

estimation of food-borne disease burden is complicated because most of the hazards causing food-borne diseases are not transmitted solely by food (Hald et al., 2016)

Water-borne diseases; In LMICs, the burden of diarrhoeal diseases is estimated at 842,000 deaths per year, including 361,000 in children under the age of 5 years (WHO, 2015b). Water-borne disease outbreaks, particularly infectious intestinal diseases, have been attributed to various pathogens, as highlighted in Table 1 (e.g. bacteria, protozoa, viruses and parasites) and drinking water system characteristics (Bless et al., 2016; Ligon and Bartram, 2016). Lack of basic hygiene and sanitation and failing infrastructure also remain as two of the greatest challenges in the global fight against water-borne disease (Ford and Hamner, 2015). Climate change is likely to exacerbate in LMICs the risks for diarrhoeal diseases and other water-borne diseases in the future (IPCC, 2018).Water-borne disease outbreaks, particularly infectious intestinal diseases, have been attributed to various pathogens, bacteria, protozoa, viruses and parasites) and drinking water system characteristics (Bless et al., 2016; Ligon and Bartram, 2016). Lack of basic hygiene and sanitation and failing infrastructure also remain as two of the greatest challenges in the global fight against water-borne disease (Ford and Hamner, 2015).

Climate change and health challenges:

The IPCC's recent special report on 1.5°C states that human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8 °C–1.2°C (IPCC, 2018). Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate (high confidence). The consequent increased severity and number of extreme climatic conditions will be accompanied by changes in microbial communities and species interaction (Walker, 2018).

The impact of climate change on diarrheal disease is projected to be higher in Asia and Africa. In 2030, sub-Saharan Africa is projected to have the greatest burden of mortality impacts attributable to climate change, while in the 2050, it is likely to have shifted to Southeast Asia. The rationale of inadequate WASH conditions for children may lead to intestinal parasitic infections; intestinal parasitic infections may hamper children's nutritional status and benefits from school gardens, the research team implemented school gardens and integrated educational, nutritional and WASH with the assumption that these will reduce infectious diseases among children. Education and promotion of nutritional knowledge and dietary diversity for school children globally. Health parasitic treatments and or iron supplement of infected and anaemic school children (Nepal, Bhutan)

Conclusion:

These findings have implications for the development of sustainable dietary guidelines, which requires balancing population-level nutritional needs with the environmental impacts of food choices. Effect of inadequate diet consumption to convert into malnutrition and other related diseases. Environment effects were significant for all food groups as well as dominated for snacks, dairy and starches. These finding endorse the view of health professional that the home environment is the main determinant of human liking for energy-dense food implicated in excessive weight gain but suggest the parents are also correct by identifying innate differences in liking particularly for nutrient dense foods that parents and health educators try to encourage.

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Changing Perspective in Environment, Management, Humanities, Sciences and Technology

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Abstract :

In the past quarter century, number of changes in environment in the context of changing perspective in environment management, Humanities, Science and Technology also important role of government. environmental management and its relationship to human development are in a period of dramatic change. In this context societies are now beginning to have serious discussion about 'sustainable development', but there is still a great deal of confusion over what this means and how to achieve it.

Introduction:

The present paper fucus on how 'changing perspective in environment, management ,humanities ,science and technology 'in this title each and every concepts important role itself. In term of environment can be defined as a sum total of all the living elements and non-living elements and their effects that influence human life. which means each concept interrelated.

Key terms: Environment, Management, Humanities, Science, Technology, Meteorology, etc.

Methodology: Present paper depend upon secondary sources related to articles, research journals, website and research paper.

Objectives:

1. To study environment, management, humanities, science and technology.
2. To aware about concept of changing percpective of environment and its role.

"Environment management refers to the management of an orgnizations environment programs in a comprehensive systematic planned and documented manner. It includes the organizational structure, planning and resources for developing, implementing and maintaining policy for environmental protection". Recently, corporation have been confronted with a number of global environment challenges such as global warming, acid rain, waste management, pollution, prevention environment management supports sustainable development and also extend from local to global level.

In terms of science and technology also various changes occur such a concept meteorology means the science that studies the inter-relationships between the various components of the earth and climate is meteorology includes the study of storms, clouds, rainfall, thunder, lightning, etc. depending upon each other and human important role all perspectives as positive or negative
way.

Conclusion:

This paper discusses about changing perspective environment, management, humanities, science and technology.

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Studies on Fortification of Multigrain Noodles with Ginger Powder

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Abstract:

Macaroni products like noodles, pasta, spaghetti, vermicelli and other similar products are highly consumed in India. Noodles are made generally up of refined wheat flour or wheat flour (high gluten content) which is harmful to health. Noodles may be round, flat which are made from unleavened dough which are rolled flat and cut, stretched or extruded with machine or with hand and cut into long strips or strings. They can be further refrigerated for short term or dried and stored for future use. Noodles are usually cooked in boiling water, sometimes with cooking oil or salt added. Multigrain Noodles were made from Wheat Flour, oats flour, semolina flour and ginger powder through simple hand process. Cooking quality, nutritional values and sensory analysis were studied. Compared with Maida noodles, oats are a rich source of fibre (Beta-glucan), ginger contains gingerol which has various medicinal properties and semolina is a rich source of protein, folic acid, and is gluten free. Multigrain noodles formulation was developed to supplement growing children, adults, people fighting with diseases like obesity, diabetes, heart problems, etc.

Keywords: Multigrain noodles, Beta-glucan, gingerol, nutrition, ginger powder

1. Introduction:

Noodles are one of the most important staple foods consumed in many Asian countries. They are typically made from unleavened wheat dough by stretching, extruding, rolling and cutting them into various shapes (Niu & Hou, 2020). Noodles fortification as an effective public health intervention and improve its nutritional properties. Quality factors important for noodles are color, flavor, and texture, cooking quality, rehydration rates during final preparation, and the presence or absence of rancid taste after extended storage (Gulia *et al*., 2013) Instant noodles are widely consumed throughout the world and it is a fast-growing sector of the noodle industry. Noodles can be classified into various types like fresh raw noodles, dried noodle, parboiled noodle, frozen noodle, steamed noodle and instant noodle. Worldwide, China ranks first in the consumption of noodles followed by Indonesia, Japan, and Vietnam. Due to the increasing popularity of noodles, the introduction of noodles made from whole grains can be an effective way to promote high-fiber food consumption and increase health benefits for people throughout the world. At present, some types of commercial whole grain noodles are available

Wheat is one of the major cereal grains and a staple food for mankind. It is an important source of carbohydrates and the leading source of vegetal protein in human food. The demand for wheat has been increasing due to the unique viscoelastic properties of gluten proteins and the industrialization processes that facilitate the production of flour-based foods. When eaten as whole grain, wheat is a source of multiple nutrients and dietary fibre. Whole wheat products are some of the most important whole grain foods due to the high yield and consumption of wheat in the world. Oats are grown in temperate regions and can be planted either in autumn or in spring. Oats are normally crushed into oatmeal or ground into oat flour. Oatmeal is usually eaten as

porridge and can be used in baked goods such as oatcakes, oatmeal cookies and oat bread. Semolina is a popular type of flour. You'll find it in many common and often comforting foods: pasta, couscous, bulgur, noodles, and lots of desserts and breads. In some parts of South Asia, semolina is known as sooji. Developed noodles as a protein–fibre-rich complementary food might offer the substantial potential to overcome the nutritional deficiency among school children through their inclusion in Mid-day Meal scheme of Government of India. Moreover, these noodles are developed particularly for primary and upper primary school children that rely on the gluten-enriched diets such as Roti-sabji, Dal-roti, Dal-poori to fulfil their protein and energy requirements; therefore, gluten incorporation can be taken as an advantage to improve the final product quality without having any adverse effect on the targeted consumers. *(Rani et.al., 2019)*

Wheat is rich in carbohydrates especially in dietary fibre, fat, protein, vitamin and some minerals. Rice, rice is reaching in natural inflammatory and gluten-free grain, it improves nervous system health, it is a good source of energy, prevents obesity, rice can be used for skincare, rice flour is rich in calcium and it makes good food for bone health. Rice flour is rich in chlorine, calcium, niacin and sodium. Ginger powder helps to smooth a bad stomach, helps to reduce cancer risk, ginger powder contains protein, crude fibre, fat and ash, it also contains carotene and ascorbic acid *(Ingale et.al., 2019).*

2. Materials And Methods:

2.1 Ingredients- Wheat Flour, Oats Flour, semolina Flour, Ginger Powder, Water, Salt, oilwas purchased from the local market.

2.2 Equipment's Used-

Weighing Balance- Electronic weighing balance is used for weighing raw materials

Grinder- Oats, semolina and sorghum are converted into flour with help of high-speed grinders.

Sieve- A sieve with appropriate mesh size is used to separate out foreign materials from the flour.

Kneader- Different formulated flours are mixed and kneaded and tight dough is obtained.

Dough Roller- After aging, the dough is converted into sheet using roller to achieve uniform thickness.

Rolling pin- to press and flatten the dough

Refrigerator- Noodles are short-term stored in refrigerator for instant cooking and consumption. The temperature maintained is 4˚C.

2.3 Methodology For Preparation Of Noodles:

1. Selection of ingredients- Select good quality raw materials and then clean them. They include Wheat Flour, Oats Flour, Semolina Flour, Water, Salt, oil, etc.
2. Weighing- Weighing of ingredients is done according to the formulation done on weighing balance.
3. Grinding- Raw materials like oats, semolina is converted into flour by using grinder.
4. Sieving- High quality sieve of appropriate mesh sizeis used for removal of foreign materials
5. Kneading- The Multigrain flour (100g) are mixed are kneaded in a dough kneader until the texture of dough is rough.
6. Aging- The dough is placed under the muslin cloth for about 25 to 30 minutes. After resting the dough is slightly kneaded with sprinkling of little flour. This maturation of dough is done 2-3 times for about 15-20 minutes until the texture becomes soft.

7. Pressing- After 30 minutes the dough is pressed and flatten by use of rolling pin and again folded and kept under muslin cloth for 15 minutes at room temperature
8. Rolling- the dough is spread on a plane surface and rolled with the help of dough roller to achieve uniform thickness.
9. Folding- Noodles are prepared hand so the sheet is folded one over the other.
10. Cutting- Folded portion is cut into small size with the help of knife, or the noodles are cut with the help of measuring scale
11. Refrigeration- The noodles are separated in a bowl and little amount of flour is sprinkled. Then they are kept in refrigerator until further use at 4˚C or dried in tray drier at 70˚C

2.4 Cooking Quality Evaluation Of Noodles:

The cooking qualities of the dried noodles were evaluated with respect to cooking time, cooking loss and water uptake (Gatade and Sahoo, 2015).

1. **Cooking time**: Optimal cooking time was evaluated by observing the time of disappearance of the core of the noodle strand during cooking (every 20 sec) by squeezing the noodles between two transparent glass slides.
2. **Cooking loss**: The cooking loss was determined by measuring the amount of solid substance lost to cooking water. 10 gm sample of noodles was placed into 100 ml of boiling water in a 500 ml beaker. Cooking water was collected in a pre-weighed glass dish and was placed in a hot air oven at 105°C and evaporated to dryness. The dry residue was weighed and reported as a percentage.
3. **Water uptake**: The water uptake was calculated by getting the difference between weight of cooked noodles and weight of dried noodles. The cooked noodles were placed on filter paper for 5 min before weighing, to blot the excess adhered water.

2.5 Chemical Analysis Of Noodles:

1. **Moisture Content-** Moisture content of the multigrain noodles was determined using the hot air oven method (AOAC, 2000).
2. **Protein Content-** Crude protein was estimated using the micro Kjeldahl method (Pelican Equipment's)
3. **Fat Content-** Fat content was estimated using soxhoplus (Pelican equipment's).
4. **Crude Fibre Content-** Crude fibre was estimated using fibroplus (Pelican Equipment's)
5. **Ash Content-** The ash fraction contains all the mineral elements but it allows to nitrogen-free-extract (by difference) from dry matter. It is determined using Muffle furnace.
6. **Carbohydrate Content-** Carbohydrates are calculated on the basis of determination of the remaining four parameters.
7. **Iron Content-** Oats is a rich source ofIron. Spectrophotometric measurement of the Iron Content of multigrain noodles was introduced in accordance with the AOAC protocol.

2.6 Sensory Evaluation By Nine Point Hedonic Scale:

The sensory characteristics of Cookies were determined using a taste panel consisting of members from MES's Arts, Commerce and Science College, Sonai, Ahmednagar. The sensory characteristics of the products were evaluated by using nine-point hedonic scale. A nine-point hedonic scale was used for sensory evaluation of Multigrain noodles.

2.7 Statistical Analysis :

All analytical tests and experimental analyses were carried out in triplicates and expressed as mean values, coefficient of variance (CV) and standard deviation.

3.Result And Discussion:

3.1 Chemical analysis of Raw materials

Chemical properties were analysed to check the quality of raw materials. The nutritional composition of Sorghum flour, oats flour and wheat flour are mentioned below in **table no. 3.1** As sorghum is rich in protein content, oats in fibre content, it is analysed using various instruments to get idea about nutritional contents such as protein content, fat content, fibre content, Ash and carbohydrate. The major nutrient found in Oats is Fibre and Protein. The major nutrient found in Semolina is protein.

Sr. No.	Semolina Flour	Oats Flour	Wheat Flour
Protein	13 %	5 %	11 %
Fat	1.5 %	2 %	0.5 %
Fibre	6.3 %	12%	0.5 %
Ash	1.2 %	9 %	1.5 %
Carbohydrate	70 %	72 %	75 %

Table No. 3.1 Nutritional Analysis of Raw Materials

3.2 Chemical analysis and cooking quality of multigrain noodles

The information regarding chemical composition of multigrain noodles emerges from the **Table No.3.2 and Fig No. 3.2** and results found that moisture content was 6.99 %, total carbohydrate 70.56 %, protein 14.6 %, crude fat 3 %, crude fibre 5.02 %, ash 1.45 %. It could be visualized from the give result that noodles found rich source of carbohydrate and protein along with dietary fibre. As incorporated noodles are rich source of dietary fibres it encompasses various health benefits. Cooking time of incorporated noodles was 6.30 min which was slightly higher than control sample (6.03 min). The cooking loss was 1.25 g which was also quite more than control sample (1.2 g). Water uptake was also determined and founds 10.5 g which was also higher than control sample (10.2 g). The reason behind increase in this cooking quality parameter may be due to increase in protein concentration of noodles, which directly effects on textural and ultimately cooking quality of noodles

Sr. No.	Parameter	Value
1	Protein	14.6 %
2	Fat	3 %
3	Fibre	5.02 %
4	Carbohydrate	70.56 %
5	Ash	1.45 %
6	Moisture Content	6.99 %
7	Cooking Time	6.30
8	Cooking Loss	1.25g
9	Water Uptake	10.5g

Table No. 3.2 Parameters of formulated noodles

Fig No.3.2 Boiled Noodles

3.3 Formulation of Multigr

The ingredients like semolina, oats, wheat flour are the rich source of dietary fibre, minerals (potassium, magnesium), protein, Iron etc. The raw material is converted into flour using grinder

These formulations are made on the basis of few trails in making the dough and observing its colour, appearance, texture. The formulation N_3 (with 10:65:20:05 proportion) **(Fig No. 3.3)** was selected based on taste, colour and texture. The quantity of as shown in **Table No. 3.3**

Sr. No.	Wheat Flour	Semolina Flour	Oats Flour	Ginger Powder
N_0	100	00	00	00
N_1	10	45	40	05
N_2	10	55	30	05
N_3	10	65	20	05
N_4	10	75	10	05

Table No. 3.3 Formulation of Noodles

Fig No.3.3 N_3 Formulated Noodles

3.4 Sensory Evaluation Of Noodles:

The sensory characteristics of noodles was determined using a taste panel consisting of members from Department of MES's Arts, Commerce and Science College, Sonai, Ahmednagar. The sensory characteristics of the products were evaluated by semi-trained panel using nine-point hedonic scale. A nine-point hedonic scale was used for sensory evaluation of Noodles. The acceptability statements and their marks given in **Table No. 3.4**

Mean acceptability scores obtained by the sensory evaluation of Noodles with content of iron, protein, carbohydrate as a source of sorghum and oats are given in **table. No 3.4** Regarding the colour attributes the highest score 8.6 is obtained by N_3 followed by N_0, N_2, N_1 and N_4 where scores are 8.5, 8.0, 7.6 and 7.5. The texture attributes were found to be maximum in N_3 with score of 8.7 followed by N_0, N_4, N_1 and N_2 having score of 8.6, 7.8, 7.7 and 7.6. Regarding the flavour attributes the lowest for N_1, N_2, N_4 and N_0 samples with scores 7.2, 7.4, 7.5 and 8.3 compared to N_3 with the highest score of 8.4. The taste attributes have the highest score is 8.5 obtained by N_3 sample followed by N_0, N_2, N_1 and N_4 with scores of 8.4, 8.2, 7.1 and 7.0 respectively. The overall scores of N_3Noodles sample were found to be slightly higher 8.55 than the N_0 sample with the score of 8.45 and the lowest was obtained by N_1, N_4 and N_2 with score of 7.4, 7.45 and 7.8 in noodles samples.

Sample	Parameters				
	Colour	Texture	Flavour	Taste	Overall acceptability
N_0	8.5	8.6	8.3	8.4	8.45
N_1	7.6	7.7	7.2	7.1	7.4
N_2	8.0	7.6	7.4	8.2	7.8
N_3	8.6	8.7	8.4	8.5	8.55
N_4	7.5	7.8	7.5	7.0	7.45
Std. Dev.	0.50	0.52	0.55	0.73	0.54
Mean	8.04	8.08	7.76	7.84	7.93
CV%	6.21	6.43	7.0	9.3	6.8

Table No. 3.4 Sensory/Organoleptic Evaluation of Noodles

4.Conclusion :

Multigrain noodles were prepared using addition of semolina and oats. The organoleptic score of N_3sample was better than N_0, N_1, N_2, N_4 samples.Semolina and oats were found to increase the fibre, protein content and decrease amount of gluten of the formulated product

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Development of Ragi Bar by Incorporating Amaranth (Rajgira) and Banana

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Abstract:

Nutritious healthy ragi bar is ready to eat food product with high in energy value. these ragi bar is rich source of vitamins and minerals. Amaranth is rich nutrient cereal consumed since long time ago. Today, Amaranth keeps being included in human diet because of its nutraceutical value such as high-quality protein including several essential amino acids, unsaturated oils as omega-3 and omega-6,dietaryfiber, calcium, phenolic compound, vitamins and minerals. Banana is also good source of iron, which is incorporated in the ragi bar. Honey and jaggery play the role of good sweetening agent which is good for children's and diabetic patients also. Sesame seeds also added in bar which have many potential health benefits.Eleusine coracanais commonly known as ragi which isrich in proteins, fibers, minerals, and antioxidants.It is commonly consumed in the form of food such as roti,paratha, muddle,kheer,etc. Ragi also helps to control the blood sugar level. Ragi, amaranth, banana, honey, jaggery mix together, dough is prepared and boiled at 60-70˚ C for 5-10 minutes. The incorporation of amaranth and banana in ragi bar shows a positive result in terms of nutrient content, taste,colour, appearance and shows considerable changesin physicochemical properties of the ragi bar.

Key Words: -Ragi, Amaranth, banana, formulation, nutrition.

I.Introduction:

Edible ragi bar is concentrated food product with good nutritive value. These are high calorie food and are rich source of minerals and vitamins. It is made up of high calorie ingredients.[1] While the amaranth and banana pulp incorporated ragi bar have a good impact because of their nutrient content.Amaranth is rich nutrient cereal. Amaranth can be considered as a "super food" because it is a gluten-free pseudo cereal that besides being a relevant sources of vegetable protein, provide to the human diet, a balanced content of essential amino acids, significant amount of calcium, dietary fiber omega-3, omega-6, vitamins, minerals and antioxidants.[2,3] Bananas are among the most important food crops on the planet.They come from the family of plants called *Musa* that are native to Southeast Asia and grown in many of the warmer area of the world. Bananas are a healthy source of fiber, potassium, vitamin B6,vitamin C, and various antioxidants and phytonutrients. It contains a good amount of carbohydrate, fibers, vitamins and minerals. It contains anti- inflammatory compounds and antioxidant that regulate immune responses and significant decrease in the heart disease risk.[4] Finger millet is commonly known as Ragi. It helps to control the blood glucose level in diabetic patients.[5,6] Honey and jiggery is used as sweetening agent which have more nutritional content as compared to regular table sugar.Honey gets its sweetness from the monosaccharide's fructose and glucose, and has about the same relative sweetness as sucrose. [7,8] Sesame seeds also added in bar which have many potential health benefits and have been used in folk medicine for thousands of years.

They may protect against heart diseases, diabetic and arthritis.[10]The main purpose of study is to develop value added bar by incorporating amaranth and banana pulp in ragi bar. This combination of ingredients that increase the nutrient value of bar and also help the utilize the nutrient of amaranth as an easy way.

II.Materials And Methodology

Ragi flour, amaranth, banana, Jaggery, sesame seeds and honey are used to make the nutritious ragi bar. The all ingredients were purchased from local market and were taken to laboratory for processing. The entire process took place at Department of B.Voc food processing, ACS college Sonai, Tal-Newasa, Ahmednagar.

APreparation of ragi flour:

Eleusine coracana(Ragi) were purchased from the local market and cleaned it well to sure that no any soil particle or any other waste material in that. Ragi were grinded into a fine powder.[5,6]

Table.1. Nutritional content of *Eleusine coracana*(Ragi) per100 gm

Nutrient	Energy
Carbohydrate(g)	72.6
Fats(g)	1.5
Protein(g)	7.7
Iron (mg)	6.3
Fiber (g)	3.6
Minerals(g)	2.5
Calcium(mg)	348
Phosphorous(mg)	280

Fig.1. Ragi flour

B Preparation of amaranth flour:

Amaranth were purchased from the local market and cleaned it well. Amaranth were grinded into a fine powder. [2,3]

Table.2. Nutritional content of Amaranth per100 gm

Nutrient	Energy
Carbohydrate(g)	6.5
Fats(g)	0.5
Protein(g)	3.5
Iron (mg)	3.9
Fiber (g)	1.3
Calcium(mg)	267
Potassium(mg)	411

Fig.2. Amaranth

Fig.3. Amaranth flour

C Preparation of banana pulp:

Bananas were washed and remove the unwanted portions, cut into small pieces and mashed it properly.[4]

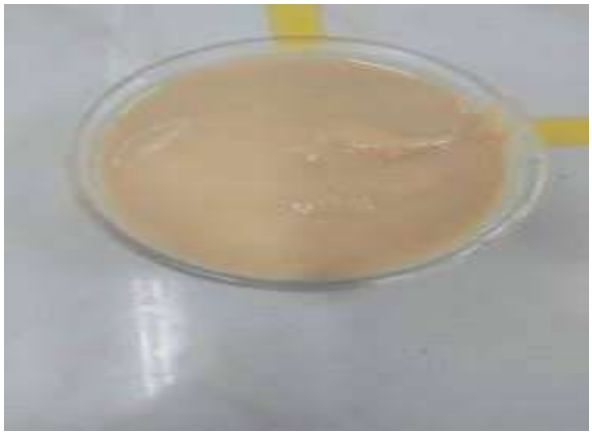

Fig.4. Banana pulp

D Preparation of bar:

Ragi flour was taken in a pan and dry roast it on medium heat.Also, dry roast the amaranth flour separately and allow cool it in properly. Mix the ragi flour and amaranth flour in

a pan after cooling. Add the banana pulp in the mixture and it is mix well until the required consistency is achieved. It is heated and added the grinded Jaggery and boiled at 60-70˚C for 5-10 minutes.Honey was added in the mixture for better taste and sensory property.Also, the sesame seeds are added in mixture. The mixture is mixed thoroughly and poured into aluminium trays which were smeared with ghee or butter. The trays are covered and then tried for 48 hours in room temperature. Finally,the bar was cut into different shapes using a cutter, pack into small polyethylene pouches and stored at room temperature.

Fig.5. Sesame seed

Table.3.Composition of ingredients

Ingredients	T1	T2	T3	T4	T5
Ragiflour(g)	100	90	80	70	60
Amaranth flour(g)	0	10	20	30	40
Banana Pulp(g)	0	10	20	30	40
Jaggery(g)	25	25	25	25	25
Sesame seed(g)	5	5	5	5	5
Honey(ml)	5	5	5	5	5

E Sensory evaluation :

The study of sensory evaluation was carried out by evaluating five major sensory attributes such as taste, appearance, texture, aroma and overall acceptability using nine-point hedonic scales. Twenty-five members including student and staffs from the department ware used for study.

F Biochemical physical analysis

The moisture content, crude protein, crude fiber, fat and ash contain of the bar were determined using various methods.[8]

Moisture content:To determine moisture content of the ragi bar by weighing a known amount of sample and tried in hot air oven at 105-125˚ C.

Ash content:To detect the ash content of the ragibar,aknown amount of sample was powdered and taken in a crucibleand then burnt in a muffle furnace. By using this method,the ash content of prepared bar was calculated.

Nutrientcontent: The protein analysis of the ragi bar were determined by Kjeldhal method. The sample are first digested and the released nitrogen is converted into protein content with a conversion factor of 6.28.

- To determine the carbohydrate content in prepared ragi bar the Anthrone method is used.[11]

- Fat content in the produced bar is determined using solvent extraction gravimetric method.
- To determine vitamin C content of the bar the2,6 dichloro indophenol method was used.

Physical Properties*:* The randomly five bar was selected and weight(g), thickness(cm) and diameter(cm) of selected bar were calculated. The spread ratio of the bar was obtained by dividing diameter(cm) of the bar by thickness(cm).

Shelf-life study: The prepared bar was packed and sealed in polyethylene pouches. The changes in water activity, sensory attributes such as colour, texture and overall acceptance were evaluated at an interval of one month upto 3 years.

III.Result And Discussion:

The incorporation of amaranth powder and banana pulp in ragi bar showed enhanced nutrition content, colour, texture and flavour.

The sensory evaluation of bar done and result are shown in Table 4. It is shown that bar have higher level of sensory properties in T4 Sample.

Table.4. Sensory evaluation of ragi bar enhanced with amaranth powder and banana pulp.

Samples	Appearance	Taste	Aroma	Texture	Overall acceptability
T1	7.10	6.95	8.01	7.50	8.00
T2	7.06	7.22	8.13	8.19	7.11
T3	7.16	7.56	7.05	8.07	8.04
T4	8.50	8.20	8.10	8.25	8.10
T5	8.10	8.07	7.18	7.24	7.41
Mean	7.58	7.6	7.6	7.85	7.73

The nutritional content of the prepared bar was determined using different methods and the results are shown in Table 5.This analysis showed that the ragi bar incorporated with amaranth powder and banana pulp have more much essential nutrients than the usual ragi bar(T1).

Table.5. Biochemical analysis of prepared bar

Parameters	T1	T2	T3	T4	T5
Moisture%	10.58	10.60	11.02	11.32	11.44
Protein%	12.14	14.28	16.97	18.48	20.65
Carbohydrate%	69.92	71.32	73.83	74.71	75.29
Fat%	2.21	2.36	3.62	3.99	4.41
Vitamin-C%	0	0.02	0.18	1.02	1.24
Ash%	1.56	1.98	2.33	2.74	3.42

IV.Conclusion:

The nutritional value of the ragi bar is considerably enhanced due to incorporation of amaranth powder and banana pulp, also changes in physiochemical properties of bar. The result show that with increasing addition of amaranth powder and banana pulp within the ragi bar recipes, increase the fat, protein and the dietary fiber in the bar. It is concluded from the study that amaranth powder and banana pulp are successfully incorporated in ragi bar to yield bar of rich nutrition and with sensory attributes.

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Biochemical Characterization of Lactic Acid Bacteria Isolated from Fruit Waste

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Abstract:

Waste to affluence is a common inclination in the world today. This work reports the utilization of fruit waste for production of lactic acid using acid bacteria. Peels of mango, orange, charry, peach and banana were used. The organisms used for fermentation were isolated from spoilt of mango, orange, charry, peach and banana and identified using biochemicaltools. These organisms were grown using different growth factors over a period of three days with initial pH of 6.0. Growth factors were then diverse in order to optimize the yield of lactic acid. A total of twenty-four LAB isolated from fruits waste samples on modified de Man, Rogosa and Sharp (MRS), catalase negative and Gram positive were considered as LAB.The isolates were identified with species of morphology and biochemical analysis It can be concluded that isolated LAB from different fruits sources have benefit consumers. Isolated was used for the production of lactic acidthe results of this study showed that lactic acid can be produced usingof mango, orange, charry, peach and bananawaste.

Key word: Lactic acid bacteria, lactic acid, fruit waste

Introduction :

Fruit based industry produces a large volume of solid and liquid waste. These poses increasing disposal and pollution problems (high BOD or COD) and represents loss of valuable biomass and nutrients (Mridul&Preethi, 2014). Disposal of wastes from fruit-canning industries has been a problem due to high transportation costs and limited availability of landfills, as these byproducts carry no commercial value, they are often discharged in places they ought not to be disposed (Pradeep*et al.,* 2014). This particularly occurs where there is a lack of legislation and their enforcement on waste disposal (Omojasolaet*al.*, 2009). These wastes directly affect environmental agencies and municipalities because food waste is a primary source of methane gas in landfills (Gunders, 2012). Reutilizing fruit-waste to develop new products has received much attention lately. Organic waste treatment processes (Purkayastha, 2012) and anaerobic digestion processes (Shin *et al.,* 2010; Dai *et al.,* 2013; Bernstadet*al.*, 2013) are two promising technologies used in this regard. Presently, the main use of such domestic food waste is the production of valuable compounds by the controlled break down of the waste by microorganisms (Rounsefellet al., 2013). Lactic acid has gained importance for its application in food, feed, chemical, pharmaceutical and beverage industries (Ray & Swain, 2011). Most important application of lactic acid is its use for the manufacture of biodegradable and biocompatible polylactate polymers (Khalaf, 2001). Microbial sources including many bacteria such as *Carnobacterium, Enterococcus, Lactobacillus,Lactococcus, Leuconostoc, Streptococcus, Clostridium* and *Weissella*have been reported to produce lactic acid (Bogaert&Coscach, 2000). Due to the importance of this organic acid, there are ongoing research efforts related to its

production (Hofvendahl& Hahn- Hägerdal, 2000). Variations in temperature, pH, carbon sources and nitrogen sources affect lactic acid production (Pavezzi*et al*., 2008; Jörissen*et al*., 2015). The present study was undertaken to screen out the potential LAB isolates producing bacteriocins from spoiled fruits.

Material And Methods:

Sample collection:

Spoiled fruit waste (mango, orange, charry, peach and banana), were collected from dump yard of a local market (Motibag, market), region of Gujarat, India. All the samples were transported to the Department of Microbiology, JunagadhagricultureUniversity, and under safe conditions, where further studies were performed.

Isolation of Lactic Acid Bacteria: -

The collected samples were subjected to tenfold normal saline serial dilution. The lactic acid bacteria were isolated on MRS (pH 6.8 ± 0.02) medium and incubated at 37*C for 24hrs. The plates were observed for appearance of colonies and number of colonies produced on each plate. The lactic acid bacteria were maintained freshly throughout the experimental work. Bacteria were purified by streak plate method on MRS agar and incubated at 370C for 24hrs and transferred to MRS agar slants and then maintained in refrigerator at 4*C till further analysis.

Identification of Isolated strains: -

The different pure cultures so obtained were characterized for their colony morphology and subjected to Gram staining, oxidase test, catalase test, carbohydrates fermentation test according to Holt *et al*. (7) Only Gram positive, non-motile, rod shaped bacteria, showing phenotypic characters similar to *Lactobacillus* species on MRS agar media were selected for further experiments. The isolated bacterial strains were maintained properly through regular sub-culturing on MRS media. The fresh cultures were used throughout the experiments. The identification of potent isolates up to species level was done based on the characteristics of *Lactobacillus* as described in Bergey's Manual of Systematic Bacteriology (Kandler, O. and N. Weis, eds. Regular Nonsporing Gram-Positive Rods. Bergey's Manual of Systematic Bacteriology. 2nd ed. Vol. IV.2005, Springer. 1208-1231.). The cultures were subjected to a battery of biochemical tests which included fermentation of different carbon sources, acid and gas production from glucose, catalase test, temperature tolerance, Salt tolerance test etc.

Antibiotic sensitivity test: -

The antibiotic susceptibility of isolated LAB was assessed using antibiotic discs diffusion method on MRS agar plates. Broth cultures of LAB was prepared using MRS and adjusted to 0.5 McFarland standards. The freshly grown overnight isolated *Lactobacillus Spp.* cultures were spread on MRS agar plates. The antibiotic discs were placed on the surface of MRS agar plates and the plates were incubated at 37*C for 24 to 48hrs. Antibiotic susceptibility pattern was assessed using, Amphicillin(AMP), Amikacin(AK), Chloromphenicol(C), Gentamcin(GEN), Streptomycin(S), Tetracyclin(TE), Kanamycin(K), Co-Trimoxazole(COT).

Antimicrobial test by Agar well diffusion Method: -

The agar well diffusion method was used to determine the antimicrobial property of the LAB isolates. The selected LAB isolates were inoculated from slants to fresh 250 ml MRS broth and incubated at 370C for 24-48 hrs. The culture broth of each isolate was centrifuged separately

at 10,000 × g for 30 minutes. The supernatant was collected after centrifugation and passed through 0.2 µm sterile syringe filter.

A 24 hr culture of the pathogens such as *E. coli, Pseudomonas, B. subtilis* and *S.typhi*grown at 370C was suspended in saline. A lawn of the indicator strain was made by spreading the cell suspension over the surface of nutrient agar plates with a sterile cotton swab. The plates were allowed to dry and a sterile cork borer of diameter (5 mm) was used to make uniform wells in the agar. Each well was filled with 50 µl culture free filtrate obtained from the LAB isolates. After incubation at 370C for 48 hrs, the plates were observed for a zone of inhibition (ZOI) around the well. Results were considered positive if the diameter (mm) of the ZOI was greater than 1mm.

Result And Discussion:

Isolation and identification of LAB: -

All the microbial colonies on MRS agar plates were morphologically characterized **(Table 1)** based on their colony characteristics obtained along with their Gram reaction and microscopic examination. Isolates showing phenotypic characters similar to Lactobacillus species on MRS agar mediaon the basis of above morphological and biochemical features were selected for further experiments. The isolate showing similar morphology and staining characteristic were followed by biochemical tests and sugar utilization tests **(Table 2, 3 and 4)** and some of them confirmed as *Lactobacillus spp.*

Isolated	Size(mm)	Color	Elevation	Cultural Characters	Cell Morph.	Gram Staining	Endospore Staining
MG1	1	CreamyWhite	Convex	Moist,Regular	CC	+Ve	-Ve
MG2	1-2	White	Convex	Moist,Regular	SR	+Ve	-Ve
MG3	1-2	CreamyWhite	Convex	Moist,Regular	Cc	+Ve	-Ve
OG1	1	Greywhite	Convex	Moist,Regular	Cc	+Ve	-Ve
OG2	1-2	Creamywhite	Convex	MoistRegular	Cc	+Ve	-Ve
OG3	1-2	Creamywhite	Convex	MoistRegular	Cc	+Ve	-Ve
OG4	1	CreamyWhite	Convex	Moist,Regular	CC	+Ve	-Ve
OG5	1	White	Convex	Moist,Regular	SR	+Ve	-Ve
OG6	1-2	CreamyWhite	Convex	Moist,Regular	Cc	+Ve	-Ve
PC1	1	Greywhite	Convex	Moist,Regular	Cc	+Ve	-Ve
PC2	1	Creamywhite	Convex	MoistRegular	Cc	+Ve	-Ve
PC3	1-2	Creamywhite	Convex	MoistRegular	Cc	+Ve	-Ve
PC4	1	CreamyWhite	Convex	Moist,Regular	CC	+Ve	-Ve
CH1	1-2	White	Convex	Moist,Regular	SR	+Ve	-Ve
CH2	1-2	CreamyWhite	Convex	Moist,Regular	Cc	+Ve	-Ve
CH3	1-2	Greywhite	Convex	Moist,Regular	Cc	+Ve	-Ve
CH4	1-2	Creamywhite	Convex	MoistRegular	Cc	+Ve	-Ve
BA1	1	Creamywhite	Convex	MoistRegular	Cc	+Ve	-Ve
BA2	1	CreamyWhite	Convex	MoistRegular	Cc	+Ve	-Ve
BA3	1	White	Convex	MoistRegular	Cc	+Ve	-Ve
BA4	1	CreamyWhite	Convex	MoistRegular	SR	+Ve	-Ve

Table1: -MorphologicalCharacteristicsofLactic AcidBacteria.
*SR:StraightRods;Cc: Cocci;+Ve:Postive;-Ve:Negative

Figure1: -

IsolationofPureCulturefromMRSPlate.

Figure2: - GramStainingofLAB.

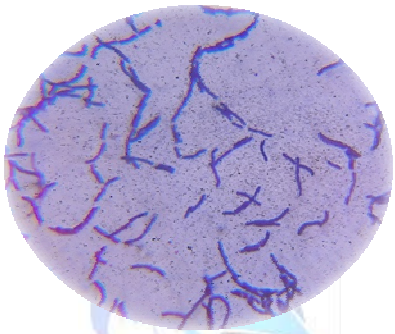


Table2: -BiochemicalCharacterizationTestofLactic AcidBacteria

Isolated	Catalase test	Oxidative test	Temperature test	NaCl tolerance test	Bile salt test
MG1	_-Ve	_-Ve	+	++	+
MG2	_-Ve	_-Ve	++	+	++
MG3	-Ve	-Ve	+	+++	++
OG1	_-Ve	_-Ve	++	++	++
OG2	_-Ve	_-Ve	+++	+	+++
OG3	_-Ve	_-Ve	++	++	++
OG4	-Ve	-Ve	+	+++	+
OG5	_-Ve	_-Ve	++	+	+
OG6	_-Ve	_-Ve	+++	+	+++
PC1	_-Ve	_-Ve	+++	++	+++
PC2	-Ve	-Ve	++	+	+
PC3	_-Ve	_-Ve	++	++	++
PC4	_-Ve	_-Ve	++	++	++
CH1	_-Ve	_-Ve	+	+	+
CH2	-Ve	-Ve	++	+	++
CH3	_-Ve	_-Ve	+++	++	+++
CH4	_-Ve	_-Ve	++	+++	++
BA1	_-Ve	_-Ve	++	+++	++
BA2	-Ve	-Ve	+++	+	+++
BA3	_-Ve	_-Ve	+	++	+

BA4	_-Ve	_-Ve	++	++	++

+ve: positive, -ve negative

Table3: -PhenotypiccharacterizationofLactic Acid BacteriabySugar Utilization

Isolated	Arabinose	Lactose	Glucose	Fructose	Galactose	Rhamnose	Maltose	Raffinose
MG1	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
MG2	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
MG3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
OG1	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
OG2	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
OG3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
OG4	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
OG5	+ve	+ve	-ve	+ve	+ve	+ve	+ve	+ve
OG6	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
PC1	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
PC2	+ve	+ve	+ve	+ve	+ve	+ve	-ve	+ve
PC3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
PC4	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
CH1	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
CH2	+ve	+ve	+ve	+ve	-ve	+ve	+ve	+ve
CH3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
CH4	+ve	+ve	+ve	-ve	+ve	+ve	+ve	+ve
BA1	-ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
BA2	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
BA3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
BA4	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve

+ve: positive, -ve negative

Table4: -GasProductionbyLactic AcidBacteriabySugarUtilization.

Isolated	Arabinose	Lactose	Glucose	Fructose	Galactose	Rhamnose	Maltose	Raffinose
MG1	+ve	+ve	+ve	+ve	-ve	+ve	+ve	+ve
MG2	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
MG3	-ve	+ve	+ve	+ve	+ve	+ve	-ve	+ve
OG1	+ve	+ve	+ve	+ve	+ve	+ve	+ve	-ve
OG2	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
OG3	+ve	-ve	+ve	+ve	+ve	+ve	+ve	+ve
OG4	+ve	+ve	-ve	+ve	+ve	+ve	+ve	+ve
OG5	+ve	+ve	-ve	+ve	+ve	+ve	+ve	+ve
OG6	-ve	+ve	+ve	-ve	+ve	+ve	+ve	+ve
PC1	+ve	+ve	+ve	+ve	-ve	+ve	+ve	+ve
PC2	+ve	+ve	+ve	+ve	+ve	+ve	-ve	+ve
PC3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	-ve
PC4	-ve	-ve	+ve	+ve	+ve	-ve	+ve	+ve
CH1	+ve	+ve	-ve	+ve	+ve	+ve	+ve	+ve
CH2	+ve	+ve	+ve	+ve	-ve	+ve	+ve	+ve
CH3	+ve	+ve	+ve	-ve	+ve	+ve	+ve	+ve
CH4	+ve	+ve	+ve	-ve	+ve	+ve	+ve	+ve
BA1	-ve	+ve	+ve	+ve	+ve	+ve	-ve	+ve
BA2	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
BA3	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve

BA4	+ve	+ve	+ve	+ve	+ve	+ve	+ve	-ve

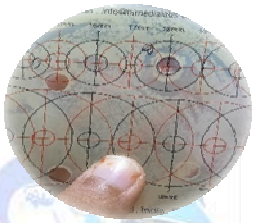
+ve: positive, -ve negative

Afterperformingallthetestsstrainslabeledaswereidentifiedas***Lactobacillusspp***respectivelyandthese strainswereusedinfurtherexperiments.

Determination of the antimicrobial activity of selected LAB by agar well diffusion Method:-

The agar well diffusion method was used to assess the antimicrobial activity of the selected LAB isolated from fruit waste. Their antimicrobial properties were tested against major food-borne pathogenic bacteria namely *E. coli, Pseudomonas, B. subtilis* and *S.typhi* were taken from MTCC. Results show that the spectrum of inhibition was different for the isolates tested. **figure3**gives the results for the antimicrobial activity of the isolates in terms of diameter of the zone of inhibition (ZOI). A diameter >1mm around the well was considered as a positive result. Among all the isolated *lactobacillus spp*. was found to be showing potent antimicrobial activity against most of the pathogenic organisms.

figure3: - Antimicrobial Activity of Lactic Acid Bacteria.



Antibiotic susceptibility Test: -

The overnight grown culture of isolates of the selected LAB isolated from fruit waste (*Lactobacillus spp*) were inoculated .Their growth were checked after 48hrs of incubation at 370C. **figure 4**shows that the isolates were resistance to Ampicillin (Amp). Some of the isolates showed resistance to other antibiotics. The isolates were found resistant to cell wall synthesis inhibitor i.e. Penicillin, Vancomycin and protein synthesis inhibitor Gentamicin, Streptomycin but sensitive to tetracycline at higher concentration 200µg/ml and above.

The results of antibiotic susceptibility test with streptomycin different from the observation made by Kim *et al* (8). Hoque*et al* (7) found that the *Lactobacillus* spp. is sensitive to Cd, E, Gen, B, C, E, S Amx, Te, Met, and resistant to trimethoprim (Tr), ampicillin (Amp). It is possibly because of β lactamase presence in the isolate which is known to cause antibiotic resistance towards penicillin and other cell wall synthesis inhibitory compounds. Similar results were also observed by Coppola *et al.* (9), Lira *et al.* (10), Caro *et al.* (11) and Hleba*et al* (12) where they examined antibiotic resistance of bacteria isolated from various food samples have argued that the results of antibiotic resistance vary from study to study.

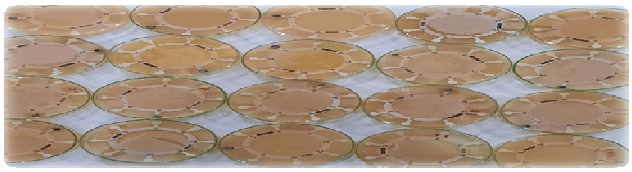


Figure-4 antibiotic susceptibility test

Conclusion:

The present study was aimed to isolate and characterize LAB bacteria from different fruit waste. Since there is substantial demand for natural food products which can be used for as probiotic food supplements to enrich nutritionally rich diet as well as cure to diseases these as they are very much diversified in gaining importance. Asthis probiotic impart beneficial properties without any genetic or molecular changes in the health of consumers which is an attractive solution for diseases management through the diet. In general, it is believed that Probiotics help keep up the balance between harmful and beneficial bacteria in the gut thus maintaining a healthy digestive system. The study is extremely promising, that underscores the important role of *Lactobacillus* strains.

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Development of Supplementary Protein Based Cake from Composite Flour

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Abstract:

Baking industry is considered as one of the major segments of food processing in India. Baked products are gaining popularity because of their availability, ready to eat convenience and reasonably good shelf life. Cake is one of the most common bakery products consumed by people in the world. Supplementation of foods is current because of increasing nutritional awareness consumers need to eat high quality and healthy foods – known as functional foods, which contain ingredients that provide additional health benefits beyond the basic nutritional requirements is therefore the trend is to produce specially bakery products need from whole grain flour and other functional ingredients known as health foods. Walnut seed flour has a good potential for use as a functional ingredient agent in bakery products because of its high water absorption capacity, solubility, bulk density and rapid viscosity characteristics. Ragi has best quality protein along with the presents of essential amino acids, vitamin A, Vitamin B and phosphorous. Green gram contains approximately 23.86-27% protein, 1.15%fat, 62.62%carbohydrates, 16.3% fiber, 6.60% total sugars, 9.05%water.This shows that the composite flour in rich in protein and fat and can serve as a protein supplement. The main objective of this research is to formulations of cakes prepared from three different proportions (T_1, T_2, T_3) of wheat, ragi, walnut, green gram flour are given in other ingredients like butter, milk, egg, baking powder, vennila essence were added to each of these formulations of cake preparation. The developed product was analysis of chemical, and sensory evaluation by nine point hedonic scale. In T_2 sample wheat 60%, ragi 20%, walnut 10%, green gram 10%, and nutritious cake has high increase carbohydrate compared T_0 sample it has carbohydrate 28%, protein 8.17%, fat 1.8%, fiber 2.37%, ash 1.56%. The result revealed that the sample T_2 which contain more acceptable in terms of chemical and sensory evaluation of developed product.

Key Words: Cake, walnut, green gram, wheat, ragi

Introduction:

Baking industry is considered as one of the major segments of food processing in India. Baked product are gaining popularity because of their availability, ready to eat convenience and reasonably good shelf life. (Vijay Kumar et al., 2013). Cake is the form of food that is usually sweet and often baked. It supplies body building protein fats and carbohydrates. Cake is normal prepared with refined wheat flour, sweetening agent (sugar). Binding agent, egg ,fat and vanaspati , liquid flavor and some form of leavening agent such as yeast or baking powder. (Dasai et al.,2010). Bakery products are widely consumed and are becoming a major component of the international food market (Kotsianis et al., 2002). Cake is one of the most common bakery products consumed by people in the world. Nowadays, cake manufacturers face a major problem of lipid oxidation this limits the shelf life of their products (Lean and Mohamed, 1999). Bakery products such as cakes particularly those with high lipid content tend to become rancid after prolonged storage owing to the oxidation of polyunsaturated fatty acids (Ray and Husain, 2002;

Smith et al., 2004). Foods containing higher content of polyunsaturated fatty acids are more prone to oxidation (van Aardt et al., 2004).

Supplementation of foods is current because of increasing nutritional awareness among consumers. Supplementation with legumes, cereals and pulses is one way to meet the needs for protein particularly baked foods. Recently, consumers awareness of the need to eat high quality and healthy foods – known as functional foods, which contain ingredients that provide additional health benefits beyond the basic nutritional requirements is therefore the trend is to produce specially bakery products need from whole grain flour and other functional ingredients known as health foods (Jideani and Onwnbali 2009).

Walnut flour has a high amount of protein and essential fatty acid which has a made it serve as a supplement or modifier for other food products. Finger millet (Ragi, Eleusinian coracana) is an important staple food in the eastern and central Africa as well as some parts of India [Majum et al.,2006]. It is rich in protein, iron, calcium, phosphorous, Fibre and vitamin content. The calcium content higher than all the foods grains.Ragi has best quality protein along with the presents of essential amino acids vitamin A, Vitamin B and phosphorous (Gopalan et al.,2004). Green gram contains approximately 23.86-27% protein, 1.15%fat, 62.62%carbohydrates, 16.3% fiber, 6.60% total sugars, 9.05%water. Composite flours have been used extensively in the production of baked goods. In facts several attempts have been made to produce cake from different type of composite flours. In countries where malnutrition poses a serious problem especially among children, composite flours which have better nutritional quality would be highly desirable.(L.C.okpala.,2013).

The development and consumption of such functional foods not only improves the nutritional status of the general population but also helps those suffering degenerative disease associated with today's changing life style and environment. The need for strategic development and use of inexpensive local resources in the production of popular foods such as cakes has been promoted by organization such as the food and agricultural organization (FAO).

This is similar to the earlier finding where protein content of snacks reduced with supplementation with starch based products for wheat flour. (M.O.Oluwamukomi,2011).The formulations of cakes prepared from different proportions of wheat, ragi, walnut, green gram flour are given in other ingredients like butter, milk, egg, baking powder ,vennila essence were added to each of these formulations of cake preparation. Cake samples were prepared by following the procedure. (Singh et al .,2006). The wheat flour, ragi flour, green gram, walnuts supplemented cakes were subjected to proximate analysis such as moisture, protein, fat, fiber and ash content. The principal parts of wheat flour are gluten and starch. Cakes are flour confections they are mostly prepared from wheat flour and other essential ingredients. The consumption of cakes prepared from wheat flour has become very popular is most developing countries of the tropics especially among children and adolescent. (M.A idowu et al.,1996). Walnut flour has a high amount of protein and essential fatty acid which has made it serve as a result of tack of several essential nutrients in the food products.

Cake flour is finely wheat flour made from soft wheat. It has very low protein content between 8% and 10% making it suitable for soft texture cakes the higher protein content of other flour could make the cake dough. Highly sifted cake flour may require different volume amounts in recipes than all purpose. Walnut seed flour has a good potential for use as a functional ingredient agent in bakery products because of its high water absorption capacity, solubility, bulk

density and rapid viscosity characteristics (Nide at.,2010). This shows that the flour in rich in protein and fat and can serve as a protein supplement. The oil from the walnut could serve as a protein supplement. The oil from the nut could serve as a source of energy for seedlings and for the formulation of wood varnish vulcanized oil. (Ajaiyeoba, 2006)

The current study was carried out to study the nutrition rich cake made from wheat flour fortified with powdered Ragi powdered, green gram powdered and walnut. Formulation and developed of nutritious cake product from local and readily available raw material have received a lot of attention in many developing countries due to malnutrition which has been known as a major problem especially to infants as a result of lack of several essential nutrients in the food product.

Materials And Methods:

Raw Materials:

The raw material (Wheat, Ragi, Walnut, Green gram) and minor ingredient (sugar,milk powder, GMS, Vanilla powder, Baking powder) which is used in this study was purchased from local market.

Method:

Preparation of composite flour:

Different composite flour sample were prepared by combining 100%, 80%, 60%, 40% wheat flour, 0%, 10%, 20%, 30% Ragi flour, 0%, 5%, 10%, 15% walnut flour and green gram flour respectively (table 1) showing blends of wheat flour, Ragi flour, walnut flour, and green gram flour used in composite flour formulation.

Sample Trial	Wheat Flour (%)	Ragi Flour (%)	Walnut Flour (%)	Green gram flour (%)
T1	80	10	5	5
T2	60	20	10	10
T3	40	30	15	15

Table No. 1. Composite flour formulation

Methodology:

Not only wheat flour but also other flour types have been investigating for developing cakes of lower cost and better quality in terms of consumer acceptance (Tanya singh et al., 2016). The detailed formulation as per mentioned Table No.1 for the preparation of flour like (wheat flour, ragi, walnut, green gram), eggs, butter, sugar, were the raw material was properly measured according to the ratio required in cake. The wheat, ragi, walnut, green gram were sieved through fine sieves to avoid the dirt and unwanted particles. Meanwhile the oven is preheated at 200^{o}C for 20 min. The weighed sugar and melted butter were beaten properly using beater for 10min. It was further processed by addition of weighed flour and baking powder and again proper beating was done for 10min. The batter obtained was poured in greased baking mould and even setting was done using spreader. After the setting of batter it was baked in preheated oven at 150-1800C for 20min.

Physicochemical Analysis:

Moisture, Fat, Protein, Ash, Fiber and were determined in cake.

Moisture content: Moisture content was determined using the method described in AOAC, 2005. 10 g sample was dried in hot air oven at 105ºC ±1ºC in pre-weight dishes till constant

weight. The dried sample was transferred to desiccators with dishes and cooled to room temperature. The dish was then weighed and moisture content in per cent was calculated from loss of weight.

Ash: 5g of ground sample was taken in a preweighed silica crucible and charred over the heater to make it smoke free. The crucible with the sample was ignited at 600ºC for 3 hours in a muffle furnace. When muffle furnace was slightly cooled, the crucible with ash was taken out, kept in desiccators to cool and constant weight was taken. The difference between the weight of the silica crucible as empty and with ash was the amount of total ash. The percent ash was calculated (AOAC , 2005)

Crude fat and crude protein: Crude fat and crude protein were determined according to the method given in AOAC (2005).

Crude fiber: Two gram of sample was put into 250 mL conical flask and 1.25% Sulfuric acid solution was added. The sample was heated about 30 min and was filtered using vacuum filter and washed until traces of acid was undetected using pH paper. The Whatman paper 5B which pore size 125 micrometer was placed in the Buchner flask. After that the acid extracted was transferred into 250 mL conical flask and 1.25% NaOH solution was added. Digest the contents for half an hour, filter and wash free of alkali using hot distilled water. The residue was transferred to crucibles, weighed, dried in oven overnight at 105ºC, and then placed in a mufflefurnace at 600 ºC for 3 hrs. The loss in weight after ignition represents the crude fiber in the sample (AOAC 2005).

Quality evaluation of prepared cakes

Crude protein, moisture content, fiber content, and external (outer appearance), total phenolic contents of the product were evaluated.

Evaluation Of Organoleptic Properties Of Prepared Cakes:

Four different formulation of cake flour (Table. 01) and prepared cake were subjected to evaluate sensory properties. Thus, Prepared cakes were served for 15 trained panelists and evaluated for external appearance, internal appearance, colour, aroma, taste, texture and overall acceptability using 5 point Hedonic scale (5-like extremely, 4-like moderately, 3-neither like nor dislike,2-dislike moderately, 1-dislike extremely). The selected best formula was tested for physicochemical characteristics and its storability of cake product.

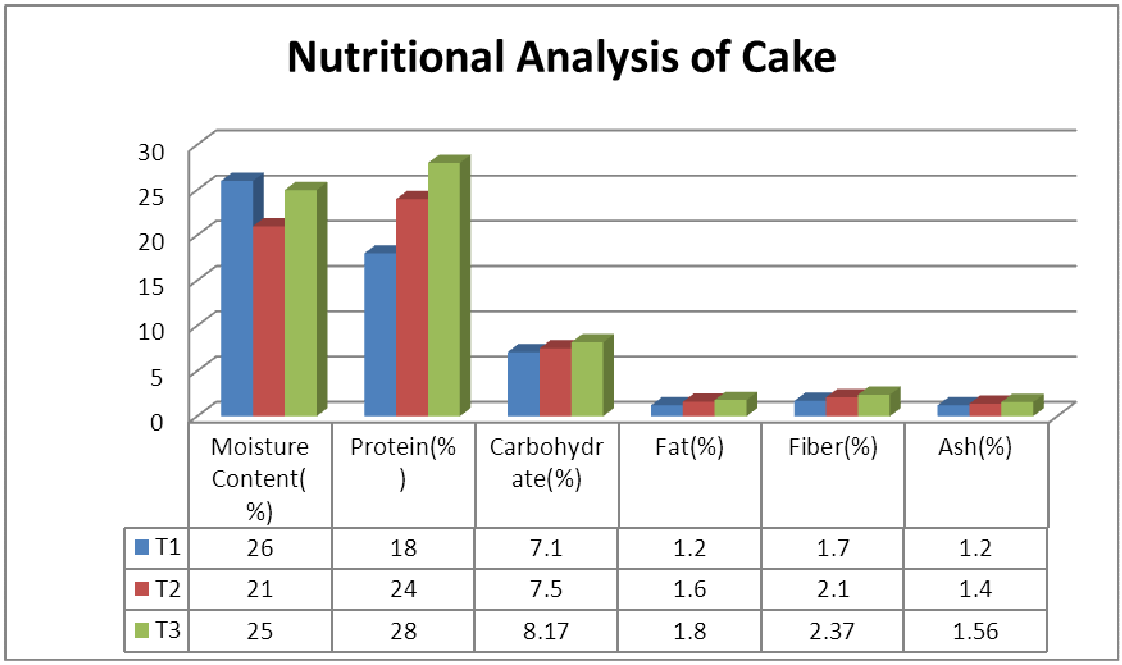
Result And Discussion:

Chemical Analysis Of Ready To Bake Cake:

The data obtained from the proximate analysis of three different flour formulated cake are given in the Table 02. Slight increase in moisture content was observed in all treatments. Moisture contents of different cake flour formulation were in the range of 9-11% and lowest moisture level was recorded by mixture (T2). The total protein, carbohydrate, fat, fiber and ash content of formulated sample T2 was higher value as compare to T1& T2.(Table No.2). Result revealed that sample formulation (T2) was higher acceptable result as per sensory evaluation panelist.

Nutritional Analysis Of Cake:

Composition	T1	T2	T3
Moisture Content(%)	26	21	25
Protein(%)	18	24	28
Carbohydrate(%)	7.1	7.5	8.17
Fat(%)	1.2	1.6	1.8
Fiber(%)	1.7	2.1	2.37
Ash(%)	1.2	1.4	1.56



	Moisture Content(%)	Protein(%)	Carbohydrate(%)	Fat(%)	Fiber(%)	Ash(%)
T1	26	18	7.1	1.2	1.7	1.2
T2	21	24	7.5	1.6	2.1	1.4
T3	25	28	8.17	1.8	2.37	1.56

Conclusion:

Supplementation of foods is current because of increasing nutritional awareness among consumers. Supplementation with legumes, cereals and pulses is one way to meet the needs for protein particularly baked foods. Recently, consumers' awareness of the need to eat high quality and healthy foods – known as functional foods, which contain ingredients that provide additional health benefits beyond the basic nutritional requirements are therefore the trend, is to produce specially bakery products need from whole grain flour and other functional ingredients known as health foods. So, main research focuses on the development of healthy cake in the incorporation of composite flour in three different proportions. The result conclude that sample T_2 contains wheat 60%, ragi 20%, walnut 10%, green gram 10%, and other ingredient was prepared nutritious cake has high increase carbohydrate compared T_0 sample it has carbohydrate 28%, protein 8.17%, fat 1.8%, fiber 2.37%, ash 1.56%. The result revealed that the sample T_2 which contain more acceptable in terms of chemical and sensory evaluation of developed product.

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Studies on Zooplankton Diversity in Bennetura Dam, Murum, Dist-Osmanabad (M.S.)

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Abstract :

Zooplankton study was carried out in Bennetura dam, Murum Dist-Osmanabad (M.S.) from February, 2021 to January, 2022. The Bennetura dam is situated in the heart of Murum city. During the studies total numbers of Zooplanktons were counted. The different species of Zooplankton were also identified. The Zooplankton in water body belongs to four main taxonomic groups such as Rotifers, Copepod, Ostracoda and Cladocera, out of which Rotifer was dominated. About 21 Zooplankton species were recorded out of which 12 Rotifera species, 3 Copepoda species, 2 Ostracoda species and 4 Cladocera species were found the Rotifera branchionar was dominated among Zooplankton in the Bennetura dam.

Keywards: Zooplanktons diversity, Seasonal population density, Bennetura dam, Murum

Introduction :

Zooplanktons are the most fascinating groups of micro-organisms found in aquatic body. The zooplankton in water body belongs to four main taxonomic groups such as Rotifers, Copepod, Ostracoda and Cladocera are dominant represented groups of crustacean in fresh water habitat. They are abundant in the shallow areas but only few species abundant in the open water. They play vital role as primary consumers. The occurrence and abundance of Zooplankton in a water body depends upon it, productivity which in turn is influenced by physic chemical parameters and the level of nutrients. Zooplankton, occupies an intermediate position in food web, many of them feed on algae and bacteria and in turn are fed by numerous invertebrates and fishes. The literature on zooplankton and biological indicators of water quality has been renewed by many workers such as Mahajan (1981), than and Seshagiri Rao (1981) and Arova (1987) have pointed out to rotifer species indicating clean, polluted and heavily polluted water. Zooplankton has been used as an indicator for monitoring the water quality tropic status and pollution level. The zooplanktons which play a role of converting phytoplankton in food suitable for fish and aquatic animals. They can also play an important role in indicating the presence or absence of certain species of fishes or in determining the population densities. Zooplankton has been a subject of study in India and several workers have worked in it, such as Ganpati (1943), Jyoti and Sehgal (1979), Sharma and Patanik (1985), Chandrashekar and Kodarkar (1996) Pulle (2000), Narsimha Rao and Jaya Raju (2001), Pawar and Madlapure (2002), Dhimdhime and Ambore (2003), Patil et. Al (2005) Madhusudhan et. Al. (2005).

The paper deals with studies on zooplankton diversity in Bennetura Dam, Murum qualitative and quantitative analysis of zooplankton diversity were carried out.

Table no. Monthly Variation in Zooplankton in Number Per list 2021-2022 at Station A

Sr. No	Components	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Total
1	**Rotifera**	7	10	9	12	14	5	2	6	7	10	8	8	98
2	**Copepoda**	5	6	10	8	4	2	1	3	6	8	10	10	73
3	**Ostvacodes**	5	4	4	2	1	6	12	7	10	6	6	4	67
4	**Cladocera**	4	4	5	3	2	8	10	4	10	8	6	5	69
	Total	21	24	28	25	21	21	25	20	33	32	30	27	307

Table no. Monthly Variation in Zooplankton in Number Per list 2021-2022 at Station B

Sr. No	Components	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Total
1	**Rotifera**	6	10	11	12	11	6	3	6	7	10	10	8	99
2	**Copepoda**	4	6	11	8	5	2	1	2	4	8	10	10	70
3	**Ostvacodes**	5	4	4	2	1	6	10	8	10	6	6	4	62
4	**Claducera**	4	4	3	2	1	8	12	4	10	8	5	5	66
	Total	19	24	28	24	18	22	25	20	31	32	31	27	297

Table no. Monthly Variation in Zooplankton in Number Per list 2021-2022 at Station C

Sr. No	Components	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Total
1	**Rotifera**	4	7	6	11	6	7	4	4	7	10	8	8	82
2	**Copepoda**	3	6	10	8	1	2	1	3	10	10	10	6	70
3	**Ostvacodes**	4	2	5	2	8	5	8	10	10	4	4	4	66
4	**Claducera**	8	2	4	1	2	4	4	4	4	10	10	10	63
	Total	19	17	15	22	17	18	17	21	31	34	32	28	281

Materials And Methods:

Water sample and zooplankton samples were collected from Bennetura dam, Murum water body for a period of one year. From February, 2021 to January, 2022, at selecting three stations. Station A, Station B, Station C. the plankton net of mesh size 30 mm was swept through subsurface and samples were transferred to 100 ml capacity plastic bottles. The samples were preserved using 4 % formalin solution, standard key and other literature was used for identification of different species Torapi (1980), APHA(1989), Pennak (1989). The number of planktons per litre was determined using Sedgwick Valter cell by taking 1 ml of approximately diluted samples and the observation was represented number of zooplankton per liter.

Result And Discussion :

The total number of Zooplankton and monthly average of Zooplankton number per litre were recorded in table and illustrated in the figure. I. it was noted that the total number of zooplanktons varied from 20 to 33 number per litre at station A, 18 to 32 number per litre at station B and 17 to 34 number per sites at station C during the year 2021-2022 i.e. Feb, 2021 to Jan, 2022 Kumar (1996) recovered zooplankton at mangev 17 to 137 per Liter in Ganga River in Bihar, M. Baburao (1997) found the domination of zooplankton over phytoplankton in Himayatnagas Lake Hyderabad. Pawar and Madlapure (2002) recorded 28 genera of zooplankton from Sirur dam near Mukhed in Nanded district. Sirsat and Ambore (2004) studies the zooplanktons form fresh water pond at Dharmapuri in Beed district, Maharashtra.

A. Rotifera :

The monthly average and total number of rotifers varied from 2 to 14 number per lit. at statin A, 3 to 12 number per lit. at station B and 4 to 11 number per lit. at Station C. Rotifera is one of the oldest group and a minor phylum of invertebrates are commonly termed as "Wheel" animalcules because of their characteristic wheel organ or corona that bears of their close resemblance to a pair of revolving wheels. The rotifers are being considered as the most important soft bodied invertebrates (Hulchinson), (1967). Most of the rotifers are primary consumers feeding on various sized phytoplankton's some of them feed on detritus element and bacteria, while few are raptorial predators (Edmondson) 1965. Rotifers constitute nutritious food item to fish.

B. Copepoda :

The monthly average and total number of copepods varied from 01 to 10 number per lit. at station A and 01 to 11 per lit. at station B and again 01 to 10 number per lit. at station C. Allan (1976) observed that there is inverse relationship between high population of rotifers and Cladocera low population of copepod during winter may be due to the feeding pressure of stocked fish on the latter and if copepod are removed than there is sudden increase in the population of rotifer and Cladocera. Usha Choubey 1997 found high density of copepods during October water temperature and availability of food organism effect the copepod population.

C. Ostracoda :

The monthly average and total number of ostracode varied from 01 to 12 number per lit. at station A, 01 to 10 number per lit. at station B and 01 to 11 at station C per lit. Ostracode species are bivalve and have shape like small seeds Ostracodes are green coloured species, like with algae while grey coloured species, live with ooze. The abundance of these provides good food for aquatic organisms. Water temp. and availability of food organisms may effect the ostracoda population. Tohapi, 1980 found the highest population of ostracoda during monsson. Might be due to abundance of fine detritus to which omnivorous organisms feed over during monsoon from they natural benthic habital and bacteria mould and algae as food. Ostracoda population was found to be maximum while other zooplanktons were minimum during monsoon may be due to dilution effect (Bais and Agarwal, 1995).

D. Cladocera :

The monthly average and total number of cladocera varied from 02 to 10 number per lit. at station A and 02 to 08 per lit. at station B and again 01 to 10 number per lit. at station C. The Cladocera compunents of zooplankton play important role in the benthic throphodynamic. Most of cladocerans are primary consumers and feed on microscopic algae and fine particulate matter in the detritus. Thus influencing cycling of matter and energy in the benthos. Usha Choubey, 1997 found the density of cladocerans is high in the month of June and low in December. Temperature and availability food may affect their numbers.

List of zooplankton species.

Rotifera :

Asplanchana sp, Asplanchana interme, Branchionas duragae, B. forficula, B. pallas, Angularis, B. calyciflorus, B. calyciflorus vandoreas, B. rubens, Filina borg, F. terminals, F.longiseta, Keratella bory, Keratella quadrata.

Copepoda : Argulus foliceous, Cyclops, Mesocyclops sps, Microcyclops Phyllodiopionus sps.

Cladocera : Alonarectangula vichavdi sars, Ceriodaphnia, Laticaudata, Leriodaphnia, Cornula, Moina, Moina brachiate juvine, Moina micrura.

Ostracoda : Cypris, stenocypris, strandesia.

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A Survey of Spiders Diversity in Three Agricultural Field Areas : The First Report of Tamil Nadu in India

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Abstract:

The present article deals with the fauna diversity of the spiders in Agricultural areas. A total of 19 species under 9 genera were recorded in Anichampalayam site-I (S-I), Nanjai Edayar site-II (S-II), and Pandamangalam site-III (S-III), Namakkal District, Tamil Nadu in India. Maximum 32% of spider species were recorded in Araneidae, followed by Tetragnathidae, Salticidae, Sparassidae, Oxyopidae, Clubionidae, Gnaphosidae, Hersiliidae and Lycosidae. A very high number of spider species was found in site III (504), followed by site II (404), and site I (376). An extensive survey for these spiders is required in almost 3 sites particularly in those where these jumping spiders are either not recorded. Despite the spiders are the most diverse group of predators and is crucial to the health of terrestrial ecosystems, none of the species recorded in India is listed in IUCN Red List.

Keywords: spider, diversity, agriculture field, species abundance, species richness.

1. Introduction:

Rice (Oryza sativa) is an essential food source for more than 50% of the world population with an annual yield of more than 700 tons roughly (Center Africa Rice, 2011; Seck et al., 2012). India, China, Thailand, Bangladesh, Philippines, Pakistan, Indonesia, USA and Vietnam are among the major rice producers (Mehmood et al., 2021). Oerke, 2006; Xie and Yang, 2018 and Savary et al., 2019 reported that from the past years, the productivity of rice at the global level is at risk due to different crop diseases and pest infestations. Insect pests of rice cause a loss of 200 million tons every year (Nasiruddin and Roy, 2012; Singh and Singh, 2017). Synthetic pesticides are extensively used to control the outbreak of pests (Karunamoorthi and Mohammed, 2012; Weng and Black, 2015). Their unnecessary use of pesticides causes negative impacts on human health, environment and agriculture production by rigorously damaging the flora and fauna (Houbraken et al., 2016; Rosic et al., 2020). John and Shaike (2015) reported that the natural balance between pests and predators has been greatly disturbed due to the careless use of pesticides which are accountable for the non-target killing of natural enemies.

Spiders are the natural predators present abundantly in the rice ecosystem and limit the population of other insect pests (Maloney et al., 2003; Thomson and Hoffmann, 2010; Radermacher et al., 2020). They are tremendous predators due to wasteful killing, high reproductive rate, functional and numerical response and their capacity to survive under conditions of food shortage (Nyffeler and Birkhofer, 2017; Michalko et al., 2019). Tyagi et al. (2019) testified that accurate identification of spiders is needed to differentiate the native spider fauna from the invasive ones by creating a barcode reference library. Different diagnostic characters like eye and epigynal patterns are used for species-level identification (Barrett and Hebert, 2005). Morphology based identification is quite difficult due to the unavailability of literature and time consumption (Ball and Armstrong, 2006). Robinson et al., 2009 and Hamilton

et al., 2011 investigated that the absence of clear distinguishing characters and sexual dimorphism dare the authenticity of phenological identification of spiders. So, there is a critical need to introduce quick, economical and undisputed approaches to investigate the spiders taxonomically (Hebert and Gregory, 2005; Fontaneto et al., 2009; Iftikhar et al., 2016).

The current study aimed to document the undescribed fauna of spiders from the Namakkal District of Tamil Nadu in India.

2. Materials And Methods:

2.1. Collection of spiders:

Live spiders were sampled from different agricultural fields across the Namakkal district including Anichampalayam site-I (S-I), Nanjai Edayar site-II (S-II) and Pandamangalam site-III (S-III), Tamil Nadu, India. The sample collection was done from 2019 to 2020 during the rabi season using different sampling techniques like visual search and sweep netting (Robinson et al., 2009; Tyagi et al., 2019).

2.2. Sampling sites:

Three sampling sites were used for the study namely S-I (Latitude- 11.1006° N; Longitude- 78.0213° E), S-II (11.0980° N; 78.0345° E) and S-III (11.1028° N; 78.9653° E). There were minor variations in the agronomic practices at all sampling sites. These sampling sites were monoculture rice fields surrounded by grassy strips/bunds (Fig. 1).

2.3. Storage and preservation:

Insects were collected in plastic jars (4×6 inches) containing 75% ethanol. Collected specimens were brought to the laboratory in the Department of Zoology, Kandaswami Kandar's College, Paramathi Veiur, Namakkal District of Tamil Nadu. After washing with alcohol spiders were transferred to clean glass vials (20 ml) with the help of forceps for morphological study containing Odd man's solution (70% ethanol, 15% glacial acetic acid and 15% glycerol).

2.4. Data analysis:

Calculations of spider diversity and dominance were based on adult individuals only. The collected data were subjected to Diversity Index (Species richness [S], Evenness and Shannon Index) by PAST statistical software. To find out the relationships between spiders and different abiotic and biotic factors, correlation analysis was performed. Because the data were not normally distributed (Kolmogorov-Smimov test), Spearman's rank correlation method requires at least seven pairs of observations (Fowler et al., 1998), only the most abundant spider species were included in the analysis. The relationships were analyzed between individual spider species or spider diversity indices and different vegetation and non-vegetation variables. The statistical significance of the correlation analysis was checked by comparing coefficient rS with the obtained p value. PCA was performed by Palaeontological Statistics (PAST) version 3.06

3. Results and Discussion:

3.1. Percentage composition of spider groups:

In the present investigation, 1079 spiders were identified from the selected agriculture area and they are representing 19 species that belong to 9 families. Out of the total catch, 148 spiders were immature and identified up to the genus level due to the unavailability of keys for juvenile identification. However, the remaining 1136 specimens were mature. Several diversity indices were used in the present study to measure the spider species diversity. The percentage composition of spider diversity in the agriculture field was calculated, maximum of 32% of

spider species were recorded in Araneidae, followed by Tetragnathidae (16%), Salticidae (11%), Sparassidae (11%), Oxyopidae (10%), Clubionidae (5%), Gnaphosidae (5%), Hersiliidae (5%) and Lycosidae (5%) and they were shown in Fig. 2. Site III showed total species of 504, followed by site II 404 species and site I 376 species in the total number of species 1284 (Table 1).

Araneidae family was found to be the 6 species such as A. catenulata (Fig. 4a), A. anasuja (Fig. 4b), A. picta (Fig. 4c), A. ventricosus (Fig. 4d), A. diadematus (Fig. 4e) and N. crucifera (Fig. 4f) abundant followed by Tetragnathidae family 3 species (T. elongate, T. guatemalensis and T. laboriosa) (Fig. 5 a, b, c), Salticidae family 2 species (T. dimidiata, T. elegans) (Fig. 6a, b) and Sparassidae family 2 species (H. venatoria, O. millet) (Fig. 7a, b), Oxyopidae family 2 species (P. viridans, O. macilentus) (Fig. 8a, b), Clubionidae family (C. terrestris) (Fig. 9), Gnaphosidae family (S. montanus) (Fig. 10), Hersiliidae family (H. caudate) (Fig. 11) and Lycosidae family (H. aspersa) (Fig. 12).

3.2. Ecological Indices (Diversity indices):

In the present investigation, various diversity index parameter was studied for the spider diversity which was noted in the 3 different agriculture sites. According to the observation, Richness varies from 16 to 18, True Diversity ranges from 12. 5 to 14, Shannon Entropy observed from 2.6268 to 2.7382 and Simpson Dominance range from 7.20% to 8.00%. During this study, compared to all the study areas a maximum species richness was observed in Site III (Table 2).

3.3. Dominance Plot and Group average in the study area:

The percentage dominance of the spider community was plotted based on their rank individually and cumulatively. The highest number of species was found in site III at this Pandamangalam (Fig. 3).

3.4. The principal component analysis (PCA):

In the present investigation, the principal component analysis was employed to study variables of spider diversity among selected agriculture sites and the results were represented using a biplot. In the present study, species variables were developed using three principal components. The result showed the influence of different spider species diversity with three selected study sites (Site I, II and III). Angular distance and length of the arrows indicated the positive and negative correlation with the variables assemblage. Figure demonstrated that site III influences greater diversity of spiders than Site I and II (Fig. 13 and 14).

4. Discussion:

Generally, spiders are considered ingenious predators and they can regulate the huge number of pests and they play a major role in the paddy field pest management. Few works related to spider diversity in paddy plantations were recorded including Pathak and Saha (1998); Ambalagan and Narayanasamy (1999); Bambaradeniya and Edirisinghe (2001); Bambaradeniya et al. (2004); Patel et al. (2004); Vijaykumar (2004). During the current study we compared the authenticity identification of spiders from three village sites, Namakkal district of Tamil Nadu in India with eye patterns approaches reference library for spider fauna of Tamil Nadu, India.

The result obtained from the present investigation was confirmed that paddy crops served as a reservoir for the spider species. About 1079 spiders were identified from the selected agriculture area and they are representing 19 species that belong to 9 families. Ash faq et al. (2019) reported nearly 38 distinguished morphospecies of spiders. One of the difficultly faced

during this study was the accuracy of the morphological examination. Nearly 148 spiders were immature and identification key was not available for those spiders and deprivation of diagnostic characters of juvenile spiders could be the possible reasons for the present less accuracy of morphological evaluation. Another important factor that plays a role in spider diversity was habitat complexity and this reason was also stated in many research findings (Dobel et al., 1990; Gunnarsson, 1990). Paddy field ecosystems were generally very simple and relatively few substrates were required for web building and hunting and added to it the complexity of increased time as the plants grow and this could be a reason spider species abundance in the present study. According to Stokmane and Spungis (2014), diversity indices suggested that the grass-dwelling spider community consists of few abundant species and numerous rare species In another study, Ambalgan and Narayanasamy (1999) concluded that both spider abundance and richness is linked to the various phase of rice growth. Spungis (2005) was the one reported Latvia spider species in the year 2004 and this was followed by Cera et al., (2010). In the present study, Araneidae was noted as a dominant family in the selected study area and this was correlated with the finding of Manju et al. (2005) and Shegokar (2012). According to the observation of Tiwari and Singh (2021), only 3 species of spiders are distributed widely; Dendrolycosa gitae (11 Indian states, 1 Union territory), Nilus albocinctus (8 Indian states, 1 Union Territories), and Perenethis venusta L. (8 Indian states). In another study, family of Araneidae constituting 4 species from 3 genera in Mannavan Shola Forest, in Kerala. The increased spider population belongs to Araneidae and Tetragnathidae (orb-web spiders) could be due to mixed vegetation of the forest, which provides enough space to build webs of different sizes and protection from predators (Sudhikumar et al., 2005). Further, vegetation structure has been hypothesized to influence spiders diversity, but this impact may present in Specific subgroups or guilds within spiders (Rodrigues et al., 2014). Nevertheless, there were quite a lot of associations between spiders and individual plant species. The DCA showed quite a similar pattern-some of the individual plant species were fairly important for spider communities. These reports partly support research by other authors (Uetz, 1991; Pozzi et al., 1998; Jimenez-Valverde and Lobo, 2007; Hore and Uniyal, 2008) who have found that vegetation structure is one of the major habitats features explaining spider species composition.

In addition, Araneidae population showed consistent increasing trends among the populations of immature and adults from January to August (Tahir et al., 2009). In Estonia, the investigation surveyed different mire types (including fens, transitional mires and bogs) but these data are quite old materials that were collected by a sweep net from 1947 to 1976 (Vilbaste, 1980). A total of 32 species were discovered from a limited area of Pune University (Wankhade et al., 2012), and out of the 252 genera from the Indian region (Manju et al., 2005), 38 genera are observed in Sellappampatty village. Similar spider genera were recorded in the other Indian spider studies viz., 33 genera in Andaman and Nicobar Islands, 41 genera in Sikkim, 47 genera in Calcutta, 40 genera and 51 species in Mangalavanam, Kerala, India (Tikader, 1977; Tikader et al., 1981; Sebastian et al., 2005).

5. Conclusion:

Further study will focus on some other sampling periods and growing seasons to evaluate the spider diversity of Tamil Nadu. In addition, our sampling method was restricted only to eyes patterns of spiders, other collection methods are required to be used in future studies to obtain a more complex overview of the spider fauna of the studied habitats. The present study may be

considered more like an eyes pattern in morphological studies, and the topic deserves future investigations because there is still a lot to learn about spider fauna.

6. Acknowledgements:

Authors are gratefully acknowledged to the Associate Professor and Head, Department of Zoology, Kandaswami Kandar's College, Paramathi Velur, Namakkal District, Tamil Nadu in India.

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Table 1. Check list of spider species in three different sites of Namakkal district during 2020 to 2021

Family	Species	Site I	Site II	Site III	Total
		No. of *Sp.*	No. of *Sp.*	No. of *Sp.*	
	Argiope catenulate	+ (14)	+++ (53)	++ (32)	99
Araneidae	*Argiope anasuja*	++ (20)	++ (24)	+++ (49)	93
	Argiope picta	+++ (46)	+++ (41)	+++ (40)	127
	Araneus ventricosus	+++ (42)	++ (23)	+++ (45)	110
	Araneus diadematus	++ (27)	++ (30)	++ + (52)	109
	Neoscona crucifera	++ (23)	+++ (41)	++ (27)	91
Clubionidae	*Clubiona terrestris*	++ (18)	+ (6)	++ (16)	40
Gnaphosidae	*Sergiolus montanus*	+ (8)	-	+++ (41)	49
Hersiliidae	*Hersilia caudate*	+ (5)	++ (18)	+ (8)	31
Lycosidae	*Hogna aspersa*	++ (36)	+ (13)	++ (32)	81
Oxyopidae	*Peucetia viridans*	+ (9)	++ (16)	++ (17)	42
	Oxyopes macilentus	++ (16)	+++ (36)	-	52
Salticidae	*Telamonia dimidiata*	+++ (45)	-	+ (10)	55
	Telamonia elegans	++ (21)	-	+++ (48)	69
Sparassidae	*Heteropoda venatoria*	-	+++ (37)	++ (15)	52
	Olios millet	-	++ (18)	++ (16)	34
	Tetragnatha elongata	++ (13)	+++ (31)	+ (10)	54
Tetragnathidae	*Tetragnatha guatemalensis*	+ (6)	+ (8)	+++ (36)	50
	Tetragnatha laboriosa	++ (27)	+ (9)	+ (10)	46
					1284

+++ = highly presence, ++ = normal presence, + = low presence, - = absence,

Table 2. Diversity index of spider diversity

Index	Site 1	Site 2	Site 3	Total
Number of Classes *N*	19	19	19	19
Richness *R*	17	16	18	19
Berger Parker Index *pi*max	13.30 %	13.10 %	10.30 %	9.90%
Shannon Entropy[1)] *H* (nat)	2.6727	2.6268	2.7382	2.8597
Shannon Entropy[1)] *H* (bit)	3.8559	3.7897	3.9504	4.1256
Number Eq. ^1D (True Diversity)	14.5	13.8	15.5	17.5
Shannon Equitability *H*/ln*N*	90.80 %	89.20 %	93.00 %	97.10 %
Simpson Dominance *SD*	7.80%	8.00%	7.20%	6.20%
SD (unbiased - finite samples)	7.50%	7.80%	7.00%	6.10%
True Diversity ^2D (Order 2)	12.8	12.5	14	16.2
Gini-Simpson Index 1-*SD*	92.20 %	92.00 %	92.80 %	93.80 %
Gini-Simpson Equitability	**97.30 %**	**97.10 %**	**98.00 %**	99.00 %

Fig. 1. Selected Study Area for Spiders diversity

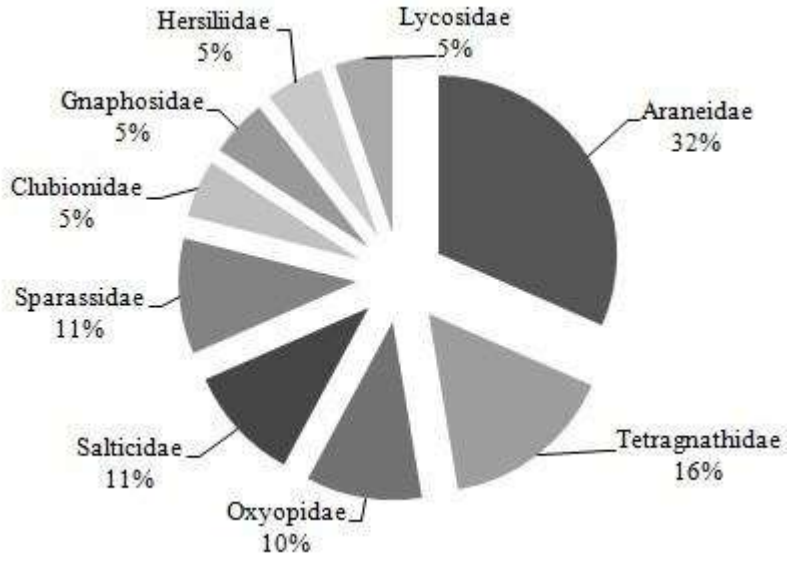

Fig. 2. Percentage composition of the different classes of Spiders – Pie chart

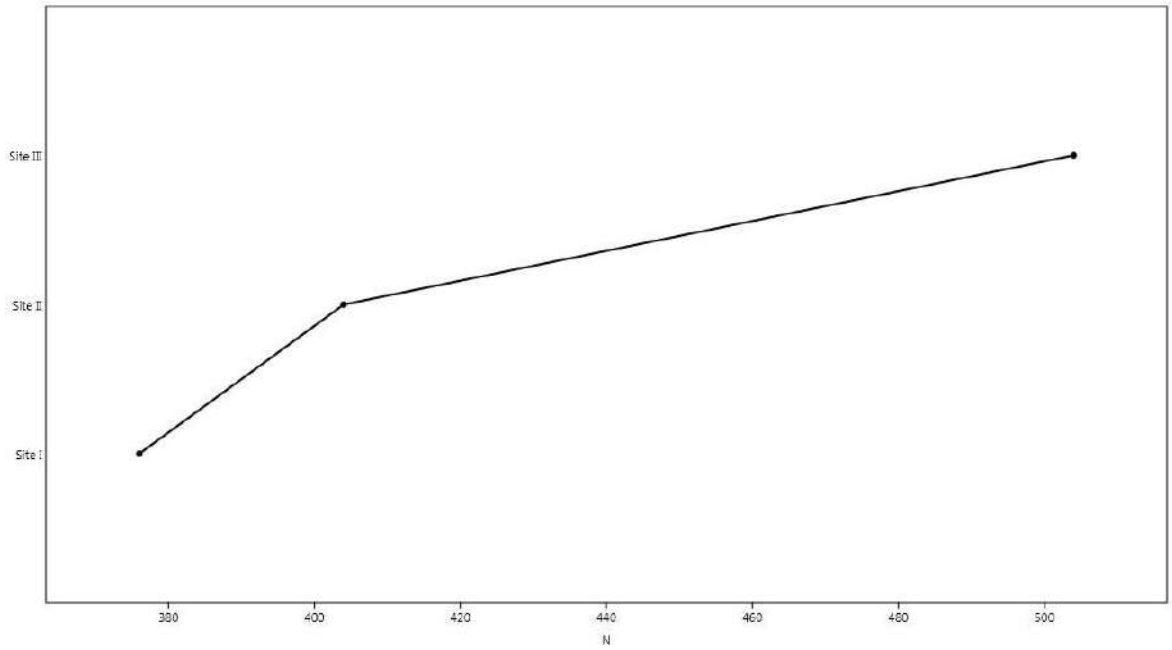

Fig. 3. Dominance Plot in all the selected study areas

Fig 4. Araneidae family A. catenulata (Fig. 4a), A. anasuja (Fig. 4b), A. picta (Fig. 4c), A. ventricosus (Fig. 4d), A. diadematus (Fig. 4e) and N. crucifera (Fig. 4f)

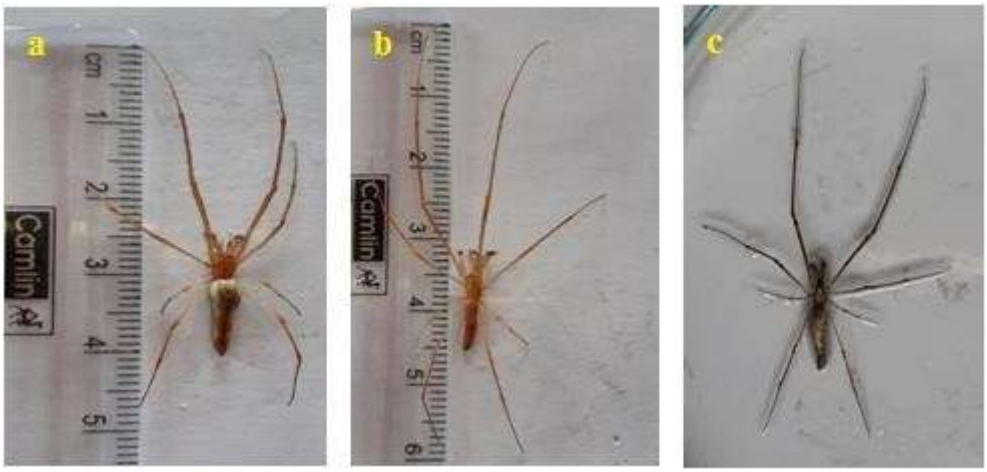

Fig 5. Tetragnathidae family - T. elongate (Fig 5a), T. guatemalensis (Fig 5b) and T. laboriosa (Fig 5c)

Fig. 6.Salticidae family T. dimidiate (Fig 6a), T. elegans (Fig 6b)

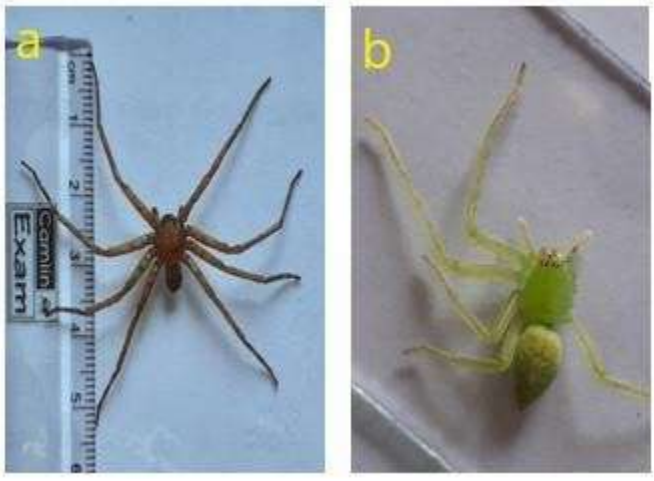

Fig. 7.Sparassidae family H. venatoria (Fig 7a), O. millet (Fig 7b)

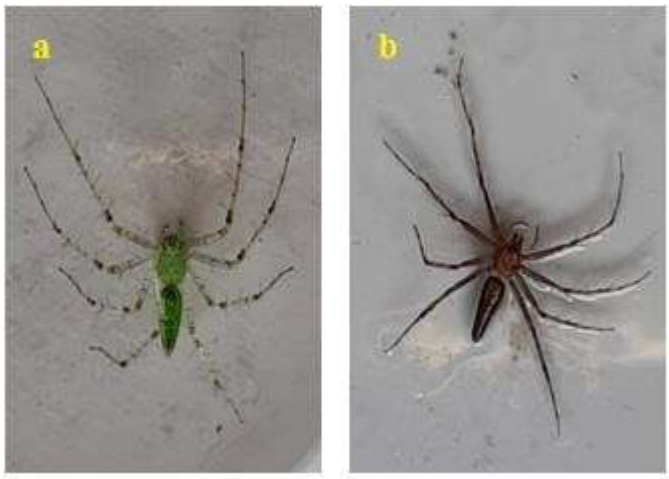

Fig. 8.Oxyopidae family *P. viridans* (Fig 8a), *O. macilentus* (Fig 8b)

Fig. 9. Clubionidae family (C. terrestris)

Fig. 10. Gnaphosidae family (S. montanus)

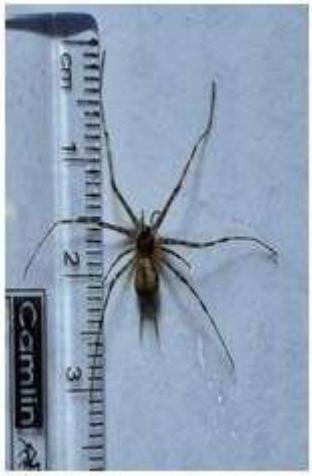

Fig. 11. Hersiliidae family (*H. caudate*)

Fig. 12. Lycosidae family (H. aspersa)

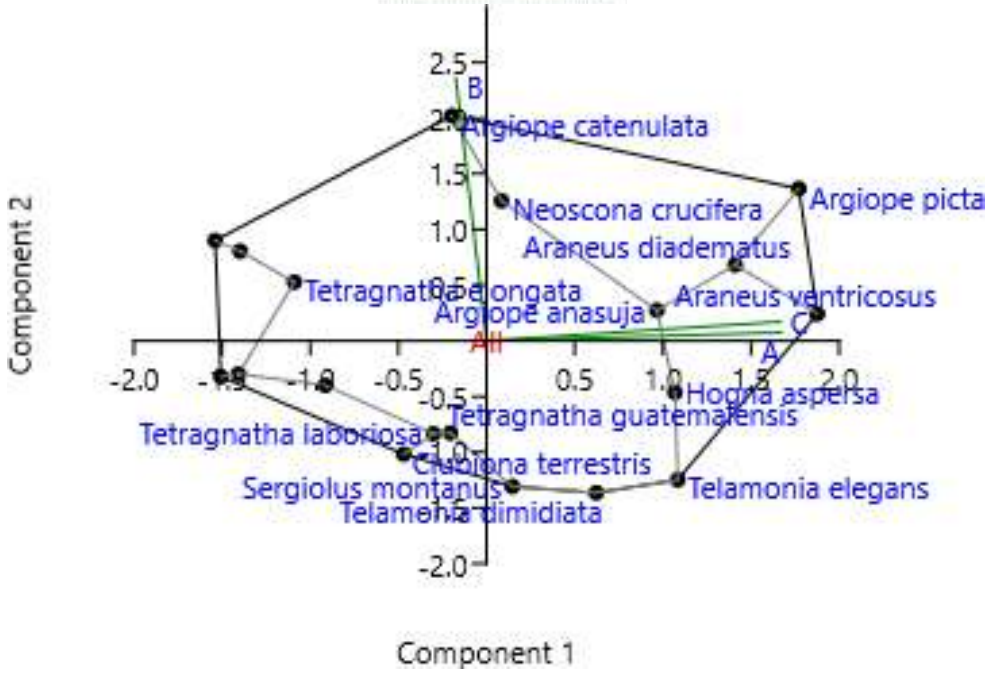

Fig. 13. The principal component plot of Sites I and II

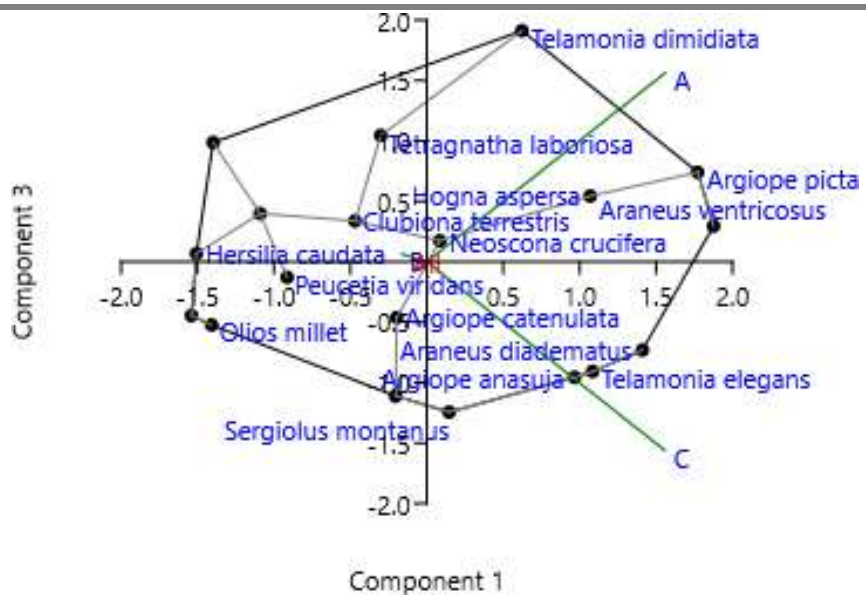

Fig. 14. The principal component plot of sites I and III

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Papaya Mealybug and its Management

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Abstract:

A survey was conducted in the village Baragaon Nandur, from Ahmednagar District, Maharashtra 413705, India. A total number of 2 Papaya farms were visited with each farms having more than 20 plants.The papaya mealy bug, Paracoccus marginatus Williams and Granara de willink (Hemiptera : Pseudococcidae), is recorded from the oriental region for the first time, where it was found in Indonesia (java) and India (Tamil Nadu) in 2008. Papaya mealybug is a polyphagous pest that damages many tropical crops. A native of central America, it spread to the Caribbean region and South America in the 1990s; since then it has been accidentally introduced to some islands in the Pacific region. The distribution, host range and characteristics of the mealybug are summarized. It's host range includes more than 60 species of plants including Papaya, Hibiscus, range in vegetables, fruits, flowers, ornamental crops and weeds. It includes agricultural and horticultural crops, trees in Tamil Nadu state of India during 2009-2010. In present investigation was conducted during the spring season. The plant was diagnosed the mealybug. During June-July period it was observed in Papaya plant. In Baragaon Nandur, Maharashtra 413705, India it was observed that white colour mealybug are spread all over the plant. The controlling of mealybugs the chemical controls method are more effective and fast method.

Keywords: Mealybug, Paracoccus marginatus, Baragaon nandur,polyphagus

Introduction:

Papaya mealy bug (Paracoccus marginatus) causes severe economic damage in cassava yield.[2] The mealy bugs are white to pink in colour and measure 3-4 mm in length. Adult females are oval and somewhat round, dark green to almost black in appearance. mature female lays eggs in an egg sac of white wax, usually clusters on the twigs, branches of the host plant.[8] Reasons faster spread of mealy bug – A white wax and flour- like substance around the body of the pest is the reason for not able to control this pest easily. This pest spread rapidly due to lack of natural enemies of these pests and it is a foreign originated insect. Also, reproduction of this mealy bug is 15 times a year. An insect lays between 500 and 600 eggs a year. The population is growing at a higher level, thus causing great damage.

They are found in colonies. It was causing the harm to the Papaya plant as well as hibiscus plant. It is small polyphagus sucking insect with pest status that attacks several genera

of host plants.[7] The infection of Papaya adversely affects on the plant growth and leaf yield as well as fruit quality.[9]

The Papaya mealybug feeds on the sap of plants by inserting its stylets into the epidermis of the leaf, as well as into the fruit and stem. In doing so, it injects a toxic substances into the leaves. [6] The result is chlorosis, plant stunting, leaf deformation, early leaf and fruit drop, a heavy build-up of honeydew, and death. Papaya mealy bug has only been recorded feeding on areas of host plant that are above ground, namely the leaves and fruit.[4]Ecologically occurring predators of mealybugs include lady beetles, green and brown lacewings, spiders. Also keep ants out of mealybug- infested areas and plants because ants protects mealybugs from their natural enemies. [11]

Materials And Method:

A survey was conducted in the village Baragaon Nandur, Maharashtra 413705, India. A total number of 2 Papaya farms were visited with each farms having more than 20 plants. In present investigation was conducted during the spring season. The plant was diagnosed the mealy bug. During June-July period it was observed in Papaya plant white colour mealy bug are spread all over the plant. They are found in colonies.

Management:

a. **Chemical control-** A numbers of chemical are available to control mealybugs, although none are currently registered specifically for control of Papaya mealybug.[3] Active ingredients in registered pesticide formulations include Acephate, Carbaryl, Chlorpyrifos, Diazinon, Dimethoate, Malathion. It also including soap water& detergent spray effective to control the mealy bug.[10]

Products to control mealy bugs on Papaya:

olecule	osage per litre of water	rade name
iomethaxom	5 gm	nant or Caper
imethoate	gm	afgor
upyradifurone	ml	vanto

Table 1.Sprays

olecule	osage per plant	rade name
artap Hydrochloride 4 % G	)-30 gm/Plant	aldan 4G
% Granular formulation of Carbofuran	5-50 gm/Plant	uradan 3G

Table 2.To apply under the infested tree on the soil

b. **Cultural and Mechanical Control:**

- Sticky bands or a band of insecticide or alkathene sheet applied to around the trunk of papaya plants.
- These method is useful for to preventing movement of crawlers and ants. The already present ant colonies are destroyed.
- To proper sanitize farm equipment before using uninfected crops and sanitize the equipment tools use 1% bleach solution or high pressure water to clean the tools.
- When infection of papaya mealybugs are less they may be picked off by the hand.
- To avoid flood irrigation to prevent spread the mealybug to other plants.[12]

Result And Discussion:

Investigation conducted at spring season. The white mealy bugs are observed in period of June- July at Baragaon Nandur, Maharashtra 413705. The controlling of Papaya mealy bugs are used the three methods I.e. chemical control, Cultural and Mechanical controls. In a chemical controls includes the active ingredients pesticides i.e. Acephate, Carbaryl, Chlorpyrifos, Diazinon, Dimethoate, Malathion, etc are spread. In a cultural and mechanical controls also used many methods i.e.sticky band, destroy colony, hand picking, etc. [1] When the infestation are more than the chemical control is more suitable as compare to cultural and mechanical method. The chemical control are very fast and more effective method and less damage to crops. The cultural and mechanical method are slow and less effective. It prevents only to spread the mealybugs to other host plant.[5]

Figure: 1 Papaya fruit infestation and damage caused by the Papaya mealy bug, Paracoccus marginatus Williams and Granara de Willink

Figure :2 Papaya leaf deformation caused by the Papaya mealy bug, Paracoccus marginatus Williams and Granara de Willink.

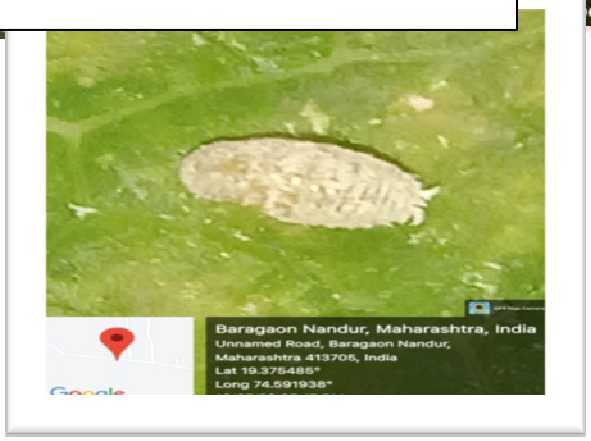

Figure 3: Nymphs and adults of Paracoccus marginatus

Figure 4: After treatment with chemical, Mechanical & Cultural method

Conclusion:

The present research paper investigates the papaya mealybugs at spring season period of June- July. It was observed that white colour mealybug are spread over the plant of papaya. The controlling of mealybugs was done using three methods. Out of them the chemical control method is very effective method as compared to cultural and mechanical method.

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Effects of Air Pollution on Human Health : A Geographical Analysis

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Abstract:-

Pollution occurs when contaminants are introduced into the natural environment, causing negative changes. Anything introduced into the atmosphere by humans that has a negative impact on the environment is considered air pollution. When chemicals or biological matter that can harm humans or other living things are released into the atmosphere, it is known as air pollution. Carbon dioxide, carbon monoxide, sulphur dioxide, and small particles pollute the air as a result of the combustion of various materials, particularly coal. These pollutants harm people by causing illness, but they also harm the environment by contributing to global warming. The lungs are the most affected by the major air pollutants. The eyes, nose, and throat are irritated by sulphur dioxide. When breathed, it can lead to serious lung conditions such asthma, bronchitis, emphysema, and lung cancer. Nitrogen dioxide causes emphysema by damaging lung tissue and restricting airways. It also causes the development of ozone, which may eat holes in lung tissue, exacerbate asthma, and put patients at risk for respiratory illness. Carbon monoxide, which is odourless and undetectable, can cause heart and central nervous system damage, as well as headaches, dizziness, convulsions, and death.

Many contaminants are significant contributors to human illnesses. Air pollutants such as nitrogen oxide, sulphur dioxide, volatile organic compounds (VOCs), dioxins, and polycyclic aromatic hydrocarbons (PAHs) are all dangerous to people. When breathed in at high concentrations, carbon monoxide can cause immediate poisoning. Natural catastrophes and climate change caused by pollution have an impact on the geographic spread of many infectious illnesses.Only public awareness combined with a multidisciplinary approach by scientific specialists will be able to handle this problem; national and international organisations must address the threat's rise and suggest long-term remedies. The current article focuses on effects of air pollution on human heath in India.

Keywords : Air pollution, pollution, Pollutants, Human health, Carbon dioxide.

Introduction:-

Chemicals, particles, or biological substances that harm other living things like food crops or the environment are referred to as air pollutants. Air pollution also refers to the release of substances into the atmosphere that cause human discomfort, sickness, or death. In order for life to exist on Earth, the atmosphere, a dynamic natural gaseous system, must be maintained. Long acknowledged as a danger to human health, the stratospheric ozone hole is caused by air pollution. According to the 2008 Blacksmith Institute World's Worst Polluted Places study, indoor air pollution and poor urban air quality are two of the most dangerous toxic pollution issues in the world. Air pollution is the term for the noxious gases and tiny solid and liquid particles (particulates) in the air that are present in high enough quantities to pose a threat to human health. Transportation engines, the production of power and heat, industrial activities, and the burning of solid waste are the main contributors of air pollution. Nitrogen oxides, gaseous

hydrocarbons, carbon monoxide, as well as significant amounts of particulates, primarily lead, are the main pollutants produced by the burning of gasoline and other hydrocarbon fuels in cars, trucks, and jet aircraft. Nitrogen oxides and hydrocarbons react in the presence of sunshine to generate a second category of pollutants known as photochemical oxidants, which includes ozone and the eye-stinging peroxyacetyl nitrate (PAN). Nitrogen dioxide, a vile-smelling brown gas, is created when nitrogen oxides combine with oxygen in the air. In cities like Delhi, where traffic is the major source of air pollution, nitrogen dioxide gives the air a brown colour that combines with other pollutants and water vapour in the atmosphere to form brown smog.

Pollutants: An air pollutant is a material in the atmosphere that has the potential to harm both people and the environment. The three different types of pollutants are solid particles, liquid droplets, and gases. They might also be created by nature or by humans. Primary and secondary pollutants can both be categorised. Primary pollutants are often discharged directly from a process, such as sulphur dioxide produced from industries, carbon monoxide gas from car exhaust, or volcanic ash. Direct emissions of secondary pollutants do not occur. Instead, they develop in the air as a result of interactions between basic pollutants. One of the several secondary pollutants that contribute to photochemical smog is ground level ozone, which serves as an excellent illustration of a secondary pollutant. Some pollutants can be both primary and secondary, which means they can both be produced directly from other primary pollutants and discharged themselves.

Pollutant categories:

The burning of fossil fuels, which are used to produce energy and power vehicles, is mostly to blame for the change in the composition of the atmosphere. Numerous air pollutants have been identified, each with unique chemical make-ups, reaction characteristics, emission patterns, environmental permanence, capacity for long-distance or short-distance transport, and potential effects on human and/or animal health. However, they do have some things in common, and they fall into one of four categories:

1) Gaseous pollutants
2) Persistent organic pollutants
3) Heavy metals
4)Particulate Matter

Gaseous pollutants-

the principal cause of gaseous pollutants, which greatly alter the composition of the atmosphere, is the burning of fossil fuels. Nitrogen oxides are released as NO, which combines quickly with ozone or other airborne radicals to generate NO2. Mobile and stationary combustion sources are the principal anthropogenic sources of pollution. On the other hand, incomplete combustion results in the production of CO. The main source of it is also the road system. The so-called volatile organic compounds are a significant class of substances that fuel combustion, particularly processes for energy generation and road transportation, which are the main source of emissions (VOCs). This group of substances contains chemical species with an organic character, including benzene.Despite the fact that the majority of gaseous pollutants are breathed and primarily have an adverse effect on the respiratory system, they can also cause cancer and haematological issues (CO, benzene).

persistent organic pollutants-

a harmful class of chemicals is composed of persistent organic pollutants. They last in the environment for a very long time, and as they ascend the food chain, their impacts become more pronounced (bio-magnification). Pesticides, as well as dioxins, furans, and PCBs, are among them. When materials containing chlorine (such plastics) are burnt, incomplete combustion and other processes can produce dioxins. Dioxins are airborne pollutants that deposit on soil and water but do not pollute groundwater supplies because they are water insoluble.Most dioxins in plants come from air and dust or pesticides and enter the food chain.

Heavy metals-

basic metal elements including lead, mercury, cadmium, silver, nickel, vanadium, chromium, and manganese are examples of heavy metals. They may penetrate water and the human food supply and are naturally occurring parts of the earth's crust that cannot be damaged or degraded. They can also be carried by air. Additionally, they are released into the environment via a number of sources, such as industrial plants, waste water discharges, and combustion. Due to their propensity to bio-accumulate in the human body, most heavy metals are hazardous. When a chemical's concentration in a biological organism rises over time relative to its concentration in the environment, this is referred to as bio-accumulation.

Particulate matter the term "particulate matter" (PM) refers to a class of air pollutants made up of complex and variable combinations of particles floating in the air that we breathe. These particles range in size and composition and are created by a wide range of anthropogenic and natural processes (Poschl, 2005). Factories, power plants, waste incinerators, automobiles, construction activities, fires, and naturally occurring windblown dust are major causes of particle pollution. The size of the particles varies (PM2.5 and PM10 for aerodynamic diameter smaller than 2.5 mm and 10 mm, respectively), and different categories have been established: ultrafine particles with an aerodynamic diameter smaller than 0.1 mm, fine particles with an aerodynamic diameter between 1 mm and 1 millimetre, and coarse particles with an aerodynamic diameter greater than 1 mm.In terms of mortality as well as cardiovascular and pulmonary impacts, there is compelling evidence that ultra-fine and tiny particles are more dangerous than bigger ones (coarse particles).

Routes of exposure:-

Dermal contact is a very insignificant way for humans to be exposed to various air contaminants, with inhalation and ingestion being the main routes. Ingestion is frequently the main route of pollutant intake since air pollution greatly adds to the contamination of food and water (Thron, 1996). Pollutants may be absorbed through the gastrointestinal and respiratory tracts, and several hazardous chemicals can be discovered in the bloodstream and deposit in various tissues. Excretion helps with elimination to some extent.

Health effects:-

Sporadic air pollution occurrences, such as the famous London fog of 1952, and a number of short and long terms epidemiological studies looked at the consequences of changes in air quality on human health. According to (Brunekreef M. Kampa, E. Castanas / Environmental Pollution 151 (2008) 362e367 363 and Holgate, 2002), air pollution is linked to higher mortality and hospital admissions. The varying chemical makeup of air pollutants, the quantity and duration of exposure, and the fact that people are more likely to be exposed to pollutant mixes than single compounds can all have various effects on human health. The impacts on human health might vary from nausea to breathing difficulties to skin irritation to

cancer. They also include birth disorders, severe developmental delays in children, and decreased immune system function, which can lead to a variety of illnesses. Furthermore, there are a number of risk variables, including age, nutritional status, and predisposing diseases. Acute, chronic, non-cancerous, and malignant health impacts can be separated. The cardiovascular and breathing systems are the most impacted systems, according to epidemiological and animal model studies. However, the function of a variety of other organs can also be affected.

1) Effects of air pollutants on different organs and systems:-

Effects On Respiratory System:-

According to several studies, all kinds of air pollution can harm the airways when present in high concentrations. Long-term exposure to lower pollutant concentrations, on the other hand, has similar consequences. Increased levels of sulphur dioxide, nitrogen oxides and certain heavy metals such as arsenic, nickel, or vanadium are usually associated with symptoms such as nose and throat irritation, followed by bronchoconstriction and dyspnoea, especially in asthmatic individuals. Particulate particles that penetrate the alveolar epithelium, as well as ozone, cause lung inflammation (Ghio and Huang, 2004). Pollutant-induced inflammation will aggravate the condition of people with lung lesions or illnesses. Furthermore, air pollutants such nitrogen oxides make people more susceptible to respiratory diseases (Chauhan et al. 1998). Finally, prolonged exposure to ozone and certain heavy metals impairs lung function with the latter also causing asthma, emphysema, and lung cancer. Mice exposed to nitrogen dioxide also developed emphysema-like lesions (Wegmann et al., 2005).

Effects Oncardiovascular System:-

Carbon monoxide binds to haemoglobin, altering its structure and lowering its oxygen-transfer capacity (Badman and Jaffe, 1996). Reduced oxygen availability can influence the performance of several organs (particularly those that consume a lot of oxygen, such as the brain and heart), resulting in poor concentration, sluggish reflexes, and disorientation. Apart from airway inflammation, particulate matter causes systemic inflammatory changes that impact blood coagulation. Air pollution can clog (cardiac) blood arteries, causing angina or even myocardial infarction, by irritating the lungs and causing alterations in blood clotting.Heavy metal contamination (particularly mercury, nickel, and arsenic) has been linked to symptoms such as tachycardia, high blood pressure, and anaemia due to an inhibitory influence on haematopoiesis (Huang and Ghio, 2006). Finally, epidemiologic studies have connected dioxin exposure to an increased risk of death from ischemic heart disease, and heavy metals have been proven to raise triglyceride levels in mice.

Effects On Nervous System:-

Heavy metals (lead, mercury, and arsenic) and dioxins have the greatest impact on the neurological system. After exposure to arsenic, lead, or mercury, neurotoxicity has been documented, with symptoms including memory loss, sleep difficulties, rage, exhaustion, hand tremors, impaired vision, and slurred speech. Lead exposure, in particular, damages the dopamine system, glutamate system, and N-methyl-D-Aspartate (NMDA) receptor complex, all of which are involved in memory activities. Mercury is also linked to several types of brain tumours. Children's mental development is harmed by dioxins because they slow down nerve conduction velocity.

Effects On Urinary System:-

Heavy metals can cause kidney damage, which starts with tubular dysfunction and increased excretion of low molecular weight proteins, and continues to a lower glomerular

filtration rate (GFR). In addition, they increase the risk of stone formation or nephrocalcinosis and renal cancer (Boffetta et al., 1993; Vamvakas et al., 1993).

Effects On Digestive System:-

Dioxins cause liver cell damage (Kimbrough et al., 1977), as evidenced by an increase in the levels of certain enzymes in the blood, as well as gastrointestinal and liver cancer (Mandal, 2005).

2) Pregnancy And Exposure:-

It's also worth noting that air contaminants might have an impact on a growing foetus. Heavy metal exposure during pregnancy, particularly lead exposure, increases the chance of spontaneous abortion and stunted foetal development (pre-term delivery, low birth weight). There is also evidence that parental lead exposure causes prenatal abnormalities and lesions of the developing nervous system, producing significant impairment in the motor and cognitive functions of newborns. (Garza et al., 2006). Dioxins were also discovered to be passed from the mother to the foetus through the placenta. They function as endocrine disruptors, affecting the foetal nervous system's growth and development. (Wang et al., 2004). TCDD is a developmental toxin in all of the animals studied in this regard.

Conclusion:-

The detrimental impacts of several (air) contaminants on human health are discussed in this succinct summary. As demonstrated, severe dysfunctions of many organs are seen. The key finding is that, in light of people being exposed to a wider range of contaminants, dietary treatments high in foods derived from plants may protect against or lessen their effects on various organs. Numerous epidemiological studies on the positive impact of a Mediterranean-style diet on human health confirm this result.

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Psychological Well-Being of College Teachers in Relation to Their Professional Development

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Abstract:

The purpose of conducting this study was to find out the Psychological well-being of college teachers in relation to their professional development. A sample of 150 women college teachers (75humanities and 75 science stream) from Ludhiana district was selected through Stratified Random sampling technique. Psychological Well-being Scale developed by D.S. Sisodia and Pooja Choudhary (2019) and Professional Development scale by Butia (2014) was used for data collection. Mean, SD and t-test were used to compare the psychological well-being and professional development of humanities and science stream of women college teachers. The findings of the study revealed that i) there is no significant difference in the psychological well being of humanities and science women college teachers. ii) Significant difference was found in the professional development of humanities and science women college teachers. Humanities and science Stream of women college teachers were found to possess higher level of psychological well being as compared to professional development.

Keyword: Psychological well being, Professional development, College teachers

1. Introduction:

Education is the most powerful weapon which helps the pupils to become good human beings. The quality of citizens depend more upon the quality of their teachers as compare to their quality of education. Teacher's personality, character qualities, well–being, attitudes, teaching efficiencies and life style creating effective teaching learning situations and helps to contribute in society. The quality of education and the standard of achievement are inseparably inter-related with the quality of teachers. The success of the learner mainly depends on the ability of the teacher.

Teacher is the weapon for every contribution and invention. Our whole education system is controlled by teacher. The nation's well-being depends upon teacher's well-being. Teachers play the important role for transmission and spreading the knowledge and intellectual power in every human being.Naturally, they are the heart and soul of education system.The best teacher is not only imparts the whole educational modules allotted to him/her in the best and most efficient manner but also ensures the best possible academic performance and an effective development of the personalities of the learner's .

A teacher will be able to function effectively if he/she has a balanced personality and a sound mental state, thus well-being of teachers is important for their effective functioning. Ryff (1989) operationally defined psychological well-being as self-acceptance and personal growth. High psychological well-being is about feeling happy and doing well. High self- efficacy is related to high self-esteem, positive well-being and better physical condition, regulation of stress and recovery from diseases (Bandura, 1997; Bisschop, Knegsman, Beekman, &Deeg, 2004; Kuijer& de Ridder, 2003).

On the other hand, professional development practices for experienced teachers are generally viewed as part of the continuum of learning of teachers throughout their careers. Within the framework of professional development, teachers change, improve in the professional field, as well as change, improve, and complement their pedagogical competences and behaviour, and change as a person.

1.1 Psychological well-being

The term Well-being is mostly used for specific variety of goodness, Well-being requires cooperation between mind and body. It understands a sense of relief to reduce the pressures in person's life. Well-being is not only physical well-being rather it includes all aspects of a man. For example, living in good environment, being of worth for world, being able to cope with life, enjoying life, etc. Well-being is one of the most important goals which individuals as well as societies strive for. Well-being can be specified in two ways: first by specifying the „what" and second by spelling out the criteria of wellness. Psychological well-being includes individual's relationship with life goals, if he is aware of his potential, the quality of his relationship with others, and what he feels about his own life (Ryff and Keyes, 1995).

Psychological well-being takes an important part in personality and development theories both theoretically and practically. Psychological wellbeing, which guides clinical studies that will help advisors to make their advisees reach their goals, informs about the goals and purposes regarding psychology consulting.

(Myers et al., 2003) Well-being is a way of life. Especially in terms of life ideally inclined to health and wellness; unifying body, mind, and soul; individually full of purposeful attitude and aim to live life more fully; and a functional life in all social, personal, and environmental aspects

Carr (2004) defines subjective well-being as "a positive psychological state characterized by a high level of satisfaction with life, a high level of positive affect and low level of negative affect".

Huppert (2009), "Psychological well-being is about lives going well. It is the combination of feeling good and functioning effectively."

Psychological well-being is defined as "……a dynamic state, in which the individual is able to develop their potential, work productively and creatively, build strong and positive relationships with others and contribute to their community**"(Foresight Mental Capital and Well Being Project 2010)**

Psychological Well-being is an effort to be peaceful and enjoy life, connect to life, establish satisfying relationships with others, aim for a purpose and make life valuable. In addition, an individual's satisfaction with his /her life refers to having positive feelings about the future and continuing the life functionally **(Seligman, 2011).**

Marks (2012) explained well-being (as cited in Dodge, Daly, Huyton and Sanders, 2012) well-being is not a beach you go and lie on. It's a sort of dynamic dance and there's movement in that all the time and actually it's the functuality of that movement which actually is true levels of well-being.

The concept of well-being has a multidimensional constitution, it could be a representation of positive feelings, individuals experience as well as aspects of life characterized by optimal functioning and flourishing (Fredrickson and Losada, 2005). It has been asserted that it is practical to assume that the concept of health is comparable to the concept of well-being (Essen and Martensson, 2014).

Psychological well-being is attained by achieving a state of balance affected by both challenging and rewarding life events. Researchers also have found that the absence of distress doesn't necessarily indicate a person has high psychological well-being. People with high psychological well-being report feeling capable,well-supported, and satisfied with life. People with higher psychological well-being are more likely to live healthier and longer lives. They are also more likely to enjoy a better quality of life. Better psychological well-being also is associated with fewer social problems.

1.1.1 Six-factor Model of Psychological Well-being

The Six-factor Model of Psychological Well-being is a theory developed by Carol Ryff in 1989 which determines six factors which contribute to an individual's psychological well-being, contentment and happiness. The following are the factors of psychological well-being:

1. Self-acceptance
2. Personal growth
3. Purpose in life
4. Environmental mastery
5. Autonomy
6. Positive relations with others

1. Self-acceptance- Self-acceptance requires the maintenance of esteem for one's self while facing complex and sometimes unpleasant personal aspects of the self. In addition, individuals accumulate a past and have the capacity to recall and remember themselves through time.

2. Personal growth- Personal growth is the ability and desire to enhance existing skills and talents and to seek opportunities for further personal development. Healthy individuals are open to experience and have the capacity to identify challenges in a variety of circumstances.

3. Purpose in life- Purpose in life captures the adult's perception of having direction in life, even when the world offers none or provides unsatisfactory alternatives. Healthy individuals see their daily lives as fulfilling a direction and purpose and therefore they view their personal lives as meaningful.

4. Environmental mastery- Environmental mastery is the active engagement of the environment to mould it to meet one's needs and wants. Healthy individuals recognize personal needs and desires and permitted to take an active role in getting what they need from their environment.

5. Autonomy- Autonomy measures the degree to which people seek self-determination and personal authority in a society that at times requires obedience and compliance. However, healthy individuals seek to understand their own values and ideals.

6. Positive relations with others- consists of the ability to cultivate warm, intimate relationships with others. It also includes the presence of satisfying social contacts and relations.

1.1.2Role of teachers

Teachers' expectations determine the understanding of their own role, as the sense of efficiency in the work that teachers experience can also depend on how they see themselves as professionals.

Beijaard (1995) stated that a teacher's professional identity is composed of three factors: the subject they teach, their relationship with pupils, and their role or role conception. The latter is built in relation to the object and the relation with pupils and therefore cannot be considered independently of the other two factors.

1.1.3Importance of teachers well being

Psychological well-being consists of positive relationships with others, personal mastery, autonomy, a feeling of purpose and meaning in life, and personal growth and development. Teachers who feel heard and valued for their ideas, have opportunities to collaborate and feel supported by colleagues feel a greater sense of well-being within the workplace. Teachers who feel secure to explore innovative teaching practices are able to provide students with deeper learning experiences in ways that promote their curiosity and creativity.

- Teacher well-being help to ensure teachers can flourish, this can promote better classroom climates
- Teacher wellbeing enable high quality teaching that leads to success for students.
- Teacher wellbeing is also linked to student wellbeing.
- Teacher wellbeing is an important first step in wellbeing programs to promote student well-being.

Grenville-Cleave and Boniwell (2012) found that teachers rated their wellbeing significantly lower than other professional occupations such as health, social work, finance and human resources.

Acton and Glasgow (2015), teacher wellbeing is defined as "an individual sense of personal professional fulfilment, satisfaction, purposefulness and happiness, constructed in a collaborative process with colleagues and students".

1.2 Professional development

Professional development may be used in reference to a wide variety of specialized training, formal education, or advanced professional learning intended to help administrators, teachers, and other educators improve their professional knowledge, competence, skill, and effectiveness. Professional development as a way to generate changes in teaching practices and improve student achievement (Lawless & Pellegrino, 2007).*It* refers to instructors developing and improving their skills to better meet the needs of their students. It is the set of tools, resources, and training sessions for educators to improve their teaching quality and effectiveness. Professional development covers a variety of topics and addresses a number of issues present in a particular school or district. The activities in which teachers participate will vary depending on personal preference, personal interests, and professional history (Day, 1999).

Researches in the area of Professional development revealed that teachers were satisfied with the professional development activities that they attended (Michael Bosley 2004) and *valued professional development experiences for improvement of teaching strategies (***Nugent,2007) resulting in development of positive** attitudes (Parua, 2012 ; Henning and Mitchell, 2002).

Guskey (2003) concluded that professional development, which aids in deepening a teacher's understanding of the content and how students learn the specific content, are critical components of successful professional development. A change in classroom practices is related to professional development activities which include opportunities for active learning (Birman et al., 2000).

Causton-Theoharis and Theoharis (2008) documented how student learning improved after policies, procedures, curriculum, and instruction were shifted to support all learners. The noted challenge for teacher professional development is to provide the opportunity for teachers to deepen their understanding of the learning process and continuously develop instructional approaches that support learning.

1.2.1 The Relationship between Psychological Well-Being and professional development.

Psychological well-being is the first step in protecting teacher's mental health and providing them an environment that helps flourish their professional development. It is also crucial for good teacher–student interactions, which in turn, may affect student self-efficacy, social abilities and with also with mental health. *Professional development* is the set of tools, resources, and training sessions for educators to improve their teaching quality and effectiveness. These resources allow instructors to further their knowledge in their subject area and allows for mentorship and the opportunity to learn new teaching techniques. The goal of professional development is to keep you up-to-date on current trends as well as help you develop new skills for the purpose of advancement in the field. Those who take part in workshops or leadership sessions develop and enhance specialized skills including technical, quantitative and analytical skills.

Turner, Barling, and Zacharatos (2002) concluded that there is a positive correlation between supportive relations in schools and the well-being of teachers. The well-being of a teacher will be positively affected if he/she has positive interactions with students and is able to fulfil the students' basic needs for care and attention (Spilt et al., 2011). Furthermore, teachers who have a positive cultural impression of their work environments and of their own profession have fewer mental health concerns **(Bentea, 2015; Wong & Zhang,2014).**

2. Literature Review:

2.1 Studies related to Psychological Well Being:

Razia (2016) assessed the level of emotional intelligence and well-being of pupil teachers. For the purpose of conducting the study, sample comprising 120 pupil teachers (B Ed students) was selected from the department of Education of Aligarh Muslim University and two private colleges in Aligarh. It was found that male and female pupil teachers were similar in their emotional intelligence but difference exists in relation to well-being. The study further brought into light that emotional intelligence had positive and significant relationship with overall well-being of pupil teachers.

Zaki (2016) conducted a study of psychological well-being. This paper attempted to explain the promotion of awareness of psychological well-being in beginning teachers as well as in-service teachers for their optimal functioning in teaching. This paper also explains relationship between psychological well-being and self-determination theory which involves human motivation, very useful for effective teaching. In the end author suggests to facilitate psychological well-being of teachers in teacher education programs.

Gangadharan (2017) investigated the psychological well-being among teaching and nonteaching employees. The findings of the study revealed significant difference in the dimensions of autonomy, personal growth and purpose in life. The overall psychological well-being of teaching staff was higher than the non -teaching employees. On the whole, the present study concluded that, women in the teaching profession had the highest psychological well-being scores as compared to other women employees, in relation to their working conditions and nature of job.

Lamba& Som. (2020) conducted in this study on the psychological well-being and mental health problems in college teachers and school teachers. Samples of 160 school teachers were taken from Delhi NCR. The study reported that the male school teachers have a better psychological well-being and they have a less mental health problem which indicates that if an individual have

a less mental health problems then they have better psychological well-being and are more satisfied with their lives. These findings can be used in Indian context and thus essential steps can be taken to educate the people to make their lives better.

2.2 Studies related to Professional development:

Duta (2012) conducted research on 68 university teachers to determine their professional development methods necessary for continuous learning training. His research findings concluded that professional development of teachers enhances the quality of education by stressing pedagogical training of teachers. He further emphasized that excellent pedagogical training of teachers leads towards quality outputs in teaching- learning process.

Cabaroglu's (2014) study indicates to the positive relationship between teacher efficacies and professional development. The researcher reported on the study that investigated the impact of the participation in an action research on the English language teacher candidates in Turkey. The objective of the action research was to support teacher candidates to enhance 25 their instructional practice and to use an inquiry-based approach to learning. The results showed that the participants demonstrated growth in teaching efficacies, increased self-awareness, improved problem-solving skills and enhanced autonomous learning.

Macheng (2016) conducted research on junior secondary schools of Botswana. The research was conducted on fourteen (14) participants. The data was gathered by using survey questionnaires and interviews. The purpose of the research was to understand the importance of continuous professional development as a critical phenomenon to deal with the gaps in training of teachers from time and changes. The findings of the study indicated that lack of structures or programs in junior secondary schools facilitate teacher professional development and growth.

Kaur &Bhullar (2019) investigated the study is to develop an understanding of relationship between professional development and job satisfaction of teacher educators. A sample of 120 teacher educators from colleges of education with 50 teacher educators working in government and government aided colleges and 70 teacher educators working in private college was drawn from 12 randomly selected colleges of education of Punjab state. A significant positive relationship was found between professional development and job satisfaction of teacher educators working in both government and private sectors.

3.Justification of the study:

Teachers play an important part in the teaching – learning process. A teacher influences a student to a great extent. The challenges faced by a teacher in a globalized world are difficult to manage. It is essential that teachers have a balance between their life and work and therefore need to possess higher psychological well-being. The foundation of building a healthy and sound society is layered to greater extent by educating the youngsters of that society. Thus, teachers are the architects in building healthy nation. They do give the shape for growing individuals and prepare them to be useful to the society in various ways of life, thus teachers have been rendering a valuable service to the nation.

Psychological well-being is an important aspect for effective performance in any organization, as it determines the internal feelings to persuade the external actions. Low psychological well-being is obvious to effect any domain of our life may it be academic or work life. The best teacher is one who possesses good psychological well-being and who is fully satisfied with his/her occupation. Ryff (1989) operationally defined psychological well-being as

self-acceptance and personal growth. High psychological well-being is about feeling happy and doing well. High self- efficacy is related to high self-esteem, positive well-being and better physical condition, regulation of stress and recovery from diseases (Bandura, 1997; Bisschop, Knegsman, Beekman, &Deeg, 2004; Kuijer& de Ridder, 2003).

Progress of any nation depends largely on Psychological well-being of its students. All intellectual creative, educational, social and cultural advancement are possible if the individual of the nation do possess well-being. Due to advancement in every field, life of teachers has become more challenging, complicated and tough. If at all we expect the teachers to contribute significantly, it is essential that they should have higher work motivation, professionally developed, self-efficacy, commitment etc. The role of a teacher does not limit itself to imparting knowledge alone, but in broadening the national outlook enhancing a sense of efficacy and competency among the future citizens, and preparing individuals for the right type of profession.

3. Objectives

1. To study the Psychological well-being of humanities and science college teachers.
2. To study the Professional development of humanities and science college teachers.

4. Hypothesis

1. There exists no significant difference between Psychological well-being of humanities and science college teachers.
2. There exists no significant difference between Professional development of humanities and science college teachers.

6. Methodology

6.1 Method and Procedure

The descriptive method of educational analysis for the completion of the present paper is followed in the context of the study.

Sample

Representative samples of 150 women college teachers from Ludhiana district were chosen for the present analysis. Out of which, 75 Women college teachers from humanities stream and 75 Women College teachers from science stream.

6.2 Tools for data collection

1. Psychological Well-being Scale developed by D.S. Sisodia and PoojaChoudhary (2019).
2. Professional Development scale by Butia (2014).

Statistical Techniques

Mean, SD and t-test has been computed for analyzing the present data.

7. Result And Discussion:

The psychological well being scale was achieved on selected sample teachers and t- value was computed to measure professional development among women college teachers. The analysis of information is offered as per the hypothesis.

Hypothesis 1:-

There exists no significant difference between psychological well being of humanities and science women college teachers.

Table No.1.Psychological well being of humanities and science women college teachers.

Gender	N	Mean	S.D.	t-value	Level of significance
Humanities	75	97.74	8.59	1.045	Not significant at 0.01 & 0.05 level
Science	75	105.55	9.81		

The result is 1.045 less than the table value (2.58) at the 0.01 level and (1.96) at the 0.05 level of importance in table no. 1, the measured t-value. The outcome indicates that there is no significant between humanities and science women college teachers in psychological well being. Hence, at all stages of significance, the null hypothesis is accepted.

Hypothesis 2:-

There exists no significant difference between professional development of humanities and science women college teachers.

Table No.1.Professional development of humanities and science women college teachers.

Gender	N	Mean	S.D.	t-value	Level of significance
Humanities	75	242.11	34.53	4.789	Significant at 0.01 & 0.05 level
Science	75	211.17	32.34		

The consequence of the measured t- values in table no. 2 is 4.789 higher than the table value (2.58) at the level of 0.01 and (1.96) at the level of importance (0.05). The outcome reveals that there is a significant difference in the professional development of humanities and science women college teachers . Hence, at all degrees of importance, the null hypothesis is rejected.

Conclusion:

Progress of any nation depends largely on Psychological well-being of its students. All intellectual creative, educational, social and cultural advancement are possible if the individual of the nation do possess well-being. Due to advancement in every field, life of teachers has become more challenging, complicated and tough. If at all we expect the teachers to contribute significantly, it is essential that they should have higher work motivation, professionally developed, self-efficacy, commitment etc. Professional development is the means by which participants gain knowledge and acquire new skills. It refers to the continued training and education of an individual in regards to his or her career.

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Attitude Towards ICT of The Teachers of Higher Secondary School

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Abstract:

Information and communication technologies (ICT) have become one of the most significant aspects of human life, and they have had an impact on all facets of school operations, including administration, time management, the delivery of lessons, project work, evaluation, and the examination system, among others. It makes teaching-learning more interesting and goal oriented. It can significantly develop interest and curiosity among the learners. It can also save the time of teachers and students which is very important in this present time, considering time-management an important aspect of education as the efforts, time, and resources of the schools can be used effectively. In the current research, the attitudes of teachers in upper secondary schools in the Paschim Medinipur area about the use of ICT in education were examined.

Keywords: Attitude, Information and Communication Technology, Rural, Urban

Introduction:

'The ICT Policy in School Education seeks to prepare young to engage creatively in the creation, maintenance, and expansion of a knowledge society, resulting in overall socio-economic development of the country and worldwide competitiveness. The National Policy for ICT in School Education was published by the Ministry of Human Resource Development in 2009.

Information and communication technology (ICT) has been shown to have the ability to better institutional administration, increase student learning, and improve instruction. Recognizing the effects of new technologies on the workplace and daily life requires the use of information and communication technology as a tool for increasing students' understanding of instructors' instructions and as a catalyst for expanding access to excellent education in structured settings. The ICT Policy in School Education project is motivated by the enormous potential of ICT for expanding reach and raising educational standards. According to the National Centre for Technology in Education (NCTE-2000), ICT is an interdisciplinary field that focuses on giving students the resources they need to enhance and alter their learning experiences.

Since teachers are members of a recognised profession, deliberate efforts should be made to help them develop a positive attitude about their line of work. The way a teacher fulfils his professional obligations and plays his position might be used to gauge attitude. Positive attitude has been shown to make teaching more fulfilling and rewarding. In the classroom, a teacher has a significant influence on student conduct. While spending the majority of his time with his pupils, a teacher's attitudes, behaviours, emotions, preferences, and etiquette have a significant impact on the way that the students behave. The characteristics of the technology itself are one of the key elements influencing people's views regarding a new technology (Rogers, 1995). Rogers

highlighted the following key characteristics of technology: relative advantage, compatibility, complexity, observability, and trialibility. Therefore, a new technology will spread more widely if prospective users believe it offers an advantage over earlier breakthroughs, is consistent with current practises, is simple to comprehend and apply, exhibits visible outcomes, and can be tested in small doses before acceptance. Technology creates new opportunities for information gathering and knowledge manipulation. This covers the manipulation of media and instructional techniques as well as environmental management inasmuch as it affects learning. It supports data storage, e-learning, e-content creation, webcasting, timetable management testing, and other activities. The two types of contact that new technology increases are student-student and student-teacher interaction. Numerous studies have been conducted over the last 20 years to determine the value of technology in education. The ICT literate population is prioritised in the National Policy on Information and Communication Technology in School Education (2012) in order for all ICT resources to be employed in the teaching and learning process (Pan, 2014). In terms of expressing the information, ICT is essential. Slide, LCD, and OHP projectors are used. Here, knowledge may be shown graphically with the aid of voice and video, making it simple for students to understand. Additionally, the student enjoys watching the lesson and may not forget what they have learnt. While watching the lesson, the learner also remains more engaged. It saves time and allows for the straightforward representation of a lot of information. ICT paves the path for the efficient delivery of specific knowledge to the learner in a short amount of time. ICT is mostly used to keep classes interesting and help students comprehend (Prabhu, 2013). Technology and multimedia alter thought processes, which has a disastrous impact on the transition from memorization practise to problem solving.

It has been anticipated that integrating ICT into education would allow the new technology instruments to completely transform the outdated educational system (Albrini, 2006). Initiatives, projects, and consequences relating to the integration of information and communication technologies (ICT) into education during the last 20 years have encouraged teachers to acquire the essential knowledge and abilities for integrating ICT into their classroom. ICT is "not just the foundation of the Information Age, but also a key catalyst and instrument for inducing educational changes that transform our students into productive knowledge workers," according to Pelgrum (2001). ICT is essential to the educational systems of information societies. To ensure that both instructors and students acquire the information and abilities required in this digital era, the stakeholders in these nations' educational policies rethink and reconstruct their educational systems using new educational paradigms like constructivist theory. As a result, the majority of nations worldwide are concentrating on methods to incorporate ICT into learning and teaching in order to raise the calibre of education by placing an emphasis on competencies like critical thinking, decision-making, handling of dynamic situations, working as a member of a team, and effectively communicating (Anderson & Weert, 2002). By involving students in the process, new technologies are seen as a cognitive tool that has the ability to promote inquiry-based learning, reinforce conceptual learning, and develop active and creative learning. These technologies have the ability to alter the dynamics of the classroom and encourage innovative teaching methods if utilised wisely. The stakeholders in educational policy in today's information societies are redesigning and reconstructing their educational systems based on new educational paradigms like constructivist theory to ensure that both instructors and students get the knowledge and skills required in this digital era.

Objectives of the Study:

The major objectives of this study are:

- To study the differences between male and female higher secondary school teachers in their attitude towards the use of ICT in teaching learning process.
- To study the differences between urban and rural area higher secondary school teachers in their attitude towards use of ICT.
- To study the differences between government and private higher secondary school teachers in their attitude towards the use of ICT in teaching.
- To study the attitude of higher secondary school teacher towards the use of ICT on basis of teacher's age group.

Hypotheses of the Study:

In this study, the following null hypotheses were framed:

H01: There is no significant difference between the attitudes of male and female higher secondary school teachers towards the use of ICT.

H02: There is no significant difference between the attitudes of rural and urban higher secondary school teachers towards the use of ICT.

H03: There is no significant difference in the attitude of higher secondary teachers towards the use of ICT of Government and private school teachers.

H04: There is no significant difference in the attitude among higher secondary school teachers categorized on the basis of age.

Delimitation of the Study:

- The study was delimited to only one major variable i.e. teachers‟ attitude towards ICT only.
- The study was also delimited to 100 samples only.
- One of the major delimitation is, the data was collected from three government aided schools and two private schools only.
- The study was also delimited to Paschim Medinipur district, West Bengal, India demographic area only.

Methodology: Survey method is adopted for the present study.

Research Design:

This is a descriptive survey type field study on the attitude of higher secondary school teachers towards the uses of ICT from paschim Medinipur, West Bengal. Quantitative approach is used in this study as the assessments consists numerical analysis and measurements. Data is collected through self-made questionnaire.

Sample:

The sample consists of 100 teachers who teach at higher secondary level in Paschim Medinipur district was selected for the study.

Sampling Techniques:

In this study, probability sampling techniques, particularly random sampling is being used in order to collect the data.

Tools:

Tools are devices used to collect appropriate data for the study. Teachers are indicated to answer their level of attitude towards the use of ICT in teaching in a five point scale going from

strongly disagree, disagree, neutral, agree, and strongly agree. The ICT Questionnaire has 25 items covering the various dimensions of ICT usage in teaching.

Variable:

Major Variable:

Attitude towards the use of ICT.

Categorical Variable

- Gender
- Location of School
- Types of School
- Age level

Analysis and Interpretation:

The aim of the analysis is to find out the attitude of higher secondary school teachers towards use of ICT in teaching.

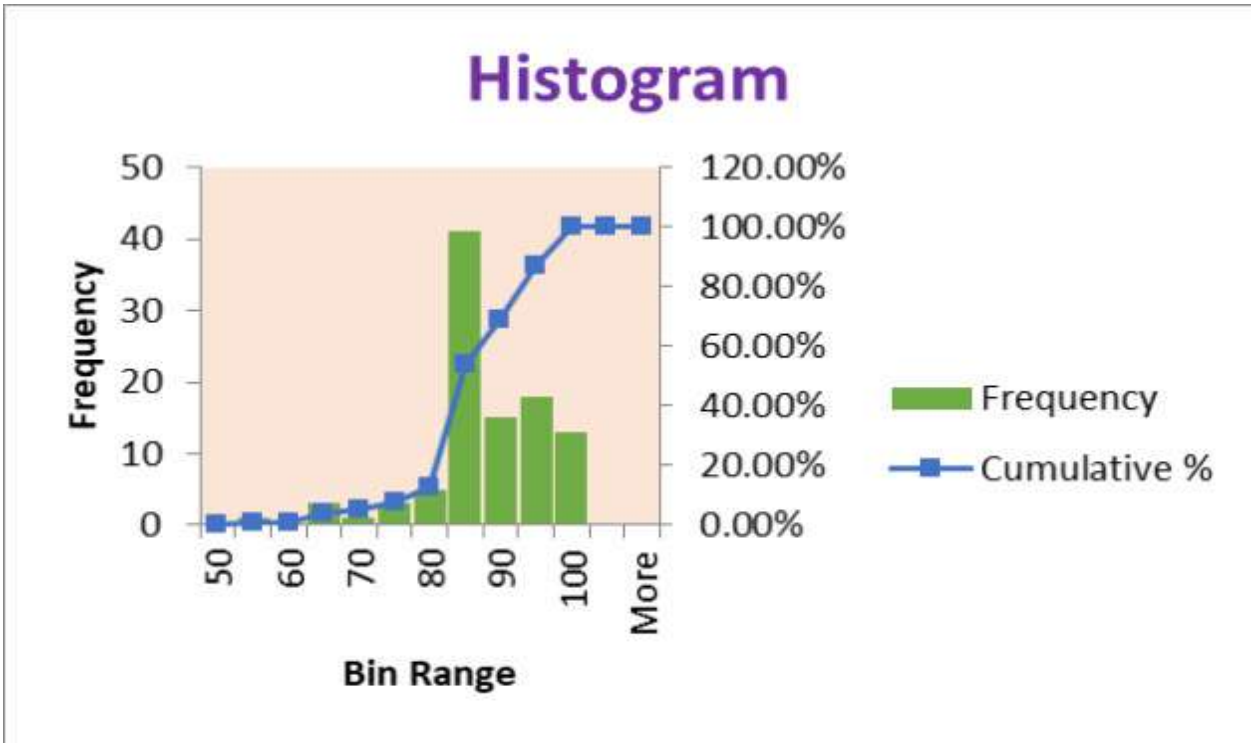

Fig:1 Histogram of collected data

From, **Fig.1**we found, attitude of school teachers towards the use of ICT, the nature of the Histogram is tends to like Normal Probability Curve (NPC). So we can use inferential statistics like Mean, Standard Deviation, t-test, ANOVA here for further analysis.

Table 1: Descriptive Statistics and t-test of the Attitude of Higher Secondary School Teachers towards the use of ICT with respect to gender:

Variable	N	Mean (M)	S.D	t-Value cal	'P' Value	Remarks	Hypothesis
Female	45	85.95	5.37	1.98	0.75	t-test significance at 0.05 level	**Ho1** is accepted
Male	55	85.43	9.64				

Figure 2: Mean and S.D. scores of Attitude of Higher Secondary School Teachers towards the Use of ICT According to Gender

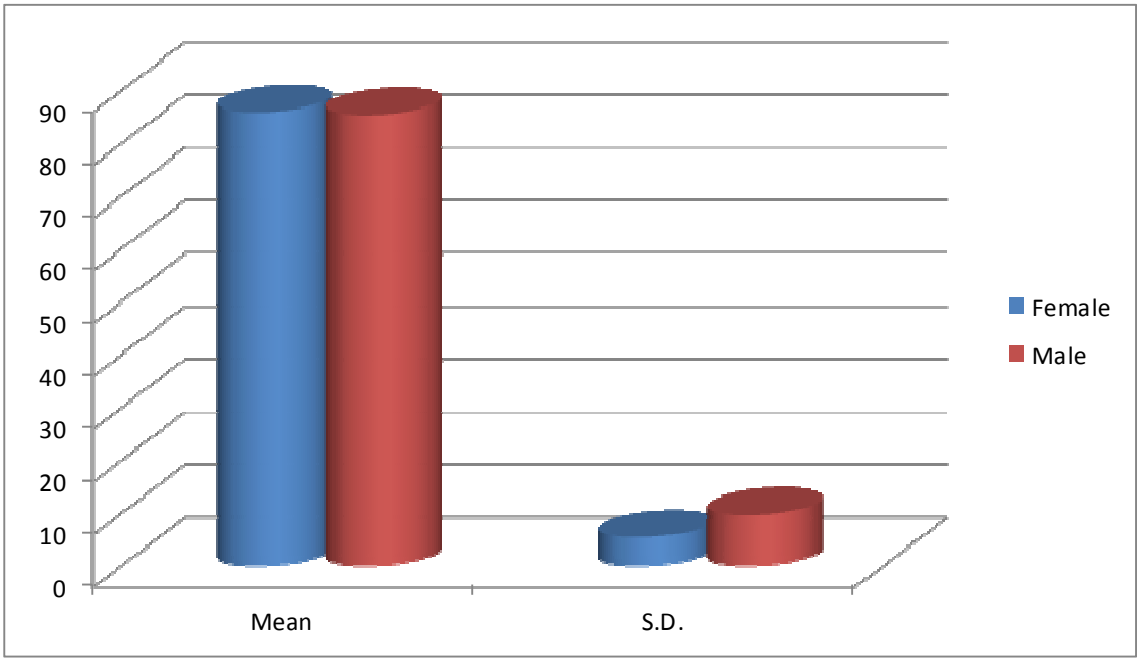

Fig. 2: Mean and Standard Deviation of attitude towards the use of ICT relation to Gender

From, **Fig. 2** it is observed that mean score of attitude towards the use of ICT of female higher secondary school teacher is (85.95) slightly higher than the mean score of attitude towards the use of ICT of male Higher secondary teacher (85.43).

From, **Table 1**, it reveals that P-value=0.75 (p>0.05) for the attitude toward the use of ICT between female and male higher secondary school teachers is higher than 0.05. It means that there is no significance difference between the attitude towards the use of ICT of male and female higher secondary school teachers. Thus, **Ho1** is accepted.

Table 2: Descriptive statistics and t-test of higher secondary school teachers' Attitude towards the use of ICT with respect to location of School:

Variable	N	Mean (N)	S.D	t-Value cal	'P' Value	Remarks	Hypothesis
Rural	46	85.09	8.25	1.98	0.54	t-test is not significant at 0.05 level	Ho2 is accepted
Urban	54	86.09	8.23				

Figure 3: Mean and S.D. Scores of Attitude of Higher Secondary School Teachers towards the Use of ICT According to Location

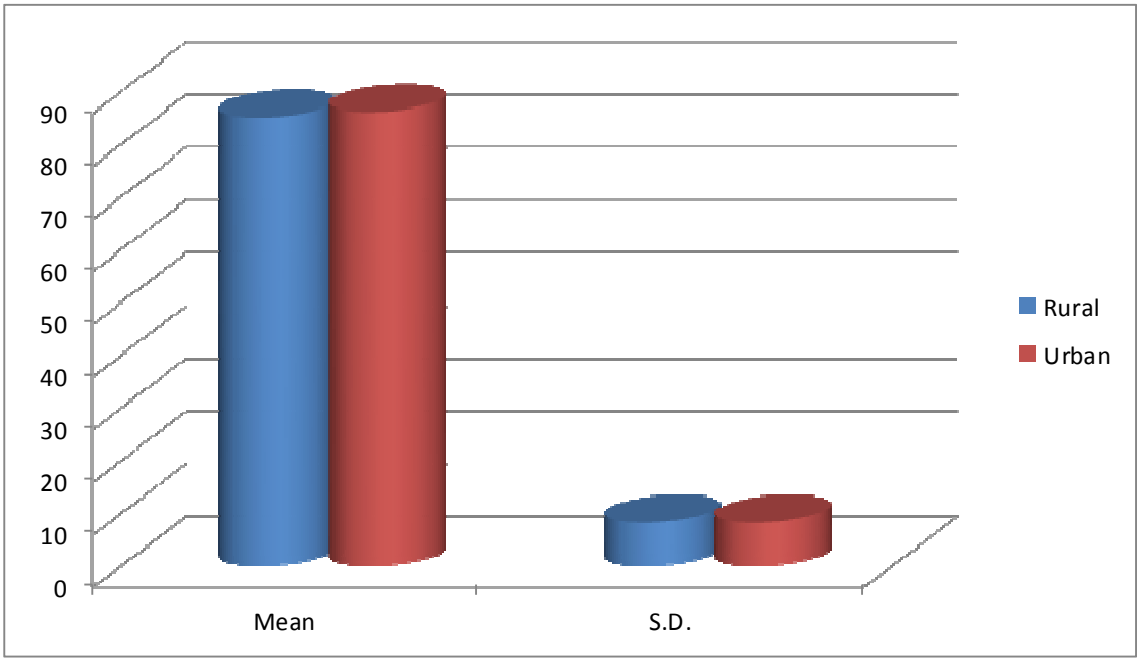

Fig. 3 Mean and standard deviation of Attitude toward the use of ICT in relation to location of School

From, **Fig. 3** we observed that the mean score of attitude towards the use of ICT of rural higher secondary school teachers (85.09) is less than the mean score of attitude towards the use of ICT of urban higher secondary school teachers (86.09). It may therefore be concluded that, the attitude of urban and rural teachers towards the use of ICT remains almost identical.

Table 2 reveals that p-value=0.54 (p>0.05) of attitude towards the use of ICT between rural and urban higher secondary school teachers which is more than 0.05. It means that there is no significance difference in attitude towards the use of ICT between rural and urban secondary school teachers. Thus, **Ho2** is accepted.

Table 3: Descriptive statistics and t-test of higher secondary school teachers' Attitude towards the use of ICT with respect to types of school:

Variable	N	Mean (M)	S.D	t-Value cal	'p' Value	Remarks	Hypothesis
Govt. School Teachers	81	84.97	9.04	1.98	0.233	t-test is not significant at0.05 level	Ho3 accepted
Private School Teachers	19	87.09	5.86				

Figure 4: Mean and S.D. Scores of Attitude of Higher Secondary Schools Teachers towards the Use of ICT According to Types of Schools

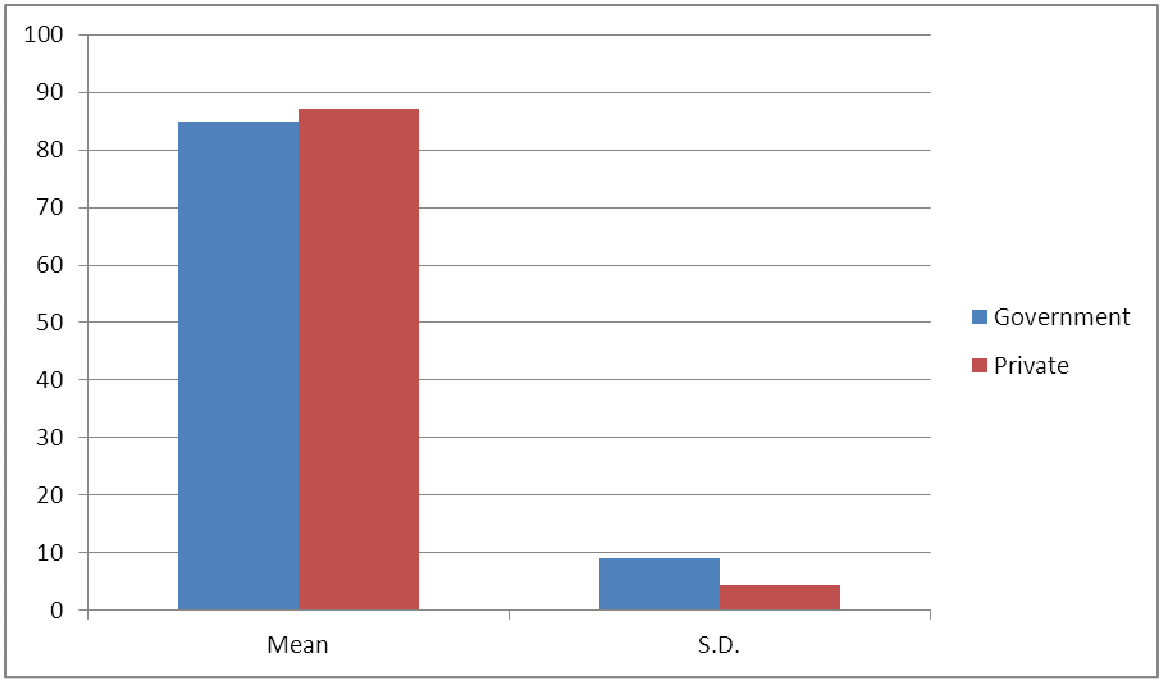

Fig. 4 Mean and Standard Deviation of Attitude toward the use of ICT in relation to types of school:

From, **Fig. 4** we observed that the mean score of attitude towards the use of ICT of rural higher secondary school teachers (85.09) is less than the mean score of attitude towards the use of ICT of urban higher secondary school teachers (86.09). It may therefore be concluded that, the attitude of urban and rural higher secondary school teachers towards the use of ICT remains almost identical.

From, **Table 3** reveals that p-value=0.233 (p>0.05) of attitude towards the use of ICT between govt. and private higher secondary school teachers‟ which is more than 0.05. It means that there is no significance difference in attitude towards the use of ICT between govt. and private school teachers. Thus, **Ho3** is accepted.

Table 4: Descriptive statistics and ANOVA single factor of higher secondary school teachers' Attitude towards the use of ICT among different Age groups:

Variable (Age group)	Mean	S.D	Degrees of Freedom	'P' Value	Remarks	Hypothesis
21-30years	87.25	6.00	99	0.34	'P' value not significant at 0.05significance level	Ho4 accepted
31-40Years	84.28	9.35				
41-50Years	84.36	10.56				
51-60years	87.63	4.84				

Figure 5: Mean and S.D. of Higher Secondary School Teachers Attitude towards the Use of ICT According to different age groups

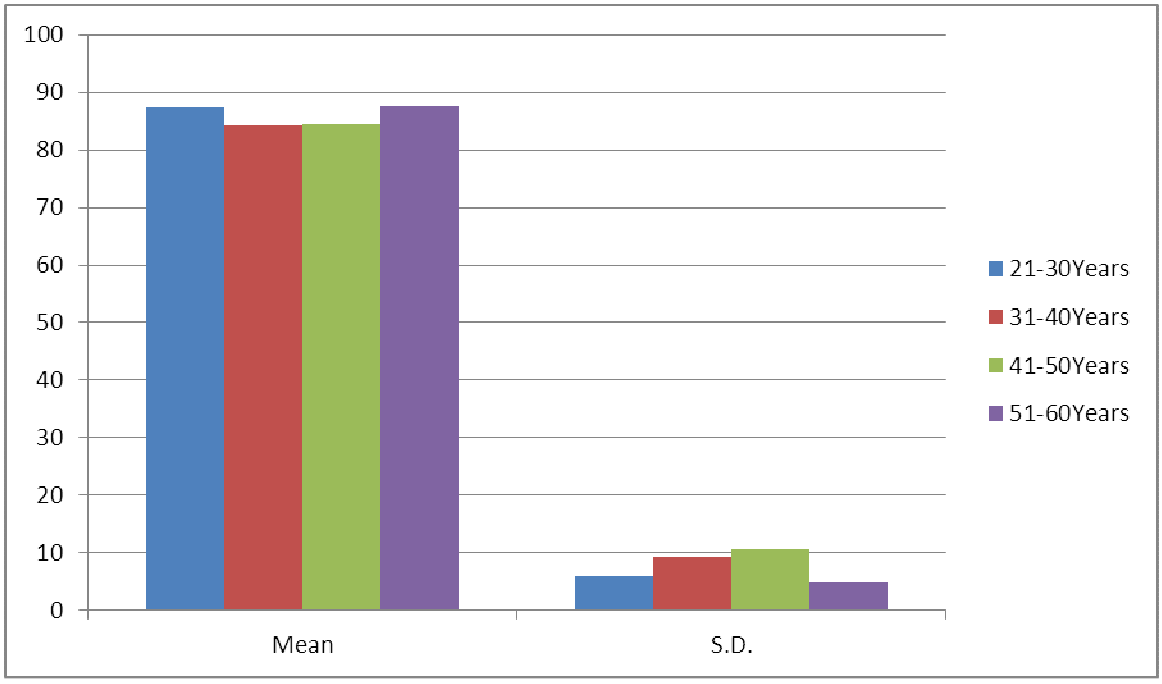

Fig. 5 Mean and standard deviation of teachers' attitude towards the use of ICT in relation to different age groups:

From, **Fig. 5** we observed that the mean score of attitude towards the use of ICT of 51-60 years age group teacher (87.63) is highest and the mean score of attitude towards the use of ICT of 31-40 years (84.28) is lowest among the four age groups of higher secondary school teachers. It may therefore be concluded that 51-60 years age group of higher secondary school teachers have more positive attitude towards the use of ICT in comparison to 31-40 years age group of higher secondary school teachers.

Table 4 reveals that p-value=0.34 (p>0.05) of teachers‟ attitude toward the use of ICT among different age groups (21-30 years, 31-40 years, 41-50 years and 51-60 years) of higher secondary school teachers which is more than 0.05. It means that there is no significance difference of teachers‟ attitude toward the use of ICT among different age groups of higher secondary school teachers. Thus, **Ho4** is accepted.

We learned from the data analysis that most instructors were supportive of the usage of ICT in the classroom. Gender has little impact on the attitudes of upper secondary school teachers on the use of ICT in the classroom since attitudes between male and female instructors stay essentially the same and are unaffected by gender.

It may be inferred that locality does not bring about a change in the attitude of teachers towards the use of ICT since the attitudes of rural and urban teachers continue to be practically same and there is no location difference in the attitudes of teachers towards the use of ICT.

types of schools (public, private, and aided) Instructors' attitudes were compared intelligently, and the results showed that there is no significant difference between the means of the two groups of teachers. The similarity in teachers' attitudes toward ICT may be due to their greater understanding of ICT, their desire to stay current on new developments, and the intense rivalry that exists between government/aided and private schools. According to the aforementioned

findings, private school instructors have a somewhat better attitude than government school teachers.

We may conclude from our current research that there are no significant differences in the attitudes of teachers who are categorized according to age groups about the usage of ICT. Teachers who fall into one of the four groups have a mostly consistent approach. It is abundantly obvious from the data that a teacher's age has no bearing on how they feel about using ICT.
Finally, it can be said that the majority of instructors in upper secondary schools had a favorable attitude toward using ICT. Therefore, it is important to raise instructors' awareness of the potential advantages of ICT integration. They should be given additional opportunities to improve their ICT abilities and encouraged to utilize ICT in the classroom.

Conclusions:

So, we can conclude that the attitude towards the use of ICT only depends on the human nature whether he or she shows positivity towards its uses and not depend on the persons‟ gender, experience, age or the person belongs from rural or urban area. Mainly adaptation of human being is the main factor of ICT uses.

Recommendations:

From our study, it manifested that major portion of the Higher secondary school teachers in Paschim Medinipur district had a positive attitude towards the use of ICT in their teaching skill. Teachers‟ attitude can also be enhancing by proper awareness of dynamic convenience of ICT integration. Hence, there should be taken more awareness programs for the teachers of ICT integration. It should encourage teachers to use ICT in classrooms and be provided with more opportunity to enhance their ICT skills.

Crucial factors like self-interest of teachers, attitude of school authority and sufficient training influenced teachers considerably in using ICT. So by taking proper awareness programs for the teachers and authority, ICT can be integrate successfully.

Though most of the schools in Paschim Medinipur had minimum ICT facilities, but lots of teachers and authority still did not know how to use the available facilities effectively. So it is very important to take proper training and supportive programme to impacting teachers to use ICT in their teaching skill. And finally we can suggest that throughout the country, there should be a definite and identical Govt. ICT policy for the Higher secondary school.

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Examining Undergraduate Students' Attitudes and Motivation in Learning English as A Foreign Language (EFL) At Socotra College : A Case Study

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Abstract:

The present research paper aims to investigate undergraduate students' attitudes and motivation toward learning English as a Foreign Language while studying at Hadrmout University's English Department College of Education Socotra.The objective of the current paper is to find out the undergraduate students' attitudes and motivation toward learning English as a F.L. studying in the English Department College of Education Socotra, Hadrmout University. To achieve the objective, the quantitative descriptive-analytical approach can be used to analyze the questionnaire that was answered by students of four levels. The researcher distributed 72 questionnaires, while 60 respondents were retrieved with a percentage of 83.3%, and 12 questionnaires were not responded to. Moreover, SPSS 23 used descriptive statistics and simple regression to analyze the research data and questions. The study found out the undergraduate students' attitudes toward learning English, as a F.L. studying in the English Department College of Education Socotra is high. As well as the results indicate that there is students' motivation toward learning English as a foreign language, with a high rate. There is a clear focus on the undergraduate students' motivation toward learning English as a foreign language lies in family. Thereby the research's outcome recommends that there should provide feedback, workshops, and training courses in English as a F.L. to raise awareness and the capabilities of the students' and teachers' attitudes and motivation in Socotra Island because of its direct impact on the students' attitudes and motivation.

Keywords: Attitude**;** Motivation;(F.L.) Foreign Language,etc.

1. Introduction:

It is known is that language considered the main medium of communication among people all over the world. To convey their emotions, experiences, attitudes, and interests, humans need a medium that is language. In this regard, English is one of the major languages that havewide-spreading globally. English has many forms of use as a native language, second language, and foreign language.

In the Arab world, English is being taught and learned as a F.L. Throughout the education system of the learning process,the subject of English is one of the compulsory courses in several countries' educational curricula.In Yemen, English is being taught and learned as a foreign language, so the students at different levels of education have points of view, attitudes, motivations, and drives that can lead them to study English properly.

In the present research article, much attention was drawn to analyzing and studying undergraduate students' attitudes and motivation in the Faculty of Education Socotra, Hadramout

University. The researcher has investigated the four levels of education in the English department at the faculty during the current academic year 2021/2022, the first semester. Though the researcher distributed 72 questionnaires, 60 respondents were retrieved with a percentage of 83.3%, and 12 questionnaires were not responded to. Further, SPSS 23 used descriptive statistics and simple regression to analyze the research data and questions.The study found out that the undergraduate students' attitudes toward learning English, as a F.L. studying in the English Department College of education Socotra is high. As well as the results indicate that there is students' motivation toward teaching English as a F.L, with high rate. Consequently, the study examined these issues carefully; revealed the reasons and challenges that stand behind these issues as well as found the results, and provided recommendations and further studies to overcome this dilemma.

1.1 Statement Of The Problem:

Motivation and attitudes of language learnersare considered a central area of research in the field of second language acquisition, and foreign language acquisition. Further, several researchers from various countries have investigated this topic in various contexts (ESL, EFL). However, limited Yemeni research has been conducted to look into these concerns among Yemeni students, particularly among EFL learners. So learning English as a foreign language is intrinsically tied to a desire to achieve a certain goal. Consequently, the attitudes and motivations of students to learn English differ dramatically from one student to another. Thus, the research problem can be formulated with the following questions:

1. What are the undergraduate students' attitudes toward learningEnglish as a F.L?
2. What are the undergraduate students' motivations for learningEnglish as a F.L?

1.2 Objectives Of The Study:

The objective of the research paper is to examine the undergraduate students' attitudes and motivation toward learning Englishas a F.L studying in the English Department College of education Socotra, HadramoutUniversity.

1.3 Significance Of The Study:

The research in the area of teaching in the field of foreign language learning has been linked to formal instruction in many recent studies. Attitudes and motivation, according to Margaret et al. (2003) and Dornyei (2003), are important factors. In the classroom, you can affect the average and progress of foreign/second language learning. Anderson (2001) asserts that the behaviors influenced by this social context are the most important determinants of formal language learning performance in the classroom. This research article highlights the attitudes and motivation of undergraduate students in learning Englishas a F.L in the English Department College of education Socotra.

1.4 Hypothesis Of The Study :

Based on the study problem, objectives as well as study questions, and in light of the research model, a hypothesis of the present research has been established to answer the research problem. The hypothesis has been formulated as the following:

1. There are no undergraduate students' attitudes toward learning Englishas a F.L.
2. There are no undergraduate students' motivations for learningEnglishas a F.L.

2. Theoretical Framework

Attitudes:

According to Likert, as stated by Gardner (1980), the term attitude refers to "an inference which is made on the basis of a complex of beliefs about the attitude object" (p. 267). Gardner showed up later and expanded on Likert's concept, identifying attitude as "the sum total of a man's instincts and feelings, prejudice or bias, preconceived notions, fears, threats, and convictions about any specified topic" (Gardner, 1980, p.267). When Gardner (1985) defined motivation, he included attitude as one of the most significant components. "The combination of effort plus desire to achieve the goal of learning the language plus favorable attitudes toward learning the language" (p. 10).

So Gardner (1985) asserted that a learner's level of success in the second language (L2) learning is inextricably linked to predictors of attitudes toward language. In other words, students with positive attitudes learn the target language more effectively than students with negative attitudes. Positive attitudes have the potential to accelerate the learning process. Gardner (1985) emphasized that a learner's belief or opinion shapes his or her evaluative response to certain referents, objects, persons, and situations. Based on the definitions mentioned above, it is clear that the structure of attitude mirrors the learner's "feelings," "beliefs," and "disposition."
Furthermore, the intensity or strength of an attitude differs from one learning situation to another. Though language attitude is an important concept because it plays a prominent role in language learning and teaching.Oller (1979) pretends that "Attitudes are merely one of the types of factors that give rise to motivation which eventually results in the attainment of proficiency in a second language"(p.138). Brown (1987) described the attitude as a construction formed early in childhood as a consequenceof one's interaction with both culture and his family and community's opinions toward that culture. Baker (1992) adds to the work of Likert, Gardner, and Brown by stating that attitude is "a hypothetical construct used to explain the direction and persistence of human behavior" (p. 10).

Wenden (1991) suggested a more comprehensive definition of the term 'Attitudes'.He confirms that attitude is made up consisting of three key components: cognitive, assistive, andbehavioral components. Individuals' views and ideas about a certain thing are referred to as the cognitive component, whilst their thoughts and emotions toward that thing are referred to as the evaluative component.Finally, the behavioral component relates to a person's attitude that causes them to behave in a certain way. From the perspective of Triandis (1971), that attitude is defined as "to think about," "to feel about," and "to react toward," implying that it is made up of three constituents: behavioral, cognitive, and effective. The first component, the cognitive component, is characterized by one's views on a social object or phenomenon.These beliefs may have been formed based on illogical thoughts, but those who hold this attitude believe it is a form of reality.Due to the experience that one has with a given state, the amount of these beliefs vary from one learner to the next (Triandis, 1971).In terms of the affective component, it refers to the learner's level of passionfor the language as a desirable or unpleasant, positive or unpleasant language. In terms of the behavioral component, the learner's readiness to act toward the attitude object has been defined.It can take two forms: either it expresses itself clearly in the learner's everyday conduct, or it expresses itself indirectly through verbal and nonverbal expressions. This aspect of attitude allows us to recognize the thoughts that learners have about a particular language.

Motivation:

Motivation, according to researchers, is a powerful engine that leads to success in learning as 2nd L, or F.L.In the study of a second or foreign language, motivation has been identified as an important topic of research. Researchers have had difficulty agreeing on the precise definition of motivation, though, as a result of the complexity of the concept (Dörnyei, 1998). In fact, according to Guilloteaux and Dörnyei (2008), all motivational definitions "attempt to explain nothing less than why humans behave and think as they do." (p. 55).

In terms of learning a 2nd L,Dörnyei, and Ott? (1998) can be defined motivation as "the dynamically changingcumulative arousal in a person that initiates, directs, coordinates, amplifies, terminates, andevaluates the cognitive and motor processes whereby initial wishes and desires are selected,prioritized, operationalized and (successfully or unsuccessfully) acted out" (p. 65).

Motivation is thought to be at least as important as language aptitude in determining second language achievement in second/foreign language learning. Danzka and Kapil (1991) believe that "Motivation is a psychological concept in human behavior that describes a predisposition to reward a particular behavior to satisfy a specific need" (p.61).

The significance of motivation in improving second/foreign language learning cannot be overstated. Different schools of thought have taken different approaches to the concept of motivation. For example, motivation is as Brown, (2000) referred to "very simply the anticipation of reward from a behaviouristic standpoint" (P.160). As we researchers defined Motivation refers to a person's desire and readiness to do something, and it is a key factor in how engaged and active they are in learning an (L2) or a (FL).

Research Methodology

The society of the study is the undergraduate students of the English department at Socotra College of education; that have been selected to represent the sample are four levels (first, second, third, and fourth).From each level, a random sample was selected. The targeted respondents in each level of the English department were the students per level. The total number of the sample selection stands at 72 (responses 60, no responses 7, and 5 not valid). The valid sample of this study is 60 responses - yielded (83.3%).The methodology that used in this study is the descriptive analytical approach to analyze a questionnaire Data analysis was performed using (SPSS 23) technique was used to analyze questionnaires and to detect the undergraduate students' attitudes and motivation toward learningEnglishasa F.L. The primary data was collected by using the questionnaire.

Data Analysis And Interpretation Of Results

The Characteristics Of The Study Sample

Table.1.the Characteristics of the Study Sample

NO	Variable	Category	Frequency	Percentage %
1	**Gender**	Male	20	33.3
		Female	40	66.7
		Total	**60**	**100%**
2	**Age**	20-25	59	98.3
		26-30	1	1.7
		Total	60	**100%**
3	**Level**	First Level	16	26.7
		Second Level	15	25.0
		Third Level	13	21.7
		Fourth Level	16	26.7
		Total	60	**100%**

Source: Researcher preparation based on the outputs of SPSS.

The age of the study sample was (98.3%) were 20-25 years and (1.7%) of respondents were 26-30 years. This indicates that a large part of the study sample has attitudes and motivation toward learning English as a foreign language. The percentage of the level students was 26.7% at the first and thefourth level, while 25 % at the second level and 21.7 % at the third level.This indicates that the study sample is distributed between the four levels, with a suitabilitypercentage.

1.5 The Undergraduate Students' Attitudes Toward Learning English As A Foreign Language

Table.2. the Result of the Undergraduate Students' Attitudes toward Learning Englishas *a F.L.*

No. QU	Items	Mean	St. deviation	Relative importance %	Rank	The degree rate
1	The English language is more useful than my first language	3.00	1.042	60	6	High
2	I think the English language is an easier language to learn	3.60	.942	72	5	High
3	In my country, people who speak English are more respected than those who do not.	2.87	1.321	57.4	7	High
4	I am interested to speak English very well	4.20	.659	84	2	Very High
5	I enjoyed learning English	4.37	.736	87.4	1	Very High
6	I like English films	3.65	.936	73	4	High
7	I feel excited when hearing English spoken	3.90	.933	78	3	High
The General Mean of the Students' Attitudes		**3.65**	**.469**	**73**	**1**	High

Source: Researcher preparation based on the outputs of SPSS.

Table (2) shows that the domain of the undergraduate students' attitudes toward learning English as a foreign language studying in the English department college of education Socotra, Hadrmout University is relatively high, within an arithmetical mean of 3.69, and a standard deviation of .469. The average of the paragraph that states, "I enjoyed learning English" is 4.37, and relative importance (87.4%) with a very high level of application. Followed by a paragraph that states, "I am interested to speak English very well." Within an average (4.20), very high application level and relative importance (84%) and standard deviation (.736) and (0.656), respectively. The results indicate that the undergraduate students' attitudes toward teaching English as a foreign language that studying in the English department,college of education Socotra is high and that the Department of College of education Socotra pays attention to this domain according to the undergraduate students' attitudes toward learning English as a foreign language. The results also indicated that the opinion of the study sample that people who speak English are not more respected than those who do not. Moreover, they agreed that the English language is not more useful than their first language; the reason it was getting a medium level of application.

1.6 The Undergraduatestudents' Motivation To Learn English As A Foreign Language

Table.3. the Result of the Undergraduate Students' Motivation to Learn English as a Foreign Language

No. QU	Items	Mean	St. deviation	Relative importance %	Rank	The degree rate
1	I study English because it will help me get a job easily	4.00	1.042	80	3	Very High
2	I learn English because I have a desire to know all aspects of English	3.55	1.032	71	8	High
3	I learn English because it is a university requirement	3.33	1.115	66.6	10	High
4	I learn English because I want to continue my Education	3.82	.930	76.4	6	High
5	My family tries to help me to learn English	4.17	.886	83.4	1	Very High
6	Studying English is important because it will allow me to be more at ease with people who speak English	4.02	1.172	80.4	2	Very High
7	English is not an important goal in my life	2.78	1.379	55.6	12	Medium
8	I learn English because it is an international language	4.00	.991	80	3	Very High
9	Learning the English language is important for my Personal development	3.92	1.169	78.4	4	High
10	I stud English because it will help me to travel to different countries without difficulties	3.90	1.130	78	5	High
11	I study English because I would like to make international business	3.17	1.092	63.4	11	High
12	I study English because it will widen my horizons	3.45	.999	69	9	High
13	I study English because it will enable me to get to know various cultures	3.73	.972	74.6	7	High
The General Mean of the Students' Motivation		**3.48**	**.331**	**69.6**	**2**	High

Source: Researcher preparation based on the outputs of SPSS.

Table (3) shows that the overall domain for the Students' Motivation is high, with an overall average of 3.48, and relative importance (69.6%). This means that most of the respondents have a high approval rate for this variable. It has a standard deviation obtained of 0.331, which indicates that there are consistency and harmony between the views of respondents on the paragraphs of the variable. The results indicate that the undergraduate students' motivation toward learning English as a F.L lies in family, it allows them to be more at ease with people who speak English, to get a job easily, and because it is an international language. In addition, the results indicate that the undergraduate students' have not motivation toward learningEnglish as a F.L lies in English is not an important goal in their life; they study English because they would not like to make international business, and they did not learn English because it is a university requirement.

2. Conclusion:

The current study concludedthat the undergraduate students' attitudes toward teaching English, as a F.L studying in the English Department College of Education Socotra is high, with

a rate of 73%. There is a clear focus on the undergraduate students' attitudes toward learning English as a foreign language because they are interested in speaking English fluently as well as their enjoyment in learning it. Moreover, the results indicate that there is students' motivation toward learning English as a foreign language, with a high rate. There is a clear focus on the undergraduate students' motivation toward learning English as a foreign language lies in family, it allows them to be more at ease with people who speak English, to get a job easily, and because it is an international language. The research recommends that the department college of education Socotra, Hadramout University should held language conferences, symposiums, lectures, provide feedback, workshops, and training courses in English as a foreign language to raise awareness and the capabilities of the students' and teachers' attitudes and motivation in Socotra because its direct impact on the students' attitudes and motivation.

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A Study of Indian Ethos in the Select Novels of Amish Tripathi

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Abstract:

The present research paper is a Theoretical, Analytical and Evaluative study of Indian Ethos with reference to theselected novels of Amish Tripathi. He is famous for the Shiva Trilogy which focuses on a man's journey and how his legend turned him into a God. After this successful trilogy he came with the another trilogy called Ramchandra Series which contains 1) Ram: Scion of Ikshvaku 2) Sita:Warrior of Mithila 3) Ravan:Enemy of Aryavarta.This Ramchandra Series explores the life of Ram,his band of brothers and his wife Sita, as they lead India out of the darkness of chaos and into the light. Amish believes that the Hindu gods were not mythical beings or a figment of rich imagination. According to him they were creatures of flesh and blood, like you and me and they achieved Godhood through their karma, their deeds. He also believes that their blood runs in our veins as they were our ancestors. Amish thinks that the words Vishnu and Mahadev are not individual names. They are in fact titles,given to persons who are the greatest of leaders, who become God-like.Amish Tripathi's novels are not only about captivating AdventuresMyth,History and use of symbols but also they touch the issues,Honesty,Goodwill,Sacrifice and above all family value

Key Words: representation, edutainment, morals, beliefs

Introduction :

Beforewe go through the Indian ethos, it is really important to understand what is ethos?Ethos can be simply defined as a set of beliefs, ideas,and philosophy. Ethos is all about social behavior and relationship of a person or group. The word ethos is derived from the Greek word,'ethikos' which means civilized, viewing honesttemperament, accustomed place, morality, showing moral character. Ethos is a Greek word meaning, 'character' that is used to describe the guiding beliefs, morals and ideals that characterize community, nation or ideology. The Greek also use this word to refer the power of music, to influence emotions feelings, thoughts, behaviors and even morals.

Cambridge Advanced Learner's Dictionary Defines ethos as a set of beliefs, ideas and others about social behavior and relationship of a person or group.Whereas Oxford Advanced Learner's Dictionary Defines ethos as the moral ideas and attitudes that belong to particular group of society. According to Oxford Concise English Dictionary ethos is the characteristic spirit of a culture or community as it is reflected in its attitudes and aspirations.

Oxford English Dictionary Defines ethos as a means of habitual character disposition and tendency of a set of people or race. In simple words, ethos stands for human society that embodies a certain culture or system based on human and other natural values of life.Inshort, ethos is the disposition of character or set of fundamental values particular to a specific person,

people, culture or movement. It is associated with the geographical locations, languages, race, religion and culture of a nation.

When it comes to Indian ethos, it is all about what can be termed as National Ethos. Indian ethos refers to the principles of self-management and governance of society, entity assisting by wisdom as revealed and brought food by great scriptures like Vedas, Upanishads as The Geeta, The Mahabharata, The Bible and The Quran. This wisdom evolved through the old practices of Indian history, philosophers and religious groups and It is now found to execute for self-management and good governance of a stormy society and business environment or even a politically divided world. Alexander the Great, Tsang Hi from the China, Abdul Razzak from Iran came to India and observes the exceptional importance of the Indian ethos in its social institutions, religious structures, moral framework and peculiarities of food ornaments and garments.

The Vedic culture is prominently reflected in Hinduism, the scriptures like Vedas and Upanishads as the Puranas and the Bhagavad-Gita have impressed life style of majority of the people in India. Due to intermingling of many cultures for centuries after centuries the
Indian society is identified as unity in diversity. It is the amalgamation of complex customs and traditions representing different religious identities, there are a multitude of beliefs and convictions, they are interlinked features of an integrated diverse society. The Indian Constitution celebrates tolerance towards various religious identities along with their linguistic differences. People living in India as a whole explore various cultures, languages and customs. Muslims, Sikhs, Jains, Christians and Zoroastrians also reside amicably in India exploring their own identities. Such complex structure of society, philosophy, religions and languages has led to the creation of Indian ethos. The crux of Indian ethos lies in its oral literature and legacy of folk lyrics. Stories have been transforming from generations to generations.Some of the oral literature was preserved in a written form in the languages like Pali, Pakrit and Sanskrit etc.Through this evaluative research work we will understand the articulation of the Indian Culture, Communication, Religious concepts, Family values, Moral values, Identity and most important of all Philosophy.

Rationale and Significance of the Study:

Since the research work attempts to study the Representation of Indian ethos as anarticulation of Culture, Communication, Religion,Identity and Philosophy.The purpose of human life as enshrined in the opposition as for the good of all.There was an apple philosophy behind this which stated that the whole world is one family one understanding, underlying Idea behind this may require scholarly rigor and erudition given the deep philosophical essence of the Vedic text, there are simplistic explanations that makes sense. Kabir the famous saint of India for instance can be read to get insightful fractions of Indian ethos in his simple and early style.Famous and often repeated quote of Kabir is,"saiitnadijiye, ja meinkutumbsamaye, main bhibhukhanarahoon, sadhu nabhukhajaaye" translating this in English becomes,' O God, give me that much so that I can take care of my family; I do not remain hungry, nor the person who comes to me for or alms.

In the Hindi popular title song of Bollywood hit of the 1950's,JisDesh Mein Ganga Bahtihai, this idea was beautifully and melodiously brought out, translating those lines in English becomes, 'We Indians love our guests more than ourselves and we do not crave for more, rather enjoy with little'. The Indian ethos has always valued Parmartha for the good of others. The

richness and the depth of this ethos is gradually being lost as we are becoming too preoccupied with self-interest under the influence of alien values and cultures that do not hold humanity on the same pedestal as Indian ethos. Indian ethos always been talked about and practiced as well.

Objectives:

1. To study Amish Tripathi's Ramchandra Series as a representation of Indian Ethos.
2. To examine Ramchandra Series as an articulation of Indian Culture.
3. To study Ramchandra Series as an articulation of Religion.
4. To examine Ramchandra Series as an articulation of Indian Tradition.
5. To study Ramchandra Series as an articulation of Indian Philosophy.
6. To understand the issues of unawareness about the ancient Indian Culture and Tradition.
7. To analyze the works in the light of educational, social and literary perspective.
8. To interpret the selected Novels as a modern take on the epic.
9. To present the need and importance of rethinking the epics as a need of time.
10. To explain how colonization of education system led to unawareness ofIndian heritage.

Hypothesis

- Amish Tripathi uses myth, history and symbols to present Indian Philosophy and Religion.
- Amish uses fantasy and imagination to execute Indian culture and Tradition.
- It has been seen that these novels are nothing but modern take on the epic Ramayana.
- It has been observed that studying of these novels can surely constitute the solid and enduring foundation of long and magnificent Indian culture and civilization.
- Ramchandra Series is an articulation of Indian ethos as Culture, Religion, Tradition and Philosophy.

Methodology of the research:

The analytical framework for the study undertaken in this research would be based on theorizations of ethos, features and aspects of Indian ethos, the need and importance of Indian ethos. This thesis would enquire that how the Indian ethos has been analyzed in Indian English literature. For the study of Indian ethos in Amish Tripathi's novels theoretical method would be used as original books would be the primary source of the Information about religious and cultural angelsfor the better understanding of the texts.

The methodology for this study will be Analytical, Evaluative, Interpretative and Theoretical. Library method will be supplemented for the understanding of the concept Indian ethos with online articles and books available related to this topic would be studied as well.

Scope and Limitations:

There is always scope for research in every genre of literature, so is in this topic as well. This proposed work offers an opportunity to the researcher for an interesting and unique investigation of Indian ethos as representation of culture, religion, identity and philosophy. These selected novels of Amish Tripathi are a modern take or representation of the epic Ramayana which not only deals with myth, history and philosophy but also honesty, morality, family values, culture, religion and sacrifice. With this topic there is scope to present the need and importance of Indian ethos in the age of globalization. This research can strengthen the positive view about learning our Indian heritage that leads to wisdom, liberalism, pluralism and

knowledge. It helps to understand the quality of writing any work of literature in modern style which can connect to the common people easily.

Talking about the limitation the study will only focus to Indian ethos with reference to the selected novels of Amish Tripathi. Indian ethos is a vast concept, so it is not possible to touch every aspect of it. Because of this the researcher would fix some rubrics like, Culture, Religion, Communication, Identity, Morality, Philosophy etc. So this study would be limited to these aspects only and not all.

Review Of Related Literature:

Indian Ethos employed by the scholar's, historians and anthropologist to illustrate the major principles that portray society, nation, community or philosophy. The Use of this word in rhetoric is closely associated with the Greekterminology used by Aristotle in his concept of three artistic proofs or modes of persuasion. Aristotle described three artistic proofs 1) Useful skills and practical wisdom 2) Virtue and goodwill and last but not least 3) Good will towards the audience.

According to TS Eliot ethos is the spirit which motivates ideas and customs. in 1940 he wrote the general methods of the people they have to govern determines the behavior of politicians (T.S. Eliot, P-25)Similarly the historian Orlando Figes wrote in 1996 that in Soviet Russia of the 1920 the ethos of the Communist party dominated every aspect of public life.

Indian writers who celebrate Indian ethos and trying to project through the novels like ram Mehta in Inside the Haveli and Kamala Markandaya in her novels.Amitav Ghosh, Shashi Tharoor and Amish Tripathi etc. are some of them.Perhaps the most well-known writer of mythology is Dr Devdutt Pattanaik who is famous for mixing traditional ideas with modern world.

His works are well researched and showing the age-old tales in new light for instance, Myth= Mithya,Jaya: An illustrated retelling of the Mahabharata and Sita: An illustrated retelling of the Ramayana. Kavita Kane is Indian women author who is a favorite among women readers. she wrote about the forgotten female characters of great Indian epics and retells the tales through the point of view of women for instance,Karna's wife: The outcast queen, Sita's sister;Menaka's choice and Lanka's princess etc. Chitra Banerjee Divya Kumari who is a professor of creative writing at university of Houston retells the story of the Mahabharata from Draupadi's point of view in her novel, 'A Palace of Illusions'.Ashok Banker is an Indian author and screenwriter,famous for crime thrillers, essays, literary criticism,fiction and mythological retellings.His works on Ramayana series contains eightvolumes,an imaginative retelling of the ancient Sanskrit epic poem. His Krishna series also contains eight parts and the Mahabharata series six parts which are quite famous.

Ethos in India, has a specific understanding and impact and territory covers different geographical areas, languages, culture, religion, tradition, society and philosophy.

Plan of Research: This work researcher wishes to divide into five chapters as below,

Chapter 1. Thiswould bean introduction to the Indian ethos, Meaning, Features,Need, History, Relevance,Principles Practiced by Indian Philosophers, Elements, Role of Indian Ethos in the age of globalization,rationale and Significance of the Study, hypothesis, aims and objectives, research methodology, review of related literature, scope and limitations of the study

Chapter 2. This chapter will be about the articulation of Indian ethos through which the researcher wishes to evaluate the novel Ram –Scion of Ikshvaku by Amish Tripathi. This is first

book on Ramchandra series published in the year 2015.As the title of the novel suggest it is from the point of view of Ram. It also refers to the Ram Rajya: The perfect world, but Perfection has a price and ram did pay that price. It has been observed that Ram loves his country, even when his countrymen torment him. He stands alone for the love. It has been seen that he and his brothers share the unbreakable bond which is missing totally in the age of globalization. Ram knows that his father's ways of ruling are not efficient, but as ideal son he refuses to rebel against Dashrath. Ram needs to regain back his interpreted name among his people. Ram stays idealistic, Bharat grows up to be practical and real, Sita's strong will, Lakshman's unconditional love and support for his elder brother Ram. Hanuman's selfless devotion.

Chapter 3. This chapter will be about the representation of Indian ethos through which the researcher wishes to evaluate the novel Seeta-Warrior of Mitthilaby Amish Tripathi. This is second book on Ramchandra series published in the year 2017. This book is from the perspective of Sita. Amish depicts Sita as a brave princess with beauty and brains. Sita is shown to be blessed with a multifaceted personality. She comes across as a mature girl. This novel showcases her governance skills and her caring relationship with her family is quite heartwarming. Hanuman and Jatayu are portrayed as brothers to Sita protecting her from every adversity that comes her way. This is the story of Sita who willingly follows her husband into exile and after being kidnapped by Raavan accepts rejection by her husband on her return. It was the idea of guru Vishwamitra to groom Sita into becoming the Vishnu,whose duty to lead country's Dharma.

Chapter 4. This chapter will be about rethinking of Indian ethos through which the researcher wishes to evaluate the novel Ravana: Enemy of Aryavartaby Amish Tripathi. This is Third book on Ramchandra series published in the year 2019. Through this novel Amish tries to present the biggest villain ever Raavan in totally different light. Raavan is the synonym to the word devil.Amish gives this character an edgy personality so as to make him an interesting project. Raavan is an intelligent, sharp as legend has it all. The bond he shares with all his brothers and specially with Kumbhakarna is the surprise package of the book. A picture of a well-intentioned, intelligent, brave warrior who seems to be in thrall to his complex elder brother.And this why readers quite liked the link to Kumbhakarna's legendary tendency to sleep the hours of the day away.

Chapter 5. This chapter discusses the conclusion arises from theprevious chapters and discusses the similarities and differences of these three books from the Ramchandra series by Amish Tripathi. It also talks about the limitation of the work providing some suggestions for further research.

Conclusion:

Thus, revisiting our Indian heritage with the study of Indian ethos in the select novels of Amish Tripathi is an enriching experience. The everlasting appeal of these treatises still influences to great extent of cultural life and behavior pattern of Indians. We are the only country That has such rich heritage which has been showcased in Amish Tripathi's novels.

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Cinematic Representations : Modes and Means

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Abstract-

The visual mode always offers choices that the written narrative may not. The multiple agencies of cinematic representations of gender masculine or feminine gain greater freedom in the choice of different outlooks. The camera eye, narrator, spoken dialogues, body language, facial expressions, the high, middle, and low light angle of the camera as well as the silence and spaces are to be called the multiple agencies or the modes of expressions. It is fascinating to critically discover the psychological relationship between a life on the screen and the actual life of one in society. Philosophical observation proves that a film always comprises several components within itself. We may list down several concepts which must be combined to form it (cinema/ film) e.g. perception, representation, signification, adaptation, evolution, identification, figuration, and interpretation. These all factors together complete to form the art called 'cinema.'

The present paper will focus on the technical modes which are used to make a film as a complete or sole object. The present research article will explain the role of the camera and different angles of Film/ Cinema interpretations. Certain keywords will be analyzed and discussed as per the need for discourse. Representation of social reality when comes from life to pages and from pages to screen, it goes through different techniques. As we will study critically the high, middle, front & back camera lights too to gain the proper effect of any theme. Every film is based on raw structure and that structure makes a solid framework for any level of the film. Under the title of films, we have to list down such commercial films, realistic films, and films based on psychology which are art or parallel films. Every cinematic presentation always prepares a discourse. That may be a discourse of social issues and gender realities etc.

Keywords- Perception, representation, signification, adaptation, evolution, identification figuration, and interpretation.

Introduction:

A heap of people is watching a film/ cinema in a theatre, but very few are concerned with a message. A little group of people has paid attention to the technicalities of film production. Very often 'the focused spectator' (of any film) is constructing and regenerating in their subconscious mind the diversified imaginative persona of someone. Most audiences feel very happy to watch the Actors and Actresses on the screen, for us they are role models and idols to be guided psychologically and emotionally. Recently the field of research in Literature or literary studies allows us to view things differently. It allows us to look for the unconscious reflection of social reality, the underline power structures, the frames which melt into each other, the repetitive narrative patterns, and the dialogues which use myth and history. It juxtaposes all techniques simultaneously by the way of the medium. There is no possible way that a compartment of literature can hold them aloof from the cinematic medium, especially when the film has never shown any hesitation in appropriating literature for its purpose.

Let us focus on the very first concept of cinematic art i.e. 'the perception'. The question arises in our mind that is 'what is perception?'

According to the dictionary, 'Perception', is the act or power of perceiving an object and point to recognise it through a combination of sensors. (**Kirkpatrick, 1991, page number 997**)

One can simply take the example of a book e.g. - the book in front of you is there on the table in reality. It has physical reality no doubt you can touch it, smell and behold it through your eyes. It means you can feel the book, going for reading the contents and contemplate it for a better understanding. You can hold the text in your hand and try to touch its cover. You were in process of objectification, the process of thinking. It means the book has become a symbol of presentation in your mind. If you are a thorough reading and you are reading a book line by line, you may be able to communicate your thoughts about the book to someone else. It means if the book is not physically present before you, but you are trying to perceive the book mentally and try to describe it in the manner in which you have perceived the interpretation of that book. It is one level of perception. Secondly, you may be asked by someone what did you learn from the book? Then you will communicate some lines from the book and try to formulate exactly what you feel about it. It is to be called another level of perception. According to Gesalt's theory, perception always implicates the advocacy of cultural attributes and the addition of a few social codes into visual life to create a semblance between a few incidents from the real and thecinematic portrayal of human life. It means people are always inclined to see the film as an integral part of everyday life.

Then 'Representation' is another medium of cinematic performances. The word, representation was first time used by the Greek philosopher Aristotle in his theory of Memesis. In the theory of Memesis, the performer tends to imitate, to copy the actual life in the contemporary society which belongs to a different class,culture, creed, etc. Now let's differentiate between the physical reality and the psychological one. Let's assume that the presence of a book is a physical reality which is something present in front of you, i.e. book. But if someone willask you,'what is a book?' Then in your mind, there would be an existence of a bookthat will take shape which is the psychological reality. The psychological reality and the perceived understanding of an object may vary from person to person. According to Christian Metz, a Film Theorist the concept of Representation in cinematic perception has its limitations. As per the search for mass audience representations, the cinematic perception tends to be rhetorical and melodramatic. Especially the dialogues which tend to use sign, footprints, symbols, myths, and inferences that are easily recognized and gains compatibility with a complete resonance.

The 'adaptation' is another medium of a cinematic representation of any context. The word adaptation suggests multiple interpretative styles of film adaptations. Seemingly it sounds enough simple but it is unfolding and somewhat complex meaning when we are seeking real-life examples in society. For example, Sigmund Freud explains many of his dreams such as suppose, if someone is planning to visit the YCMU, Headquarter in Nasik from his or her home town to collect the grade sheet of PG Diploma in Psychology. He or she has to plan the trip well in advance. When that person will reach there, he/ she will realize that several administrative procedures are yet to be completed toobtain the grade sheet and He will have to stay in Nasik for another day. What will come to his mind immediately that is interesting? 'Where would I stay and 'What would I eat'. It means the adjustments and readjustments need to manage several

times. It is to be called the phenomenon of adjusting oneself to one's immediate environment that is adaption.

In the world of cinema, such a similar process happens. We can mention any short story or fable or folk tale that is being adapted for a film. The story undergoes several changes through the process of adaptation, transformation, and translation which has become a necessary process to fit the matter in which it will be produced. Jean Mitry, a Film Theorist said, when a story from a different language is adapted, and modified as a plot (of the film), it has become a necessary aspect of filmmaking and it can be varied according to the language and culture in which film is being made. E.g. Sharad Chantra's Chattarjee's Bengali novel "Devdas" has been adapted into a film by the male director and the role of Paro and Chandramukhi is equally portrayed in comparison to Devdas that is they are portrayed as powerful gorgeous, emotionally vulnerable characters. Even Mahasheta Devi's text 'Ruddali' was adapted into a film in 1933 by a female director Kalpna Lajmi, as a female director with an impartial sincerity she did justice to the portrayal of the faithful profession as a mourner. Kalpana Lajmi has shown the powerful portrayal of a woman in commercial cinema.

Then 'Identification', the story of the sub-conscious mind popularised the medium of observation study to understand the cinematic form of art. Hugo Musterburg, a Film Theorist focuses on the proper communication of a spectator and a film producer. In order to understand any film as an art, it is important to study the dialogue of a producer/director with the spectator and see what they have in mind. The proper identification of a spectator with a film director processes the film towards success. E.g. the inter-caste marriages began to be shown in the 1930s and 1940s Films of Boll woodslike 'Achhut Kanya (1936) where we see a Brahmin boy and an untouchable girl get married on their own choice.

The last concept of cinematic representation is the 'interpretation'. 'Interpretation' is an indivisible part of film analysis is as it focuses on the context of a film. The interpretation always focus on the other new aspect which may not be immediately visible but when you watch a film, one must observe that every individual has his/her own way of thinking which is monitored by the norms of society in which it lives.

Merleau Ponty, a Film Theorist points towards the way of representation as the way a film portrays the scene of a food habit which suggests interpretations of different kinds depending upon its cultural context and social surrounding. Interpretation is called a basic technique to understand the film. It is interesting to know how the emotional movements of the film are shown through different cameraangles; sometimes the focus of a camera is on facial expressions particularly a deep angel shot at the time of death scene is shown from a high angel camera. Rape scenes of a woman have always been signified through symbolic musical background. The technique of interpretations works through the properties of the (actual) scene such as bird fluttering, thunderstorms, violent waves, and lighting on the rocks, and on the sea sides. The medium of representation and interpretation is the basic medium that can give proper justice to the response of the Spectator.

There are many ways to study and analyze the Film. Many Film Theorists projected semiotic and psychoanalytical modes of film studies. Let us focus on the semiotic and psychoanalytical angle of study.

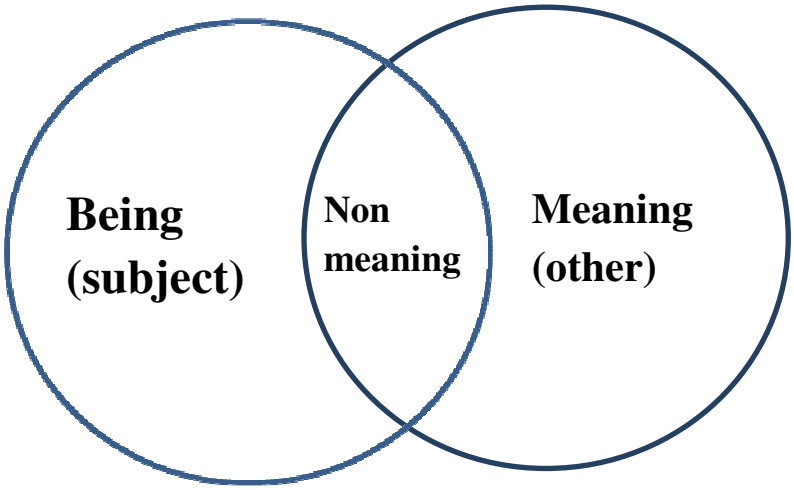
The semiotic theory is related to the theory of signs. As we know Ferdinand de Saussure is to be called the pioneer of Semiotic theory which creates a scientific base for the study of signs

in a language. We are familiar now with the concepts of perceptions, significations, and identification which can be examined from the semiotic perspective. In order to explain the semiotic angle of a cinematic study in performing art, it will be explained with an example of a tree. When someone pounced or 'uttered' the word 'tree', at once image of a tree appears in one's mind. Your single thought shape at the objectification of an image of a tree could be different from the image of a tree that someone thought of. Because we already read about it in a book, in a poem with an exemplification of an image of the tree one can access any example of any scene from any film where a song is being shown on the screen. You can observe that most of the time the Hero and the Heroine of any film go to a different location with different costumes, at an alternate shot which may be drastic from the preceding scene of the film. If someone listens to the song apart from the film, it will not be interesting. But if the same song is sung by a Hero, now you can see it has a meaning. If someone sings the same song somewhere, where it is not necessary for that particular context. If you like any particular song, you may repeat it until it will not be replaced by another song now if it. comes at the comparative level with other people who have watched that particular film with you, might not surely like that same song. So, there is a basic bottom-line difference between watching a film and listening to a song. So there will be a difference between two things watching a film and listening to a song. Such differences always createstereotypical images of Heroes and Heroines. Again you might like a particular Hero because of his dressing senses or because of a typical style of presentation.

Cinematic art always uses different semiotic forms to create meaning for the entire film or cinema. Cinematic art establishes certain techniques which may not suitable for the scenario of a particular society. Therefore certain films have to be defined as fixed parameters that indicate a utopian understanding of the life of a diversified cultural country like India. The semiotic approach of study drags our attention towards the domain of the particular parole because it studies the permissibility and impermissibility of that system. Sometimes films portray things as it is which might not be accepted by your society and culture. E.g. widow's remarriage in 'Kati Patang' (1970) and 'Prem Rog' (1982), the inter-religious marriage in, 'Bombay' (1995) or 'Pinjar' (2003), and pre-marital pregnancy shown in 'Aradhana'(1969) and 'Julie' (1975). The angle of semiotic study has been efficiently tackled in 'Amar Prem'(1972) and 'Ram Teri Ganga Maili' (1985) problem of prostitution has been intelligently shown in both above films by the technique of semiotic study.

The second mode to study is psychoanalytical. In psychoanalytical mode, the fundamental issues are thoroughly focused on from all angles of study. The study of Sigmund Freud, Jacques Lacan, Levi- Straus, Mitchell Foucault, Julia Kristeva, and others have prepared the strong grounds for the technical, psychological, and socio-linguistically study of films. Lacan has developed particular philosophy of meaning, through the theory of 'Vel of alienation. According to Jacques Lacan, Psychoanalytical Theory.Signifies the psychology of choosing one over the other which always resulted in deprivation. E. g. selection of money and life. If someone inclines to choose wealth instead of money life itself deprives them of something and similarly, if someone chooses life, deprivation of money will be in priority. Jacques Lacan elaborates on the mode of Semiotic and Psychoanalytical way of interpretation through the following Venn diagram. Where the meaning and the necessary essence of life are like the choice between money and life. Thus the individual has become nonmeaning. One can observe the difference; e. g. if

someone chooses the 'being as a subject' then the meaning of other objects becomes, non-meaning. **(Lapsley & Westlake, 1988. P. 72)**



Source: (Lapsley & Westlake, 1988. P. 72)

The above sources of being (subject), non-meaning, and meaning are shown to be adapted into cinematic art. It means when a subject utters something, that will convey proper meaning to everybody. It is observed that everyone doesn't interpret the word in the way someone inclines to utter it, and that becomes the nonmeaning of that utterance. We can take an example with the above reference suppose the Hero tells the heroine, 'I didn't expect this from you, and one might interpret the statement differently from someone else in the audience. Similarly, when someone tends to generalize certain gender issues, which you may have heard and tend to differ with generalizations. E. g., the issue of child trafficking might sound irrelevant to people who are not at all aware of the stark reality of life. Another example of a bitter truth of society i. e. the concept of marital rape sounds somewhat illogical and unbelievable to few one. There are many other problems and gender issues are yet to be discussed in our day-to-day life. Those social problems find objectification through cinematic art. One might say film always brings those shaded issues into the light and questions our beliefs through various interpretations based on cinematic art.

The above observations underline the two art forms i. e. the 'verbal' and 'visual' are not only parallel but both are interactive, interdependent, and reciprocal. The verbal and visual are the two diverse mediums that affect the reader and viewer's relationship which seems very complex. The disparities between the two at the same time focus on similar areas.

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Exploration and Projection of Nakedness of Socio-Political and Administrative System in *Article 15* Film : A Review

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Abstract:

Article 15 through the lights on Dalit stereotypes that are represented in the movie. The research paper discusses projection and exploration of nakedness of socio-political and administrative systems depicted in the movie, the research paper also lays emphasis on themes revolving around 'Brahminic Heroes', 'Dalit Victims and Dalit Protest Silenced' and 'Interlinkage of Gender and Caste Violence'. In the movie, Brahminic/ Savarna heroes are presented with certain visual cues and cultural markers. This includes certain privilege, fairness, well-dressed, confident, handsome, articulate and upper-class characters. AyanRanjan checks all these stereotypes. He is portrayed as an ideal for the audience and a saviour for his Dalit counterparts. However, his cultural cluelessness makes him caste-blind. He has achieved this privilege due to caste-hegemony which does not look at other spaces. The character is not just Brahminic but urban Brahminic. The movie depicts that caste space only exists in rural India which is clearly flawed. While the movie tries to interrogate it when Aditi hints to Ayan how even their mothers used to have separate sets of utensils for people from lower castes but it never addresses caste in urban spaces. Through analysis, we will discuss the depiction of a stereotypical Brahminic hero. Dalits are portrayed as dark-skinned, unhygienic, skinny, powerless characters who are dependent upon the social elites for justice. In the film, the Dalit community lives in the conditions of helplessness, abject poverty, performs filthy jobs and faces daily violence and social ostracization. Even the law enforcement is seen harassing them. Very little resistance by Dalits is shown. Even when it is.it is shut down through upper caste violence. This serves them to the cycle of voiceless subjects who do not have any agency. And once again an upper caste Brahmin man becomes a saviour.While Dalit community in general is shown to be victimized, the body of a Dalit women is depicted as a point of exploitation, sexual and economic. The movie portrays the bodies of young Dalit girls to be used for upper caste violence. The framing of a brutal gang rape and murder of two Dalit teenage girls who are later hanged on a tree just because they asked for a raise of Rs. 3 in the film expose the interlinkage of sexuality and gender with caste. Although, the movie gives a clear sense of closure to the case but in reality, the story remains unsolved.

Keywords: Film, Article 15, Casteism, Humiliation and Representation

Introduction:

Article 15 is a film directed by AnubhavSinha, released in 2019 that revolves around the evident caste discrimination that is witnessed in everyday life in many cities and villages of Uttar Pradesh. AyushmannKhurana plays AyanRanjan,, an upper class, urban, educated, entitled police officer who is fortified from, if not entirely well versed with the incongruous ground realities of

the country - to have little or be completelyignorant of caste based discrimination owing to their own privileged position in the profoundlyunfair world.

The film is named after Article 15 of the Constitution of India, which prohibits discrimination on the basis of religion, race, caste, sex or birthplace. While not based on one specific event, the film is inspired by multiple real-life cases involving crimes driven by caste-based discrimination, including the 2014 Badaun gang rape allegations and 2016 Una flogging incident.

Casteism is intertwined with the reservation. But there is another storyline that people miss. The issue of casteism and Brahmanicalcontrol. The film Article 15 brings to our notice the reality of the society we live in. A society that oversees the binary standards and falseness its members proliferate.

Set in rural Uttar Pradesh, India - Article 15 looks at the shuddering truth of casteism and its concerns. The film is roughly based upon the Badayun gang rape, which took the country by a storm. In this movie, two Dalit minors were brutally gang-raped and then hung from a tree in the same village they were from - for the world to see. This is allegedly done to instil fear in the hearts of those who belonged to the same caste as them.

The story begins with Ayan slipping into a Bob Dylan's song "How many roads must a man walk down before you call him a man?" and taking in the rural beauty of countryside India, moments after which he is made aware of the discrimination that the people of the village follow when his fellow officer tells him, "This is a Pasi village, they are from lower caste. They breed pigs. We don't drink the water they touch". It is soon witnessed that the caste system severely comes in the way of justice when Ayan investigates the disappearance of three girls from a small village, revealing a history of caste-based tyranny along the way.

Despite the fact thatobserving the discussions between AyanRanjan and two other officers (played by Manoj Pahwa and Kumud Mishra) we see the arrogant dismiss of caste talk, referring to the people as "these people", much to annoyance of Ayan as he demands, "Who are 'these' people?".Ayan's character makes us see that the stigma of caste and preconceptions is too deep-rooted in our lives to vanish with individual political correctness and the absence of biases of a few who are far removed from the 'wild west' as Ayan calls it.

Article 15 expresses the story of anenquiry into the rape and murder of two Dalit girls & a search for the third one. The film moves around the issue of the gangrape and how its origins lie deeply deep-rooted in Casteism and Brahmin Controlpredominant in the town.

From the outside, the rural administrative system in India appears well-established. Village panchayats and police offices are manageable and ears of the law for ideally anyone. But when you look deep inside the heart of this system, it is not as modest as we are made to believe. When AyanRanjan arrives at Laalgaon, he instantly notices the division between groups of people when his request for a bottle of water generates tension among the local police officers, because, according to them, the upper cast are not supposed to even touch the Dalits. India's history is a witness of countless such beliefs among the rural police. Some consider in the caste system; some are enforced to. Local villagers struggle to bind with the police and report anything.

we observe the sluggish nature of police. All want to stay in their own ease, and never move a force. That ends up resulting in FIRs not being filed and investigations just…abandoned. The poor in this country suffer especially. In the movie, we see Gaura and the villagers implore

the police to investigate the three missing girls. As usual, they are turned down. "It's always like this with them" they say, as they continue drinking their whisky. When two of the girls are found dead the next morning, it's already too late. The film takes this moment to force our protagonist to start taking some steps. Regrettably, at this point we face another mess in the rural police system. Political pressure. Most of the officers work only to file cases, and these files never see the light of day again, because someone forced them to shut it down. Villagers with connections high up exploit these connections, getting away with anything and everything. We see Manoj Pahwa's character Brahmadatt Singh absolutely tremble with fear when Ayan mentions that he wishes to speak to AnshuNaharia, local contractor and son of local minister RampalNaharia. Police wages are so scant in villages that most of the earnings for a police officer usually comes from looking the other way for powerful people in the village. And usually when an officer even remotely uneasiness these people, it ends up with the officer dead. That is what Brahmadatta was so fearful of. He felt if anything happens, Ayaan would promptly leave Laalgaon, but he and the other officers would feel the wrath of these politicians**.**

But even then, it's not just fear that drives Brahmadatt. He has a lust for power. He likes to be in control of his actions. He frantically tries to halt Ayan in his tracks, because he knows he is a part of the gang rape under investigation. When power is handed to people who are not worthy of it, they get gluttonous. In contrast, KishanJatav also tried to stop Ayan, but for a very different reason. Being a Dalit, he knew the lengths to which the higher castes in the village went, to ensure Dalits stay in and know their places. Bhramadatt and Jatav are two sides of the same coin. Their hopes and dreams are completely opposite, yet the pair walk the same path.

Article 15discloses every aspect of a system which has been influenced by a handful of people for periods. The faces change but the robe of power remains the same. In the film, the rapists include dominant local contractor AnshuNaharia, the Jat bodyguard of AyanNihal Singh and the local Brahmin SHO (policeman in charge of a police station). The entire administrative machinery is out to hush up the case and the father of the girls is framed in their murder but overall it's the system who is responsible for the gang-rape and murder of these two girls.

Exploration of Nakedness of Socio-Political System

Encouraged by the 2014's Badaungangrape and murder case, the film features AyushmannKhurrana as an honest IPS officer, who examines the rape and murder of two Dalit girls, both minor, who are found hanging on a tree in a fictional village of Lalgaon in Uttar Pradesh. The London-return officer is seen dealing with the strong presence of caste discrimination and societal differencesimpending over the village. At one point he even tells his partner Aditi that it's like 'The Wild West. The movie is meant to open the audience's eyes from what they have always been sheltered from. There is a scene where a man is lowered into a blocked manhole. He is then seen emerging with sludge all over him. Though the scene has no dialogues but it is powerful enough to make the viewers feel uncomfortable and showcase the division and hypocrisy in the society. The film also subtly indicates caste privilege when Ayan asks his fellows which caste they belong to. Ayan is constantly reminded that he should not interfere in the caste dynamics of the village and disturb the balance that holds the social hierarchy. Another interesting aspect is the portrayal of an alternative hero Nishad, who is a fugitive. His intelligence gets redirected to fight against the system. The short-lived character leads the audience thinking if the character's destiny would have been different if he was not born in ainferior caste family.

The representation of a Brahmanicalsavior and of a Dalit victim is clearly represented in 'Article 15' as well. The IPS officer, who earlier was unaware about caste discrimination becomes the rescuer for the Dalits. His dialogue "I will unmess it" further claims this, while Dalits, who have been instigating a persistentfightin contradiction of caste atrocities have little agency or proclamation. The movie does not place Dalit characters and their experience at the centre. It represents that Brahmins are the liberators and the Dalits community cannot fight for themselves. A brahmin saviour is seen as the one who solves the case, detains the criminals as well as finds the missing girls. While others are seen folding their hands in gratefulness. Dalit character are carved in such a way who are first torn apart first by the murder of girls and then by the false cases against the deceased girl's fathers.

In the film, Dalit women are presented in limited resisting capacities and lack agency. Dalit women are represented as victims at different concentrations in the film. Gaura, who is in search for her missing cousin or Doctor Malti Ram, who is initially stopped and cajoled into not releasing the exactpostmortem report of the bodies. Two Dalit girls- Shanu and Mamatha are viciouslygangraped and murdered and later hanged on a tree. These girls were beleaguered just because they demanded a hike of three rupees, in their daily wages. The frame where the bodies of two girls are seen hanging on a tree with a chilling background score depicts the horrific violence wreaked on Dalit women by superior caste men. It is a remarkable example of how rape is used as a weapon of vengeance to castigate and silence women when they dare to complaint. While Dalit women have been actively involved in anti-caste and anti-untouchability movement, the absence of Dalit women's voice from the narrative makes the viewer believe that they are mere victims and nothing more than that.

The film additionally inspects why fundamental revolutionists act the way they do, through Nishaad. He is part of a revolutionary group that resorts to brutal acts to be heard and to speed up the process of justice. Although looked at by law implementation with an angry eye, the audience quickly goes on to love him- witnessing his situation and viewing the world through his glasses. The story also discloses how political parties inconsiderately use people like Nishaad to fulfil their conspiratorialdrives.

Projection of Social systems in 'Article 15

The film mainly focuses on three themes- Construction of Brahminic Saviour; Representation of Dalit Identity and Caste and Patriarchy. Each theme aims to dissect how caste dictates everyday life in Indian society.

The concept of 'Brahmanical Saviour' which arises from the concept of 'White Saviour Complex' manifests that escaping poverty or ignorance can only happen through a saviour's intelligence. Caste which continues to be a stable structure in India has managed to survive over thousand years. Caste is not just a social stratification that underlies hierarchy, difference, endogamy and division of labour in Indian society. But, it also forms an ideology and practice supporting inequality and oppression. Low-caste social reformers like Mahatma Phule and Ambedkar were the first to introduce values of freedom, equality and fraternity. It was Ambedkar who enriched these in the Indian constitution. It is only recently that 'intellectual elites' have started to pay attention to the role of Dalit assertion. However, when people of privilege interact with a marginalized community much of the focus is on what one person can do to help those in need rather than what the Dalit community itself has been performing.

'Article 15' projects a world of 'Saviour' and 'Victim', where the generous Brahmin is trying to uplift the helpless Dalits. Dalit men are seen tied to a jeep and flogged in the street and then there is a sight of a bare bodied man emerging from the sewer. These are a few instances where Dalits are seen in a piteous sight but the audience is never allowed to enter into the subjectivity of the sufferer. There are a large number of Dalit characters in the film however, only three Dalit characters have substantial dialogues. The invisibility of these characters is ensured by subtracting their voices.

Conclusion:

It has been observed thatthe reformation and eradication of the discrimination based on caste is become political issue for the collection of votes which are reminiscedonly during the time of election and then nippilydisremembered.The film forces you re-shift and refocus on our perception of what is important. In India where the media is busy with animosity propaganda and low rated entertainment news to keep us busy in frolicsomestuffs, this film comes as a breath of fresh air. It is one of the foulest veracity checks of recent times. The ending of the filmprojects that the system of supremacy is built on blood, sweat, and blubbing of the oppressed. The film projects the upper caste people are supporting in the eradication of the casteism and gains the sympathy from the lower caste people as the upper caste people are the reformers or omniscient for them. But it may be happened as the there is no representation of the lower caste people in the film industry. The sufferings of the lower caste people can be represented very well by the protagonist from the lower caste people.

In short, the lower caste people are not born for the humiliation and comforts of the higher caste people. They are also human being. They should not be treated inhumanly. The film focuses on the social issues and while watching movie, we also become part of the same. We feel awkward at the end of the movie and forces us what has been done by us to eradicate the casteism. The constitution has given protection to the lower caste people with Article 15, but it is not implemented properly. Therefore, by representing the recent issues of the society, the film hascaptures our attention and create awareness among us. Thereby, the movie must be appreciated and extolled.

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India's Indigenous Banking System

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Abstract :

Indigenous banking is one of the oldest forms of banking that existed in India from the mediaeval period until the first half of the nineteenth century. The indigenous banking system is a monetary system in which local entities function as bankers by offering financial services such as loans and accepting deposits. It entails a private form and an individual performing fundamental banking operations such as accepting public deposits and lending money. Prior to the arrival of foreign banks and commercial banks, it was the only type of banking available in India. This further collapsed after the emergence of cooperative and commercial banks in the late 1990s.

The financial system of India is dominated by nationalized banks. The banking industry's success is undoubtedly more directly tied to the economy than any other sector. The objective of this paper is to examine all private loans and money transactions made up to the nineteenth century i.e. indigenous banking and weigh their benefits and drawbacks.

Keyword: Indigenous Banks, Banking System, Security, Hundis

Introduction:

Indigenous banking system falls under the purview of unorganized banking therefore there is no direct control of Government and law over indigenous banker.

Indigenous bankers are of three types-

1. Those whose main business is banking.
2. Those who combine their banking business with trading commission business and
3. Those who are mainly traders and commission agents but who do a little banking business also.

In India, a group of indigenous bankers known as Shroffs participated in fundamental banking operations. The actual number of such bankers is unknown since they are not registered under any company act or subject to any government regulation, but it is estimated that there are between 3 lakh and 4 lakh of them.

There are several communities in India who engage in indigenous banking, and they go by different names in different parts of the nation. Let's take a closer look at a couple of these financial communities:

1. The vaishya: Vaishya performs banking business in whole country and are consideredas prominent money lender.
2. The Jain's: Jain's among the richest community in India and at some places they arealso known as sravakas or saraogis.
3. The Kshatriyas : in Kshatriyas we have two banking class of Punjab Khatris and Arora.
4. The Multanis and Rehtis: The Multanis were from Sind and Rehtis also known as Bohras were from Gujrat.

5. The pathans: They came to India from afganistan for trade and performed money lending activities.
6. The Chettiars : The Chettiars also known as Nagarathas are well known indigenous bankers from southern India. Among all the Chettiars Nattukottai chettis are the most prominent bankers.
7. The marwaris : The marwaris who come from Marwar region of Rajputana are merchant and banker caste.
8. The Mahajans: The Mahajans belongs to Maharashtra.

Functions Of Indigenous Bankers:

The main job of an indigenous banker was to receive public deposits and provide loans. Hundis is the main feature of their function. Prior to the advent of the new modern monetary instrument, hundis were regarded as one of the most important and lucrative instruments for indigenous bankers.

There are two kinds of Hundis:

- Darshaniaur hundi or sight Hundi which is payable on demand and
- Muddati hundi which is payable after a certain period of time.

Indigenous bankers also provide Remittance services.

In numerous cases, documentation has been discovered that indigenous bankers also functioned as state financiers.

2. In the 14th century it is found that Multaniyas so help Delhi Kingdom with funding.
3. In the rain of Firoz Shah (1351 – 88), the bankers of sarsuti,Ninety kos (180 miles) from Delhi land to the state large sum of money which were used for payments to the army.
4. Soldiers at Delhi where paid by cash orders (itlaq) on outlying places, these were discounted in Delhi by financers who made a regular business of it, and earned a good income
5. Early days of East India company indigenous Bank we also found lending money for tradeand Commerce to the company.

During the reign of the East India Company, indigenous bankers also worked as a company agency raising donations and taxes from the inhabitants of the Bengal region.

The indigenous banking system in India declined as the British reign and dominance in India proceeded due to the introduction of new financial systems by the British.

As the British reign and dominance in India progressed the indigenous banking system in the country come to decline by the introduction of new financial system by British.

Shortcomings Comings Of Indigenous Banking System:

1. High rate of interest: indigenous bankers charge their customers a rate of interest that is far higher than the standard rate of interest. It also varies from individual to person. Interest rates might range from 2% to 5% each month.
2. Unregulated system: indigenous banking system is not regulated by reserve Bank of Indiaor any government or authorities which results in no record of their financial activities and as they are not registered under any law, the reserve Bank of India have made sincereefforts to bring this system under its win but have failed to achieve success. Policies were s suggested by The banking commission, 1972 in its report to bring this

under the control of commercial banks and encourage cooperation between them. The number of indigenous banker operating in the country is unknown.

3. Exploitation of customer: indigenous banker have no leash of law so they charge very highrate of interest to the customer which lead to the exploitation of people which majorly includes people from poor financial background and rural community. Few attempts were made by the government to improve the situation (e.g. The Maharashtra money -lending (regulation) act, 2014) but the results were not fruitful. This majorly has results in the suicide of the customers who are not able to pay their debt.
4. Improper banking function: indigenous bankers sometime combine and non-banking activities.
5. Low capital: the amount of capital invested in the business comes from the personal saving of the banker and their families. This amount is not sufficient for huge loans and other banking functions.
6. Unproductive loans: The loans distributed by indigenous banker are usually for unproductive activities as they do not pay attention to the purpose for which the loan is taken the sole purpose of lending is to earn revenue.

Relevance Of The Study:

The government's and RBI's financial inclusion policies have far-reaching consequences for India's banking industry. However, this sort of banking is still common in the country's rural and tribal areas. In India, the agricultural sector and small companies continue to rely on local bankers for funding.

Conclusion:

People continue to do business with indigenous bankers in the nation due to the ease with which funds can be obtained in a short period of time and the lack of legal requirements. Because the country's banks are insufficient to satisfy the needs of the current population, indigenous bankers play an important role in bridging the gap and delivering monies to the people.

It can be seen that this sort of banking cannot be abolished from the Indian financial system, but the government and the RBI may work together to make the country's unorganized banking systems more dependable. They were immensely popular with dealers, businesspeople, farmers, and regular people. By extending loans, issuing, purchasing, and selling hundis, and producing finance bills and trade bills, indigenous bankers provide financial and remittance services to traders and small enterprises.

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Effect of Private Sector Organizational Culture on Performance of Female Employees

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Abstract:

This article describes the definition and measurement of private sector organizational culture and its impact on employees' performance through the analysis of existing studies and empirical models related to organizational culture and performance. The results show the relationship and impact of organizationalculture on employee performance as a whole. However, the extent of this impact depends on the sub-elements of the organizational culture: change management, goal achievement, and so on. The relationship between organizational culture and innovation has been the subject of various studies in recent years. The numerous cultural variables studied have led to the fragmented notions of innovation culture. In addition, management practices require a foundational structure for deciding which culture to implement for innovation and assessing whether a particular culture is an effective and efficient coordination tool. The motive of this text is to discover the factors of organizational way of life in groups imposing innovation and to try to gift its model. After evaluation of huge literature, it's miles discovered that organizational way of life has deep effect at the sort of businesses process, personnel and its performance. This additionally describes the special dimensions of the way of life. When employees are engaged and share the same norms and values as organizations, they can increase performance to achieve the organization's overall goals. Managers and leaders are encouraged to develop a strong culture within the organization to improve overall employee and organizational performance.

Keywords-Impact, Organization Culture, Organization Performance, Employee Performance.

Introduction:

The culture of the workplace is a very powerful force, consciously and consciously nurtured and passed on to new employees. This is a common thread that brings your organization together. Cultural rules and traditions are very important to any organization and have a significant impact on employees and the organization as a whole. The culture of an organization is defined by the sharing of beliefs and values shared by all members of that organization. These shared beliefs, values, ethics, symbols, and actions guide employees in making decisions at the subconscious level. The organizational culture is widespread and powerful. For organizations, businesses, and businesses, it is a force of change or a clear obstacle to it. For employees, it's either the glue that connects people to the organization or the one that repels them. Today's organizations are increasingly faced with the challenge of changing their corporate culture to support the way they do their jobs. Organizational subculture performs a totally vital position in an organization. This is a recognized indicator that helps you understand the stability your organization is expressing in terms of incentives, encouragement, and satisfaction for your employees' work. However, organizations provide employees with a

strong, rigorous, flexible, supportive, and career-focused work environment to attract, manage, and retain a valuable and competent workforce. We are aware that we need to provide it. This is only possible with a good organizational culture that encourages such activities in the work environment. As the world changes rapidly, so do the ways businesses, investments, and organizations work. Therefore, organizations have revolutionized the traditional dictatorial structure and are now moving towards adopting more democratic norms, delegating responsibilities to lower levels and encouraging the participation of all sectors. Organizational culture, employee performance, and job satisfaction are interrelated, and in order for an organization to achieve its goals efficiently and effectively, organizational culture, and employee performance and job satisfaction. Great attention should be paid to other indicators of degree.Gender inequality is a phenomenon where individuals are differentiated on different grounds like recruitment, pay, policies, re-launching process, gender biasness, etc.

Many companies have put their efforts in the up-gradation of policies for promoting equality at work place. But none of these have changes the scenario, the facts that women still occupy a place where they are hired with low pay scale, no re-launching, less policies of promotion etc.Women are continuously pushing through these barriers and more of them are choosing the professions like technology and engineering. But all of their efforts are put in vein as they still get less recognition and awards they deserve.

Review Of Literature:

Employees are seen as part of an organization that are involved in the organization day-to-day actions to ensure that the organization continue to survive or exist (Abdullahi et al., 2020). Wambugu (2014) asserts that employees are an essential component of an organization and that the success of the organization depends on employee performance (EP). It cannot be overstated that workers are the main thrust of every organization since they manage any other factors that keeps it running. Employees must be proactive, responsive, hard-working and diligent to ensure that they are always completely ahead of their competitors (Ramly, 2018). Along with that, the overall performance of an organization is highly dependent on PE level through employee engagement (EE) (Ganyang, 2019). Therefore, EP can be considered as an activity in which an employee can effectively perform the task assigned to him with the proper use of available resources (Mkamburi and Kamaara, 2017). Various organizational researchers have studied the effect of demographic traits on person and organizational outcomes. There is adequate studies analyzing the impact of age and gender on person's process pleasure and organizational tradition. Gender problems can also additionally arise in HR policies, fee, merchandising, etc.

Gender discrimination in selection-making practices referring to HR problems arises from gender inequalities in broader organizational systems and practices, together with: HR policies, strategy, structure, management, organizational climate, and culture. Besides, the stages of sexism of selection makers' in corporations can also additionally have an effect on their possibility of creating gender-biased choices approximately HR practices (Stamarski, Hing, 2015). Agentic girls, who behave in an assertive, task-orientated fashion, are much less likable and much less hirable than similar agentic male candidates are (Heilman and Okimoto, 2007; Rudman and Phelan, 2008; Rudman et al., 2012). Besides, there's discrimination in opposition to pregnant females after they follow for jobs (Hebl et al., 2007; Morgan et al., 2013). Further, mothers are advocated for merchandising much less than females who aren't mother or males without or with children (Heilman and Okimoto, 2008).Women and specifically mothers are

probably held to stricter requirements withinside the administrative center as compared to guys (Correll et al., 2007).Women obtain fewer possibilities at paintings, as compared with men, ensuing of their under-illustration at better stages of control and management inside corporations (Eagly and Carli, 2007). Managers supply females fewer difficult roles and less education possibilities, as compared with males (King et al., 2012). Men are much more likely to accept key management assignments (e.g., De Pater et al., 2010). Men also are much more likely than females to be considered as powerful leaders while occupying roles which are described in masculine terms, together with withinside the military (Paustian-Underdahl, Walker, and Woehr, 2014) or in company management positions.

Women are barely much more likely than men to be visible as powerful leaders in female-ruled industries like training and social paintings (Paustian-Underdahl et al., 2014). Managers price females as having much less merchandising capability than males (Roth et al., 2012). Thus, males have a quicker ascent in organizational hierarchies than females (Blau and DeVaro, 2007).Other studies confirmed that women and men produced gaps in gender fee of their rankings of fairness(Auspurg, Hinz, and Sauer, 2017).

Cohen and Huffman (2007) of their have a look at advice that the presence of high-fame girl managers has a miles large effect on gender salary inequality. The merchandising of girls into control positions can also additionally gain all girls, however best if girl managers attain quite high-fame positions.

The have a look at of Plickert and Sterling (2017) suggests that paintings schedules drastically range via way of means of gender, parental position, and revel in of administrative center discrimination. Gender requirements of leaders limitation girls' get entry to better positions and the impact of gender will increase while there are marital relationships (Yang, Aldrich, 2014).

Research Objectives:

- To have a look at private quarter enterprise subculture.
- To have a look at the connection among organizational subculture and organizational performance.
- To study impact of organizational culture on female employees' performance.

Scope:

The main aim of the study is to find out the moderating effect of organization culture , gender perception and career satisfaction. The struggles and ways in which women have tackled their problems are often not very explicit.

Major Findings, And:

Thus, the major findings from the above study are discussed as follows:

1.In order to clear up gender inequality withinside the workplaces, the maximum green component to do can be the installment of written guidelines of gender equality promotions. These policies must ensure that men and women have equal rights and equal pay for the same work. Policies must ensure equality at all levels of human development: recruitment, hiring, training, promotion, compensation and reward.

2.These policies should make it possible to balance personal and professional lives of employees. Moreover, the maximum critical aspect is that those rules have to encompass the prohibition of

any form of harassment, in particular sexual harassment. And withinside the end, the rules have to have a system for reporting gender discrimination instances without effects or fear.

3.These types of policies are a good step towards solving many problems in workplaces. But the state should adopt a law, which will force organizations to set up such policies, as many organizations will not follow the necessary steps if it is not mandatory.

Some people will never encounter inequalities at work.

Gender inequality is directly related to economic development, social performance, national development, life standards etc. Recent studies have been discussed only when equal at work, which they can achieve:

- High economic growth
- Better business performance
- High reputation in global business
- Highly capable and qualified candidates
- GDP level increases

Suggestions:

Gender equality in the private organizations can be achieved through following ways:

- Equal pay for equal work: There should be no discrimination in the payment criteria for the work done by the employees i.e. men and women. The work done by both the genders is equal in all respects. The pay should depend on the type and job structure to promote transparency. Remuneration act must be considered to determine the proper pay structure.
- Appropriate training programs should be initiated within the organization: The organization should strive to promote equal development of employees regardless of gender. The organization should introduce an appropriate training program and seminars to update the knowledge of the organization's human resources. These leads to the growth of organization, human capital and economic growth of country.
- Re-launching of women staff: The organization must promote equality by giving equal opportunity to both the genders. This aims to encourage women to continue their quest for excellence. The organizations must launch come back programs which creates a balance at work place.
- Equal leadership roles for male and female staff: it has been commonly mistaken that men have more leadership qualities than women. Women also thrive to support oriented roles. This leads to create gender discrimination at work place.
- Appropriate schooling packages have to be initiated in the agency: The agency have to attempt to sell identical improvement of personnel irrespective of gender. The agency have to introduce the correct schooling application and seminars to replace the information of the agency`s human resources.
- Equal opportunity to get recruited for any position: In an organization all the genders must get equal opportunity to get recruited.

Conclusion:

Now it is high time, we should tear gender equality at workplace. One of the biggest reasons why women lack prestigious positions at workplace is lack of support after marriage professionally and domestically.

In an organization the mechanism should be sell to cope with gender equality. India currently is going through demanding situations of cultural diversity, social stereotypes and there may be a want to take collective moves toward the established order of parity in gender roles and ladies at workplace. Our countries women and girls are very much powerful community leaders so this gender inequality must be vanished for proper development of nation.

Directions For Future Research:

This study is based on private sector organizational culture and its impact on performance of female employees. A comparable examine may be performed for public sector organizational culture. The modern examine did now no longer recall the mixed impact of age and gender. Therefore, the findings of the examiner can best be generalized after an extra rigorous studies at the effect of organizational tradition values on employees' process satisfaction.

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Utilization and Availability of Resources in the VJTI Library

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Abstract:

The present research paper aims to investigate how students at Veermata Jijabai Technological Institute in Mumbai use library information resources. A descriptive survey method was used in this study, with a questionnaire used as a data collection tool. A questionnaire was distributed to 60 library users at random from the VJTI Library, and 52 copies are completed and returned. The frequency counts and simple percentages are used to analyze the research questionnaires. It was concluded that 'for the proficient and effective use of the library for teaching, learning, and research, the academic institution must provide a live library of updated library resources to meet the information needs of library users.' It was suggested that library or university administration implement library literacy education to teach users how to properly manage the library. This will entice more users who are unaware of the library's resources. Finally, Board Display Services should be sufficiently expanded to reflect the available resources to users, thus representing all library resources.

Keywords: Library Resources, VJTI Library, Availability, Awareness and Utilization

Introduction:

Library in general consists of a wide range of collections of books pertaining to different subjects. The resources mainly consist of books, magazines, and other resources including microforms, audio recordings, video recordings, electronic resources, etc. Library users visit the library to obtain sufficient, significant, and up-to-date information in print and non-printed forms for effective teaching, learning, and research that meets their information needs and enable them to make important decisions. However, they can obtain this information through research, which includes the search for new ideas, facts, and information through scientific and methodological research. Academic libraries are those established in colleges such as polytechnics, universities, and colleges of education, among others. Its primary function is to provide resources and information services to help the parent education and research program achieve its overall goals.

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Definition of Library Resources:

In general, the term "resource" refers to the source of supply. Library resources have been identified as materials that enable libraries to effectively provide resources to clients such as books and other media. It also includes everything required to provide the client with the requested information service. Books, manuscripts, periodicals, government publications, brochures, catalogs, reports, files, microfilm, microfiche, and microcards are examples of library resources, according to Kent and Lancour. The amount of time that library resources and services

are used in teaching, learning, and research is referred to as resource and information service use. Library statistics, which are compiled daily by library staff, generally reflect the extent to which library resources are used in university libraries.

Veermata Jijabai Technological Institute, Mumbai:

VJTI Mumbai (est. in 1887 as Victoria Jubilee Technical Institute) has pioneered India's Engineering education, research, and training ecosystem. Pre-independence, VJTI had been instrumental in driving industrial growth throughout united India. Post-independence, VJTI played a pivotal role in setting up IITs and RECs in India and strengthened the technical excellence of the country. In 1997, VJTI changed its name to Veermata Jijabai Technological Institute to honor the mother of Chhatrapati Shivaji Maharaj. Located in South Mumbai, the heart of Mumbai, VJTI is an autonomous institution owned by Maharashtra State Government. The institute offers programs in engineering and technology at the diploma, degree, post-graduate and doctoral levels. VJTI is known for its high-quality teaching, collaborative research, industry connections, and strong alumni network.

VJTI Mumbai is an autonomous institution owned by Govt. of Maharashtra and affiliated with Mumbai University. After autonomy (2004), VJTI has a separate Board of Governors, where the Chairman (Leading Industrialist) is nominated by Govt. of Maharashtra. Director is responsible for the overall administration of the institute along with the team of Dy. Director, Deans, HoDs, and Registrar. Diploma section is managed by Dean Diploma. The National Institutional Ranking Framework (NIRF) – approved by the Ministry of HRD, Govt. of India (Ministry of Education) – outlines a methodology to rank institutions across the country. The parameters broadly cover Teaching, Learning, and Resources – TLR (30% weightage), Research and Professional Practices – RP (30%), Graduation Outcomes – GO (20%), Outreach and Inclusivity – OI (10%), and Peer Perception – PR (10%). Currently, VJTI ranks 82nd in the Engineering Discipline.

The VJTI Library is the primary source of information for the community during its studies. The Library is divided into two levels. VJTI Library Resources are a valuable research resource for current VJTI students, faculty, staff, and researchers who have a valid VJTI ID CARD. Services vary according to staffing levels. Students with disabilities and/or specific learning difficulties can receive additional assistance.

Objectives:

1. To observe the awareness of Library resources by student and faculty community.
2. To know the frequency of users using resources among students.
3. To study the purpose of utilization of resources by the community.
4. To investigate the student's problems.
5. To ascertain the degree of satisfaction with Library resources.
6. To suggest ways to access the resources.
7. To broaden the community's access to these resources.

Scope And Methodology:

This research study employed a questionnaire-based survey method. For data analysis, the data is thoroughly checked and analyzed. The paper's scope is limited to engineering students from seven departments, and the study was limited to students from Veermata Jijabai Technological Institute in Mumbai. A questionnaire is distributed to 60 library users at random

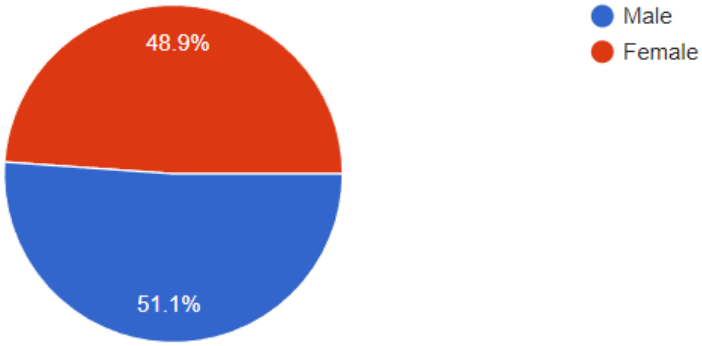
from the VJTI Library, and 52 copies are responded and returned. The frequency counts and simple percentages are used to analyze the research questionnaires.

Data Analysis And Results:

The study is conducted at the VJTI College campus in Mumbai during the period 2022. This study was undertaken to investigate the libraryinformation resources with special reference to library resources that are available in the central library used by the student community at Veermata Jijabai Technological Institute, Mumbai.

Table1: Gender-wise Respondents

Sr. No	Response	No. of respondents	%
1	Male	23	51.10
2	Female	22	48.90
Total		45	100

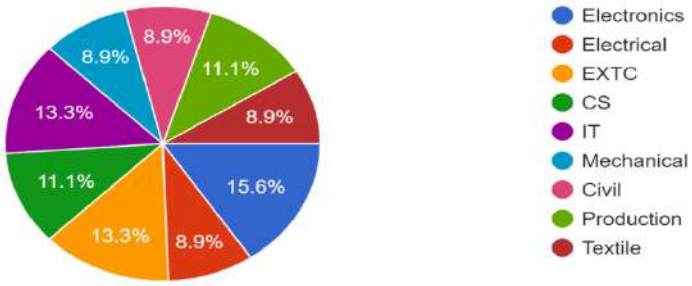


According to the above table (Table 1), the number of respondents was nearly equal, with 48.90% female respondents and 51.10% male respondents.

Table2: Distribution of Questionnaires

Sr. No	Departments	Questionnaire Distributed	%	Questionnaire Received	%
1	Electronics	10	15.6	7	7.77
2	Electrical	10	8.9	4	4.44
3	EXTC	10	13.3	6	6.67
4	CS	10	11.1	5	5.56
5	IT	10	13.3	6	6.67
6	Mechanical	10	8.9	4	4.44

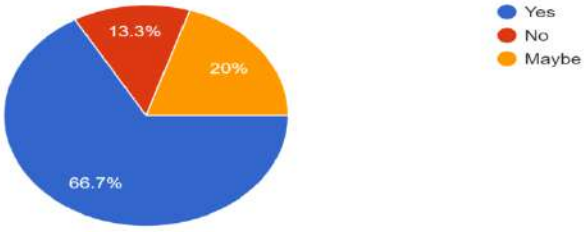
7	Civil	10	8.9	4	4.44
8	Production	10	11.1	5	5.56
9	Textile	10	8.9	4	4.44
Total		90	100	45	50



It is discovered that the majority of respondents 7 (15.6 percent) from the Electronics Branch are interested in filling the questionnaire, whereas only 4 (8.90 percent) from the branches Mechanical, Civil, Electrical, and Textile are interested, and 45 are returned duly filled in by the user's community, yielding an overall response rate of 50.00 percent.

Table3: Awareness about library resources

Sr. No	Description	No. of Respondents	%
1	Aware	30	66.7
2	Slightly Aware	9	20
3	Not Aware	6	13.3
Total		45	100



It is revealed that Table no. 3, clearly indicates that out of 45 respondents 66.70 % were well aware of library resources and it was followed by 20.00 % of respondents were slightly aware of it and only 13.30 % of respondents had no idea about the use of library resources.

Table4: Frequency of using library resources

Sr. No.	Frequency	No. of Respondents	%
1	Daily	8	17.8
2	Once in Two Days	6	15.6
3	Once in Week	10	22.2
4	Occasionally	13	28.9
5	Never	7	15.6
Total		45	100

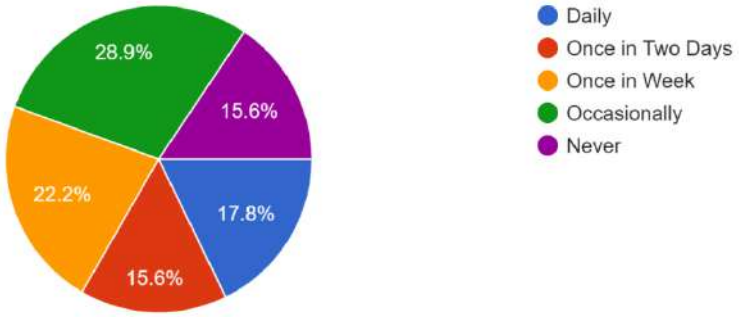
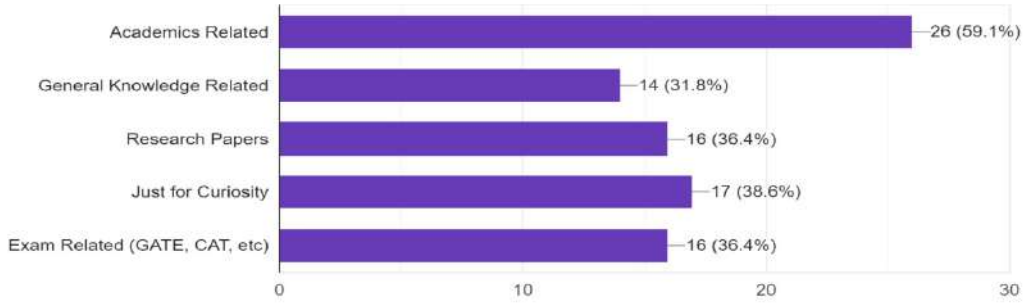


Table 4 shows that 28.90 percent of respondents use library resources occasionally, while 17.80 percent have never used any library resources.

Table5: Subjects for which you use these resources

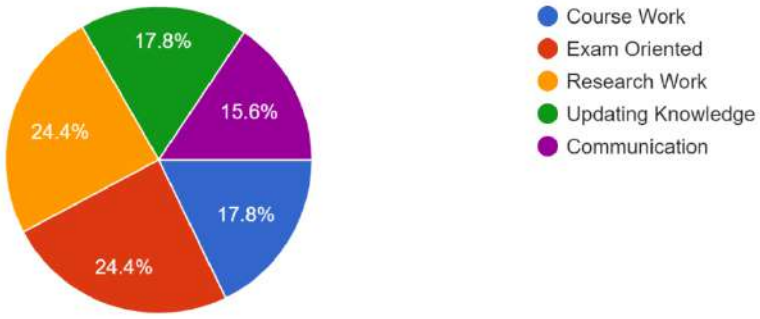
Sr. No.	Purpose	No. of Respondents	%
1	Academics Related	26	59.1
2	General Knowledge	14	31.8
3	Research Papers	16	36.4
4	Just for Curiosity	17	38.6
5	Exam Related (GATE, CAT, etc)	16	36.4
Total		86	



The graph above depicts the distribution of subjects for which respondents use library resources. It shows that the majority of respondents use the library for academic-related readings. It is followed by respondents who visit the library solely to learn new things about technology. The majority of respondents chose General Knowledge resources.

Table6: Purpose for using Library resources

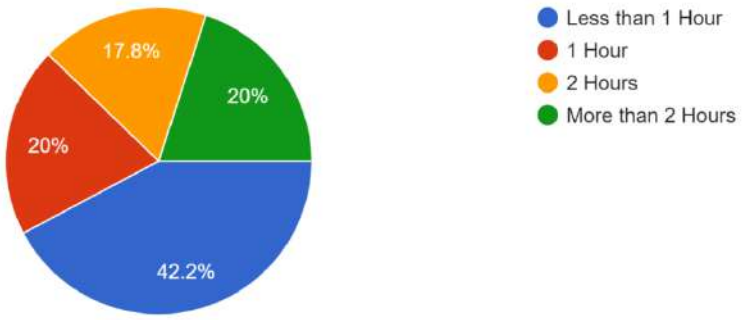
Sr. No.	Purpose	No. of Respondents	%
1	Course Work	8	17.8
2	Exam Oriented	11	24.4
3	Research Work	11	24.4
4	Updating Knowledge	8	17.8
5	Communication	7	15.6
Total		45	100



The pie chart above illustrates the reason for which these resources are used. We discovered that the majority of respondents used the library for exam preparation or research purposes. A significant number of respondents also use the library for Course Work, Soft Skills Development, and knowledge enhancement.

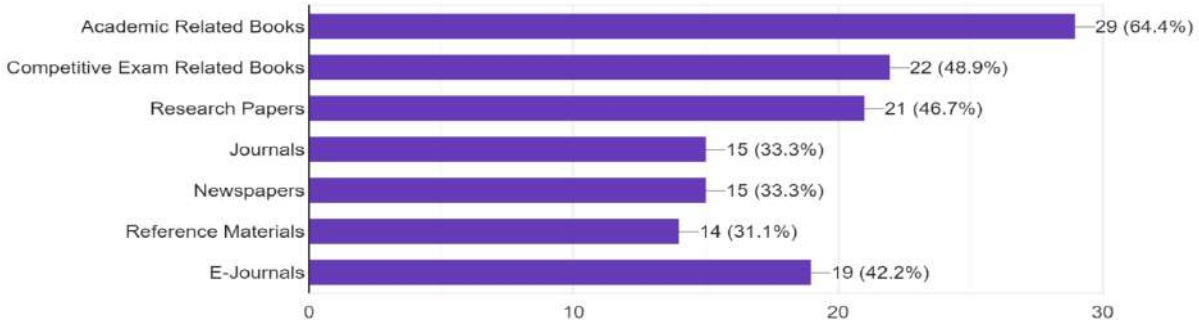
Table7: Time usually spent using library resources

Sr. No.	Purpose	No. of Respondents	%
1	Less than 1 Hour	19	42.2
2	1 Hour	9	20
3	2 Hours	8	17.8
4	More than 2 Hours	9	20
Total		45	100



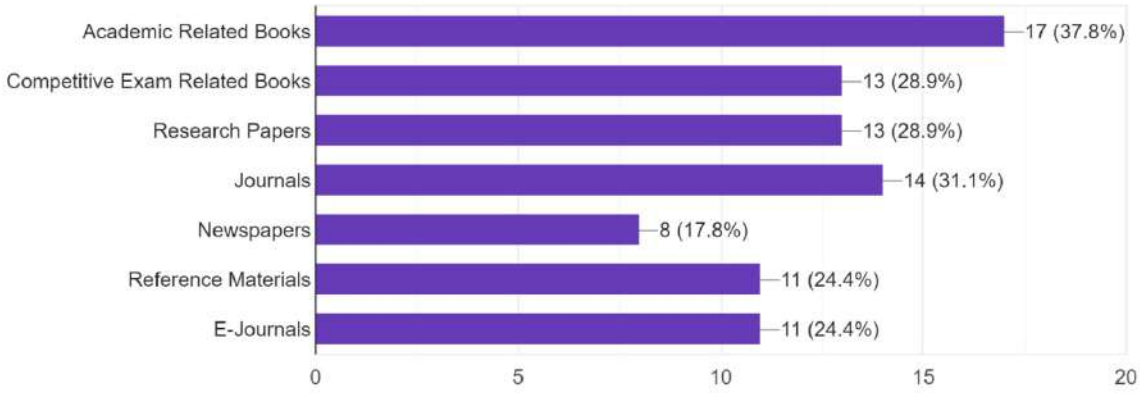
The graph above depicts the number of time users spends accessing library resources. We can conclude from this that the majority of respondents use library resources for less than an hour, while the minority uses library resources for more than two hours.

Awareness of Library Resources



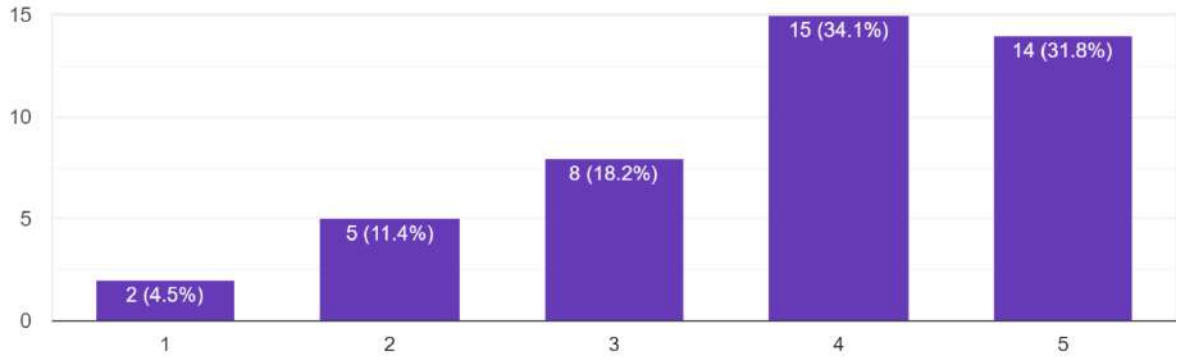
The bar chart above demonstrates the respondents' knowledge of various types of library resources. We can see that 64.40 percent of respondents are aware of the academic resources available in the library, whereas 31.10 percent are aware that the library resources also include Reference Materials.

Utilization of Library Resources



The bar chart above characterizes the respondents' use of various types of library resources. We can see that 37.80 percent of respondents use academic resources available in the library, while 17.80 percent use newspapers, which corresponds to the least amount of resources used by the respondents.

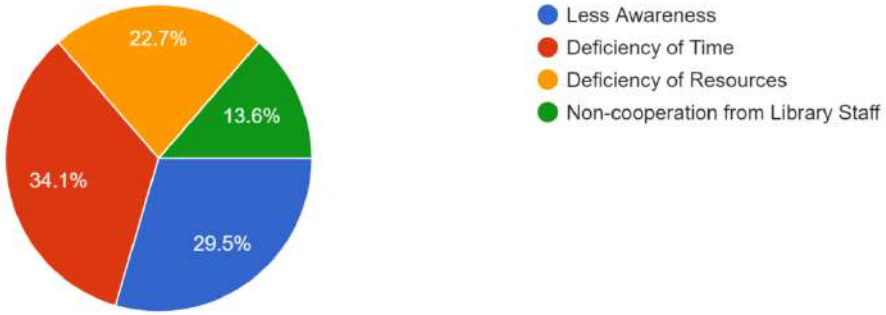
Satisfaction of the respondents



The above figure rates the satisfaction level of respondents on a scale of 1-5. The majority of respondents were well satisfied with the library resources.

Table8: Problems faced while accessing resources

Sr. No.	Problem	No. of Respondents	%
1	Less Awareness	13	29.5
2	Deficiency of Time	15	34.1
3	Deficiency of Resources	10	22.7
4	Non-cooperation from Library staff	6	13.6
Total		45	100



The chart above depicts the issues that respondents encountered while using library resources. It demonstrates that most respondents do not fully utilize the library's resources due to a lack of time. Some respondents also claim that the staff is not supportive.

Findings:

The number of respondents are nearly equal, with 48.90% female respondents and 51.10% male respondents. It is discovered that the majority of respondents 7 (15.6 percent) from the Electronics Branch are interested in filling the questionnaire, whereas only 4 (8.90 percent) from the branches Mechanical, Civil, Electrical, and Textile are interested, and 45 are returned duly filled in by the user's community. Out of 45 respondents, 66.70 % are well aware of library resources and it is followed by 20.00 % of respondents who are slightly aware of it and only 13.30 % of respondents have no idea about the use of library resources. The majority of 28.90 percent of respondents use library resources occasionally, while 17.80 percent have never used any library resources. The majority of respondents use the library for academic-related readings. It is followed by respondents who visit the library solely to learn new things about technology. The majority of respondents choose General Knowledge resources. The majority of respondents have used the library for exam preparation or research purposes. A significant number of respondents also use the library for Course Work, Soft Skills Development, and knowledge enhancement. The majority of respondents use library resources for less than an hour, while the minority uses library resources for more than two hours. The majority of 64.40 percent of respondents are aware of the academic resources available in the library, whereas 31.10 percent are aware that the library resources also include Reference Materials. The majority of 37.80 percent of respondents use academic resources available in the library, while 17.80 percent use newspapers, which corresponds to the least amount of resources used by the respondents. The Respondents seem to be satisfied with the overall experience. Most respondents do not fully utilize the library's resources due to a lack of time. Some respondents also claim that the staff is uncooperative. But overall it is observed that the most of the users are using library sources.

Conclusion:

Based on the study, the following three suggestions are made. Firstly, the awareness about the variety of resources available in the library should be given to all the faculty, staff and students. If possible the library should increase the number of working hours.

So that users get maximum utilization of this service. Secondly, the College must introduce a user education program about library resources. Finally, the library staff ought to create awareness and usage of resources and help the students in accessing them with ease. As a result, the findings indicate the usage and awareness of library resources that are available in the

Central Library. From the above study, the majority of the respondents are well aware of library resources and only a few respondents have no idea about the use of library resources. Many problems are facing the students even though the majority of respondents are fully satisfied with the accessibility of library resources.

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Survey of E-Resources in the University Library at Mahatma Phule Agricultural University Rahuri (M.S)

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Abstract:

This paper showsthe study of use of electronic information resources, its impact on the collection of print and electronic resources, and user awareness and issues where users are using these resources. The survey was organized in the academic year 2021-22 at Mahatma Phule Agricultural University Rahuri (M.S). A total of 108 professors, readers and librarian were selected and their responses were obtained with the help of questionnaires. The findings show that users were using e-resources; awareness of e- resources inspires users to make maximum use of such resources; and users are progressively using departments and homes to access information. This paper presents an overview of these resources, describes a few advantages and disadvantages and gives addresses of few web sites.

Keywords: Mahatma Phule Agricultural University, Electronic information resources, E-Resources.

1. Introduction:

After choosing a topic to complete the research, it is necessary to keep a record of a research by definitive its scope, objectives needs from a business point of view and research methodology etc. As the horizons of knowledge in human history began to expand, more reading material became available. The world books is an important creation of man. A library is needed to collect and manage written knowledge of such informative books.Perpetual any other man-made things or not external cultures becomes old and absolute and disappear. The age of darkness begins for a while but then new castes, tribes and their cultures emerge. The books of the world, however become the witnesses of all this and become external. The collection of written knowledge means the library is needed to manage and preserved it.

An electronic resource is defined as a resource which requires computer access or any electronic product that delivers a collection of data, be it referring to full text bases, electronic journals, image collections, other multimedia products and numerical, graphical or time based, as a commercially available title that has been published with an aim to being marketed. The value and use of information resources, particularly e-resources, have increased with the time. Therefore, there is essential to make study on the different condition of e-resources and the issues relating to the use of resources by users, more particularly by the faculty of academic institution. The present study is an attempt to analyses the use of e-resources by the faculty members, readers and librarian of Mahatma Phule Agricultural University and out the problems and constraints faced by the users in accessing the e-resources with some purposeful suggestions for its development.[1]

Need of E- resources:

E- resources enable the librarian to provide better service to the user community. The few considerable points are mentioned bellow;

1. To get access to an information source by the more than one users.
2. E- resources can be searched quickly.
3. These can be found easily by the users.
4. Amount of times spent on the E- resources use.
5. Know different types E-resources commonly used by respondents.
6. To collect, store, organize information in digital form.[6]

Types of E-resources:

Sr. No.	Types of E-resources	Description
1.	E- Book	E-books is the many formats competing for prime , including Adobe PDF, Microsoft reader and I pad
2.	E- Journal	An e-journal is very important part of every library collection. E-journals are one application of information technology.
3.	E- Newspaper	An E- Newspaper is also known as online newspaper or web newspaper that exists on the World Wide Web or internet.
4.	E- Magazines	An E-magazines is very important part of every library collection.
5.	Full text databases	Today's there are number of databases available on the network. They are either free or with charges.
6.	Reference database	These are many Dictionaries, Almanacs, and Encyclopaedias, which are available on internet in electronic format.
7.	Image collection	Due to adventure of E-images facility this type of database is developed.
8.	Multimedia products	These types of database are included images, video's , audios and text etc.
9.	E-Thesis	These database are contained with PhD thesis and dissertation published through e- format.
10.	E- clipping	The main objective of E-clipping is retrospective search and comprehensive analysis of new items.
11.	Statistical database	These database contain the numerical data useful for the mass community.

Research Objective:

The following objectives have been set for the present research and the research accordingly will be done.

1. Collecting information on E-resources in the library.
2. To get information about the use of E-resources in the library.
3. Obstacles to the availability and use of E-resources in the library to study.
4. Suggesting solutions related to E-resources. Research has been done in accordance with the above objectives.

Descriptive research methods:

Descriptive research methods are all the research in which a circumstance, a society, a social organization or a case in reviewed and described in the analysis. Descriptive research method has been used for the presented research. Descriptive research is related to fact-finding. An in depth study of the current state of a social phenomenon, work, undertaking or plan is done to objectively treat its pros and cons. Here are 4 features of descriptive research method.[7]

1. Objectively collected information.
2. Technique formula analysis of the collected information.
3. Medicines
4. A background of ambition that has benefited therapists.

Descriptive research methods include the three types of research described by Gopal, philosophy and library research. This research methods use a wide range of surveying information collection techniques. Often these are fact-finding surveys. Descriptive research methods are widely used in the social sciences.

Modification mechanism:

1. Questionnaire
2. Interview
3. Inspection
4. Survey
5. The Questionnaire technique is an important tool along with the observation, interviewing technique to get the information required for your social research work from the various information scattered around. Questionnaire is a pre-arranged list of questions. To study a specific problem, a series of questions were created to get information about the problem from the concerned called.[8]

2. Materials And Methods:

This study is based on questionnaire method. A structured questionnaire was designed to collect data from the faculty members, librarian, readers of Mahatma PhuleAgricultural University, Rahuri (M.S). A total of 108faculty members, librarian and readers were selected and their responses were obtained with the help of questionnaires.

3. Result And Discussion:

Analysis of Data:

Out of 150 questionnaire only 108 (72%) responded with the filled in questionnaire. The questionnairewere edited where necessary. Thus in all the cases the total number of respondents was 108. The data collected through the questionnaire was survey, classified and sequential for better understanding and accuracy. Certain factors like whether the data collected are correct or incorrect, statistically true or not etc. judged using some statistical methods.

1. Sex ratio

Sex ratio is the ratio of males and females in a population. The primary sex ratio is the ratio at the time of appreciation, secondary sex ratio is the ratio at time of birth, and tertiary sex ratio is the ratio of mature organisms.

Sr. No	Gender	No. of Respondents	Percentage
1.	Male	89	82.40
2.	Female	19	17.59
	Total	**108**	**100.00**

Table No. 1 Sex Ratio

2. Computer knowledge of faculty members and readers

Knowledge on computer has become necessity for all profession. Realizing this, the present study attempted to certain the Knowledge of computers of faculty members and readers. This study shows that all the respondents were computer educated, which is a healthy sign for any organization.[2]

Sr. No	Extend	No. of Respondents	Percentage
1.	Excellent	70	64.82
2.	Good	30	27.78
3.	Fair	04	3.70
4.	satisfactory	04	3.70
	Total	**108**	**100.00**

Table No. 2 Computer knowledge of faculty members and readers

3. Frequency of Internet use

Internet has become an important tool for teaching and research. Literature on all the fields of knowledge is available on internet, which is very useful for faculty members, librarian and readers to enrich their knowledge. [4]Regarding frequency of Internet use by the respondents table 3

Sr. No	Frequency	No. of Respondents	Percentage
1.	Daily	82	75.92
2.	Weekly	13	12.03
3.	Monthly	05	4.63
4.	As when required	08	7.42
	Total	**108**	**100.00**

Table No.3 Frequency of Internet use

4. Purpose of Internet use

Internet use has both advantages and disadvantages. Its depends upon the purpose of use. If it is properly used, it helps to increase knowledge and keeps oneself level of the latest developments.[3]

Sr. No	Purpose	No. of Respondents	Percentage
1.	E -mail/charting	78	40.21
2.	Entertainment	18	9.28
3.	Study and Research	98	50.52
	Total	**194**	**100.00**

Table No. 4 Purpose of Internet use

5. Awareness on E-resource

Electronic resources along with print resources have become an integral part of a library collection. Also, remarkable shifts of choice from print resources to E-resources have taken place by users for information. [5]But it is fact that use of E-resources is not satisfactory in most of the libraries, the main reason is the lack of awareness among the users. The present study attempts to highlight on this matter in the following tables.

Sr. No	Response	No. of Respondents	Percentage
1.	Yes	90	83.34
2.	No	18	16.66
	Total	**108**	**100.00**

Table No. 5 Awareness on E-resource

The result implies towards a positive sign regarding use of E-resources by faculty, readers and librarians of New Arts, Commerce and Science College Ahmednagar.

6. Types of E- resources frequently used

Sr. No	E-Resources	No. of Respondents	Percentage
1.	- database	90	31.25
2.	-journals	75	26.04
3.	-articles	40	13.89
4.	-books	20	6.95
5.	-magazine	25	8.68
6.	-these/dissertation	30	10.41
7.	ll	08	2.78
	otal	**288**	**100.00**

Table No. 6 Types of E- resources frequently used

7. Purpose of using E-resources

Sr. No	Purpose	No. of Respondents	Percentage
1.	udy of teaching	**90**	**48.12**
2.	esearch work	**50**	**26.73**
3.	aper writing for publication seminar/workshop	**25**	**13.36**
4.	resentation	**12**	**6.41**
5.	ll	**10**	**5.34**
	otal	**187**	**100.00**

Table No. 7 Purpose of using E-resources

8. Reasons of dissatisfaction on available E- resources

The study of investigates about the reason of dissatisfaction on available E-resources by the faculty, readers and librarian.

Sr. No	Reasons	No. of Respondents	Percentage
1.	frastructure is not good e-resources are not as per	60	55.56
2.	eed	23	21.29
3.	brary time is not suitable	16	14.81
4.	ooperative	09	8.34
	otal	**108**	**100.00**

Table No. 8 Reasons of dissatisfaction on available E- resources

9. Advantages of accessing E-resources

Reveals the multiple opinions regarding the advantages of accessing these resources.

Sr. No	Advantages	No. of Respondents	Percentage
1.	ess time in searching	88	32.84
2.	multaneous usage	22	8.21
3.	asy accessibility	89	33.21
4.	ownloading facility	50	18.66
5.	uthor can be directly through E-mail	19	7.09
	otal	**268**	**100.00**

Table No. 9 Advantages of accessing E-resources

4. Conclusion:

Thestudy reveals that the faculty, readers and librarian of Mahatma Phule Agricultural University, Rahuri are using the available e-resources satisfactorily. At the same time the library of New Arts, Commerce and Science College Ahmednagar is playing an important role in promotion, assistance and guidance in accessing the E-resources. The use of E-resources is helpful to ensure exhaustive and pointed information. The E- resources provide themselves various search options to the user and library manages. E- resources are useful for libraries as well as each and every users of the society. The developments in the information and Communication Technology services are available in the present made wonderful changes in the library operation.

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Need of E-Resources in Academic Libraries

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Abstract:

New technologies have always been of interest for libraries both for the potential of increasing the quality of service and for improving efficiency of operations. At present libraries of all kinds whether public, research academic or special libraries are overwhelmingly looking forward to adopt new technologies mostly use of e-resources due to its potential for cost savings in operations and the management of collections and Patrons. E- Resources are digital objects containing electronic representation of books, journals and other form of reading materials and they are converted into a digitized form in order to be read by a computer. Many Library resources are now available electronically and can be access via the web. You can get the information you want, when you need it, 24 hours a day, 7 days a week.

Keywords : Library Automation, E resources, Academic Library.

1. Introduction:

The development of computer and network technology is changing the education pattern and transforming the teaching and learning process from the traditional physical environment to the digital environment. Modern academic libraries, a conglomeration of printed books and journals as well as electronic resources (e- resources) where both forms of documents can be stored, retrieved and delivered as and when required. The library should have good number of Resources for teaching, learning and Research work. E- Resources offer creative possibilities for expanding access as well as changing learning, teaching and research work. Contents of EResources can be accessible, at any place regardless of time, to be read at personal computers. Ebooks would never to go out of print, and new editions can be easily created.

2. Library Automation:

The main purpose of library automation is to improve the efficiency of library and to provide optimum user services. To provide E-Resources to users, the automation of library is most important. The automated library system is always ready to handling large volumes of documents and of providing effective and timely information services to faculty, researchers and students in achieving their main goals.

The present Indian libraries are in transitional stage from traditional to modern. The Indian Library has moved from palm leaves, manuscripts etc. to CD-ROMs and digital books. Library Automation useful for:

• Faster communication and information retrieval, research results, new innovations are

communicated speedily to the end users, Dissemination of information in within less time, Email, data transfer etc

• Access to large amount of Information resources accurately, efficiently and with up to date Information at their places. Access to Electronic publications, Information on floppies, CDROMs excise easily possible.

• Identification and loans of the print and non-print materials are easily tackled through bar code technologies.

• Library operation such as – circulation, acquisition, serial control, cataloguing, documentation, information retrieval resources-sharing, library management, library budget and finance control.

• Provide networking and liaison with the other libraries which helps to the resources sharing among the library and information centers. Most of the integrated library automation systems are now providing web enabled online catalogue [Web OPAC].

3. E-Resources:

An E-Resource means electronic resource, which are available in electronic/digital form. The e-resources are very useful in academic libraries. This is most important part related to eresources. The quality has replaced the quantity of library collection during the present days. The quality has direct link with the types of library collection as it depends upon the requirement of the users. An e-database is an organized collection of large information, of a particular subject or various subject areas. The information of an e-database can be searched and retrieved electronically. Contents include journal articles, newspapers articles, books reviews and conference proceedings, etc. e-databases usually updated on a daily, weekly, monthly or quarterly, half yearly or yearly basis. Full text databases contain the whole content of an article such as citation information, text, illustrations, diagrams, charts and tables. Bibliographic databases only contain citation information of an article, such as author name, journal title, publication date and page numbers.

Types of E-Resources:

3.1 E- Books

E-book is a book-length publication in digital form, consisting of text, images, or both, readable on computers or other electronic devices, although sometimes defined as "an electronic version of a printed book"(WIKIPAEDIA, 2008). An electronic book is a text and image-based publication in digital form produced on published by and readable on computers, other digital devises. E-books are usually read on dedicated hardware devices known as e-Readers or e-book devices. E-books are very useful tool for academic teachers, students etc Many users now read the books on Mobile phone by use of e-book reader software. E-books are preferred by the users for their features like changeable font size, make citation, links to other relevant sites, searching, sending to other users etc. E-books can be transferred from library catalogue to users e-book readers for a fixed loan period and after which it is automatically taken back.

3.2 E-Journals

An electronic journal, provides research papers review articles, scholarly communication, issued periodically in electronic form by use automation. E-journals may be defined very broadly as any journals, magazine, e-zine, webzine, newsletters or any type of electronic serial publication, which is available over the internet. E-journals are mostly useful tool for researchers. E-journals have an impact not only on libraries but on authors and publishers too.

Hence, now-a-days majority of the users expect up to-date and timely information from library and information centers. Information from journals can easily, quickly, pin-pointedly and remotely be retrieved, provided the journals are available in electronic format. Academic and other special libraries cannot reject e-journals in their collections. It is the duty of librarian and library staff to provide access to the published knowledge to their users irrespective of the origin or e-resource.

Another type of online journals, whose full-text are available in the web for viewing and downloading free of charge, called open access articles. Open Access Articles means online access without access charge to individuals and libraries. A large number of important full text articles are available free of charges in the personal or institutional websites of few eminent personalities.

3.3 Aggregator

An aggregator is a database, collection of electronic publications, most commonly a searchable collection of electronic journals. It provides access to a large number of e-journals from a range of different publishers Aggregator has come as a big solution to the librarians as there is no need of contacting each and every publisher for making their publication available for use. It has made it possible to present electronic content as a simplified access to a range of publishers and purchasing of a large collection, allow libraries to quickly address the information needs of their patrons.

3.4 Consortia

With the Information explosion, it is becoming difficult for the librarian to satisfy the increasing information need of the users. Due to economic reason no library is in a position to acquire all such information in print or other form. Due to cost effectiveness, librarians are coming together in the form of consortia for resources sharing. In India, CSIR Consortia, FORSA, IIM Library Consortia, INDEST Consortium and UGC-info net e journal consortium are some of the consortia serving the varies kinds of institution in the country.

3.5 E-Reference Sources

Now various vendors and publishers are providing various reference sources in electronic form through their databases and web sites such as dictionaries yearbook, encyclopedia' sets. Some of them are dictionaries online (WWW.dictionaries.com, www.dic.leo.org);yearbooks online (www.uja.org); directories online (www.people.yahoo.com). Etc Wikipedia's a new form of reference source which does not have its printed counterparts. Lots of information are available are available in the Wikipedia and the most interesting thing is that new information can be added by the user and the information available can also be altered.

3.6 E-Thesis and Dissertation

E-Thesis and Dissertation are now very useful tool to collect large data for specific subject. This is a very useful service for users or mostly researchers. It reduces the duplication of research works and gives assistance for the selection of the research area to the users of the libraries. As these can be searched subject wise, it reduces the labor of the reference staff a lot.

4. Selection Of E-Resources:

Selection is not a new term to librarian, staff and users as they have been doing it since long back the libraries started acquiring printed material. However libraries are now focusing to take e-resources information technology approaching towards the e-resources rather than printed material as technology developed.

The selection process should be done in relevant with the demands of the users, committee, focus group, users recommendation etc. Apart from this, it should taken into consideration the following steps:

1) to identify library needs;
2) to identify content and scope of the e-resources;
3) to evaluate quality of that particular resource and search capabilities;
4) to estimate the cost;
5) to check either subscription based or web based when acquiring ;
6) to evaluate the systems and technical support;
7) to review licensing agreements;
8) to evaluate application software and installation , updated sporadically or in regular schedule; and
9) to check the facilities for educational support and training

5. Need And Importance Of Library Consortia Based Resource:

Sharing:

The word 'consortia' was originated from the Latin in early 19th century in the sense of partnership. Advanced learners Dictionary describes consortium as 'a group of people' countries. Companies etc. who are working together on a particular project. Information is a national resource and it is necessary for national development. Consortia can become an excellent way in the process of collection, digitizing organizing and making accessible the electronic resources.

The trend today is forming library consortia for sharing of electronic resources. Epublishing has brought a revolution in journals publication ;subscription access and journals online has led to a new and still evolving, form of co-operation among libraries and information centers; every individual library now subscribes to a smaller number of journals, usually those most relevant o their organization.

5. Conclusion:

The library/Information centre is considered to be the backbone of any research organization as it provides its user the literature and information through electronic sources and services in order to carry out their academic activity. It took many years for digital libraries to reach the present state but the Librarian's goal of the fully integrated online digital gateways. Although a library already has a particular journal in print form, but most often, for the sake of integrity and rendering effective value-added services to the users, the library is compelled to subscribe the online access of the same journal for the same period.

In Indian scenario the digitization programmes are in their initial stages and much needs to be done to prepare a long term strategy to sustain these efforts and preserve the digital resources for future use.

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A Critical Study on Tools and Techniques Contemplated for Empowering the Faculties working in Educational Institution

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Abstract :

The Study is to know about the techniques and tools that are used for empowering faculties working in Educational Institution. The Teaching is the noblest among all the profession around. The faculties from teaching fraternity should be knowledgeable to possess some good set of skill, qualifications and feel empowered, which would further be an obvious reflection on the student who are our future generation of our country. So the Study is to critically evaluate the techniques and tool used for empowering the faculty .An empowering emphasizes on autonomy, proper communication, individual participation for academic excellence, rewarding them on achievements and feedback on their performance. Which in turn builds one's Self-esteem and energizes them for perform better and move with upward trend in their career and further motivation in conduction of class and organizing several programs like Seminar, Conference, Workshop's for the well being of the student's Community.

The Questionnaire consisting of 20 statements was used for collection of data and was distributed among 250 faculties working Self finance Arts and Science College. Convenience Sampling techniques were used for this study. Data was analyzed by using Excel & SPSS package by using techniques of Simple Percentage Analysis, ANOVA, Chi-square, Correlation, and F-test.

Objectives Of The Study:

- To Know the Demographical Profile of the Faculty Working in Self Finance Arts and Science college.
- To Study the Tools and Techniques used for Empowering faculties Working in Educational Institution
- To Know the type of faculty training program offered by the institution
- To Understand the level of job satisfaction of the faculty by empowerment

Statement Of The Problem:

Teaching is very noble as well a challenging profession. The job of the faculty is really a challenging their dealing is not with machine or working on techniques the dealings with a social being. The faculty has to feel empowered to get satisfies with their job. So, the current study is targeted to know the tools and techniques contemplated to empower the faculties working in Self Finance Arts and Science College

Descriptive Research:

The Type of research used in this project is Descriptive in nature. The Main goal of this type is to describe the data and characteristics about what is being studied. Descriptive research is the exploration of the existing certain phenomena. The design of the present project is

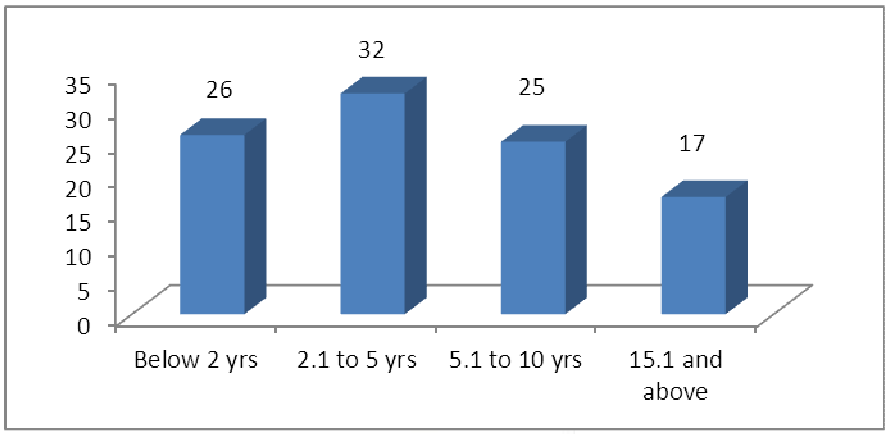
descriptive type of conclusive one.

Statistical Tools For Analysis:

The Data was analyzed through Simple Percentage, Chi-square, ANOVA and Correlation was used for the study

Interpretation:

From the above table it is interpreted that 26 % of the respondents are having below 2 years of experience, 32% of the respondents are having 2.5 to 5 years of experience,25% of the respondents are having 5 to 10 years of experience, 17% of the respondents are having above 10 years of experience.



Chi-Square Analysis Between Gender And Accepting & Appreciating Faculties Suggestions

NULL HYPOTHESIS (H_0): H_0: There is no significant association between gender and accepting & appreciating faculties suggestions.

ALTERNATIVE HYPOTHESIS (H_1)

H_1: There is Significant association between Gender and accepting & appreciating faculty's suggestions

LEVEL OF SIGNIFICANCE α=0.05

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.646[a]	12	.097
Likelihood Ratio	21.732	12	.041
Linear-by-Linear Association	4.954	1	.026
N of Valid Cases	110		

Interpretation:

From the above table the calculated value is (0.097) which is greater than the level of significant (0.05) [0.097 > 0.05]. Therefore we accept the Null Hypothesis {H_0} and reject the

Alternative Hypothesis {H_1}. Hence there is no significant association between Gender and accepting & appreciating faculty's suggestions

Chi-Square Analysis Between Educational Qualification And Motivation To Attend Training, Conference And Fdps:

NULL HYPOTHESIS (H_0)

H_0: There is no significant association between Educational qualification and motivation to attend training, conference and FDP

ALTERNATIVE HYPOTHESIS (H_1)

H_1: There is significant association between educational qualification and motivation to attend training, conference and FDP

LEVEL OF SIGNIFICANCE α=0.05

Chi-Square Tests

	Value	D.f	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.646[a]	12	.027
Likelihood Ratio	21.732	12	.041
Linear-by-Linear Association	4.954	1	.026
N of Valid Cases	110		

a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .33.

Interpretation:

From the above table the calculated value is (0.024) which is lesser than the level of significant (0.05) [0.084 > 0.05]. Therefore we reject the Null Hypothesis {H_0} and accept the Alternative Hypothesis {H_1}. Hence there is significant no association between educational qualification and motivation to attend training, conference and FDP

ANOVA

AGE AND AUTONOMY, EMPOWERMENT MOTIVATE THE EMPLOYEE

NULL HYPOTHESIS (H_0)

H_0 There is no variation between the age and feeling motivated due to Autonomy, Empowerment

ALTERNATIVE HYPOTHESIS (H_1)

H_1 There is a Variation between the Age and feeling motivated due to Autonomy, Empowerment

Age And Autonomyand Empowerment Motivate The Employee

	Sum of Squares	D.f	Mean Square	F	Sig.
Between Groups	11.419	3	3.806	3.267	.024
Within Groups	123.499	106	1.165		
Total	134.918	109			

Interpretation:

From the above table it is interpreted that the calculated table value is (.024) which is lesser than the level of significant (0.05) [0.024 < 0.05]. Therefore we reject the null hypothesis {H_0} and accept the alternative hypothesis {H_1}. Hence there is variation between the age factor and Autonomy and empowerment motivate the employee.

ANOVA

GENDER AND NUMBER OF CONFERENCES ATTENDED BY THE FACULTY IN A YEAR

NULL HYPOTHESIS (H_0)

H_0 There is no variation between the Gender and Number of Conferences attended by the faculty in a year

ALTERNATIVE HYPOTHESIS (H_1)

H_1 There is variation between Gender and Number of Conferences attended by the faculty in a year

Gender And Number of Conferences Attended By Faculty in A Year

	Sum of Squares	D.f	Mean Square	F	Sig.
Between Groups	11.419	3	3.806	3.267	.004
Within Groups	123.499	106	1.165		
Total	134.918	109			

Interpretation:

From the above table it is interpreted that the calculated table value is (.004) which is lesser than the level of significant (0.05) [0.004 < 0.05]. Therefore we reject the null hypothesis {H_0} and accept the alternative hypothesis {H_1}. Hence there is a variation between the gender and number of conferences attended by the faculty in a year.

Findings

- Majority 58% of the respondents belongs to Male category
- 26% of the respondents are in the age of 36- 40yrs.
- Majority of the respondents are having below 2-5 years of experience.
- There is no significant association between Gender and accepting & appreciating faculty's suggestions
- There is no significant association between educational qualification and motivation to attend training, conference and FDP
- There is no variation between the age factor and Autonomy and empowerment motivate the employee.
- There is a variation between the gender and number of conferences attended by the faculty in a year

- There is a positive Correlation relationship between Age and Monthly Income. When the age of the person increase Monthly Income also increase
- There is Positive Correlation relationship between Experience and Monthly Income. When the Experience of the person increase Monthly Income also Increases

Suggestions:

- Faculties can be involved in joined decision making process which gives them an Autonomy and Empowerment to work
- The organization should have to consider their salary & statutory benefits. Which serves as a biggest motivation for the employee
- The organization should train up the employee which gives them more empowerment
- The Educational institution must recognize and appreciated the employee's contribution. Which would helps the employee to achieve greater avenue
- Institution can support the professional learning community for the faculty

Conclusion:

Inspiration and commitment of employees to their work is regarded with high esteem in organizations. This is because inspiration and commitment play a very significant role in determining the performance of employees. The level of commitment and inspiration of employees in organizations are functions of employee motivation and it will help to do better performance in their work. Since the role that motivation plays in an organization is unquestionable, its application becomes the challenge since the concept is quite complex. In order to motivate employees in a company or organization, it is imperative that the needs of employees are identified. Many theorists have come up to highlight the needs of employees at work place. Maslow list the needs of employees in an organization in a given hierarchy which include security needs, social needs, psychological needs, esteem needs and self actualization needs. More than all the above mentioned need employees of all the business irrespective of their position are expected to get more empowered .Empowerment is not just giving them autonomy to work but to give them a space to communicate, reward them in all their achievement and to give sufficient training whenever an need arise.

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A Review on Synthesis and Characterization of Zno Nanoparticles

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Abstract:

All research paper I have studied in during 6 month and finalized these review paper. Zinc oxide is an inorganic compound and usually appears as a white powder. It also called a multifunctional material because of to its unique physical and chemical properties. Zinc oxide nanoparticles were successfully synthesized by a sol-gel method, precipitation method, green leaf extract, and microwave method, wet chemical and hydrothermal method. Different compositions of zinc oxides nano composites were characterized using X-Ray Diffractometer and Photoluminescence Spectrofluorophotometer studies. The X-ray diffraction studies reveals that the synthesized ZnO nanoparticles have wurtzite structure and the particle size varies from 20 to 30 nm.TheZnO nanoparticles were prepared by two different methods where the size of the particles formed were found to be 320 nm and 559 nm studied by the particle size analyzer. The XRD patterns of these sample revealed that the required phase is present with a little amount of impurities. The particle size measurement which was done by particle analyzer was supported by the XRD Scherer's formula. Crystalline oxide powders, combined with other materials, provide possibilities for obtaining improved chemical, mechanical, optical or electrical properties.

Keywords: Nanoparticles, zinc oxide (ZnO), synthesis, characterization

1. Introduction:

Nano means one-billionth, thus nanotechnology deals with materials measured in a billionth of a meter. A nanometer is 1/80,000 the diameter of a human hair or approximately ten hydrogen atoms wide. Nanotechnology is the science of very small things. But nanotechnology is not just involved with small things. Nanotechnology is a multi-disciplinary science. It includes knowledge from biology, chemistry, physics and other disciplines. Nano technology as the manipulation or self-assembly of individual atoms, molecules or molecular clusters into structures to create materials devices with new or vastly different properties

Zinc oxide is an inorganic compound with the formula ZnO. It usually appears as a white powder, nearly insoluble in water. The powder is widely used as an additive into numerous materials and products including plastics, ceramics, glass, cement, rubber (e.g. car tyres), lubricants, paints, ointments, adhesives, sealants, pigments, foods (source of Zn nutrient), batteries, ferrites, fire retardants, etc. ZnO is present in the Earth crust as a mineral zincite; however, most ZnO used commercially is produced synthetically.

Zinc oxide, with its unique physical and chemical properties, such as high chemical stability, high electrochemical coupling coefficient, broad range of radiation absorption and high photo stability, is a multifunctional material. In materials science, zinc oxide is classified as a semiconductor in group II-VI, whose covalence is on the boundary between ionic and covalent semiconductors. A broad energy band (3.37 meV), high bond energy (60 meV) and high thermal and mechanical stability at room temperature make it attractive for potential use in electronics, optoelectronics and laser technology.

Methodology:

1. **ZnO Nanoparticles synthesis by Precipitation method:**

Zinc sulfate (1.5 mol/l) and ammonium bicarbonate (2.5 mol/l) were prepared in distilled water and 100 ml ZnSO4 solution was added to 126 ml NH4HCO3 solution while stirring and the reaction mixture was kept at 45 °C. The slurry of basic zinc carbonate (BZC) in the form of a white precipitate was obtained. It was then filtered, washed and dried. Finally zinc oxide nanoparticle was prepared by calcining the precipitate at 500 °C for 1 hour. In this process, the reaction of Zn ions and ammonium acid carbonate proceeds according to the equation 1.

$$5ZnSO_4 + 10NH_4HCO_3 \longrightarrow Zn5\,(OH)_6\,(CO_3)_2\,(S) + 5\,(NH_4)2SO_4 + 8CO_2\uparrow + 2H_2O \ldots. (1)$$

The complex formed decomposes upon calcining to ZnO according to the equation 2.

$$Zn5(OH)_6(CO_3)_2 \longrightarrow 5ZnO + 2CO_2\uparrow + 3H_2O\uparrow \ldots. (2)$$

1. **ZnO Nanoparticles synthesis by Green method:**

Janjal*et al.* (2017) reported that zinc oxide nanoparticles were prepared by leaf extract of guava plant. For Preparation of leaf extract of guava plant: The leaves of guava (10 mg) were thoroughly washed, dried and then boiled in 100ml distilled water for 15 min. The resultant extract was cooled, filtered using Whatman No. 1 filter paper and used as the extract solutions. In this method, 0.02 M solution of zinc acetate (50ml) was taken and 2ml leaves extract was added drop-wise and the resulting mixture was stirred for 10 minutes. The pH of the mixture was maintained at 12 by adding 1M NaOH drop-wise and the solution was stirred continuously for 2 hr. A pale white precipitate resulted which is washed by distilled water 2-3 times followed by ethanol, filtered and dried at 500C overnight in oven. Pale white powder of zinc oxide nanoparticles was store for characterization. *Coriandrumsativum*leaf was used for the synthesis and characterization of ZnO nanoparticles prepared by green and chemical technique. The average size was found to be 66 nm in green synthesis method while the size was 81nm in the chemical method. The ZnO nanoparticles prepared from *Coriandrum*leaf extract were expected to have more extensive application in biotechnology, sensors, medical, catalysis, optical devices, DNA labeling, drug delivery and water remediation (Gnanasangeetha and Thambavani, 2013) [14]. The antibacterial activity towards human bacterial and plant pathogens showed good sensitivity towards the green synthesized ZnO-NPs at all concentrations. The size of the particles ranged from 100 to 200 nm. The study indicated that the *C. proceraZnO* nanoparticles had strong antimicrobial activity against the tested human and plant bacterial pathogens along with the fungal pathogens (Poovizhi and Krishnaveni, 2015) [22].

Bala*et al.* (2015) [4] reported the synthesis of Zinc oxide nanoparticles from the leaf extract of *Hibiscus subdariffa.* The synthesized ZnO nanoparticles had potential anti-bacterial agents which have been studied on *Escherichia coli* and *Staphylococcus aureus*. The Zinc oxide nanoparticles were synthesized from the leaf extract of Tanners cassia (*Cassia auriculata*). The synthesized Zinc oxide nanoparticles were confirmed by SEM, UV- Vis Spectrophotometer and FTIR. The SEM studies revealed that the synthesized ZnO-NPs were spherical in shape (Ramesh *et al.,* 2014a) [23]. The Zinc oxide nanoparticles were synthesized with the leaf extract of green tea (*Camellia sinensis).* The whole plant body of *Brassica oleraceae*had possessed aphrodisiac activities, and it had a significant role in maintaining maleness. The nanoparticles showed antibacterial activity against both Gram-positive and negative bacteria. The antibacterial

activities increased as the concentration of Zinc oxide nanoparticles increased. The synthesized Zinc nanoparticles were applied on *Arachishypogaea*L (peanut) pot-culture to estimate soil microbial population, soil exo-enzyme activities and physiological growth parameters of the peanut plants. Zinc nanoparticles applied to the peanut pot-culture exhibited good soil microbial and enzyme activities by showingsignificant variations compared to the control and enhanced the physiological growth parameters of peanut plants (Sindhura*et al.,* 2015) [32].

The Zinc oxide nanoparticles were synthesized with the leaf extract of *Aloe vera.* The particles were a hexagonal shape with an average size of 22.18 nm. Photodegradation and antibacterial activity of the nanoparticles were studied. The antibacterial studies of synthesized nanoparticles showed sensitivity to both Gram positive and Gram negative bacteria (Varghese and George, 2015) [38]. The green synthesis of Zinc oxide nanoparticles by using peel extract of *Punicagranatum*. The flower extract of *Trifoliumpratense*was used for the synthesis of Zinc oxide nanoparticles. The synthesized ZnO nanoparticles were agglomerated with a particle size ranging from below 100 to 190 nm. ZnO nanoparticles synthesized from *T. pratense*flower extract showed effective antibacterial activity against all tested strains (Dobrucka and Dugaszewska, 2015) [12]. The Synthesis of Zinc oxide nanoparticles with the milky latex extract of *Calotropisprocera.* The morphology of ZnO NPs embedded in *calotropis*matrix with little agglomeration having sizes about 5 nm throughout the carbon coated copper grid, and average particle size was in the range of 5-40 nm (Ravindra*et al.,* 2011) [27].

2. ZnO Nanoparticles synthesis by Wet chemical method:

The Synthesis of zinc oxide nanoparticles by wet chemical method using zinc nitrate and sodium hydroxides precursors and soluble starch as stabilizing agent. Different concentrations of soluble starch (0.1%), were dissolved in 500 ml of distilled water by using microwave oven. Zinc nitrate, 14.874 g (0.1 M), was added in the above solution. Then the solution was kept under constant stirring using magnetic stirrer to completely dissolve the zinc nitrate for one hour. After complete dissolution of zinc nitrate, 0.2 M of sodium hydroxide solution was added under constant stirring, drop by drop touching the walls of the vessel. The reaction was allowed to proceed for 2 h after complete addition of sodium hydroxide. After the completion of reaction, the solution was allowed to settle for overnight and the supernatant solution was then discarded carefully. The remaining solution was centrifuged at 10,000 rpm for 10 min and the supernatant was discarded. Thus obtained nanoparticles were washed three times using distilled water.

Washing was carried out to remove the byproducts and the excessive starch that were bound with the nanoparticles. After washing, the nanoparticles were dried at 80°C for overnight. During drying, complete conversion of $Zn(OH)_2$ into ZnO takes place.Sivakumar*et al.* (2011) worked on biosynthesis of silver nanoparticles from AgNO3 solution and using *Calotrophis gigantean* leaf. In biosynthesis method *Calotrophis gigantean* leaf acted as a reducing agent. Vafaee*et al.* (2007) [37] workedon synthesis and characterization of zinc oxide nanoparticles using sol-gel method. By using this method they synthesized spherical shape ZnO nanoparticles. They utilized first time triethanolamine (TEA) as a surfactant. Yiamsawas*et al.* (2009) [41] prepared zinc oxide nanostructures by using solvothermal method. They utilized PVP, ethanol, and zinc acetate dehydrate. This entire chemical treated in sealed polypropylene vessel heated in autoclave.

Result & Observation:

1.According to Awwad*et al.,* 2014, the antibacterial activity towards human bacterial and plant pathogens showed good sensitivity towards the green synthesized ZnO-NPs at all concentrations.The synthesis of Zinc oxide nanoparticles was reported with the leaf extract of *Oleaeuropea*. The average size of particles was found to be 500 nm and the thicknesses was about 20 nm by SEM studies. FT-IR analysis of aqueous *Oleaeuropea*leaf extract indicated the presence of phytoconstituents such as amines, aldehydes, phenols and alcohols which were the surface active molecules stabilizing the Zinc oxide nanosheets.

According to Bhumi*et al.,* 2014, the synthesized ZnO-NPs were evaluated for the antibacterial activity against *Bacillus thuringiensis*, *Escherichia coli, Staphylococcus aureus*and*Pseudomonas aeuroginosa.*The highest antimicrobial activity was observed against *Pseudomonas aeuroginosa*followed by *Staphylococcus aureus*(Bhumi and Savithramma, 2014) [5]. The synthesis of Zinc oxide nanoparticles with the leaf extract of *Adhatodavasica*. The Synthesized ZnO-NPs were found to be discoid in shape with an average size of 19 - 60 nm. Phytochemicals present in the plant were responsible for the quick reduction of Zn+ ion to metallic Zinc Oxide nanoparticles.

According to Sindhura*et al.,* 2015, The particles were spherical and sheet shape. The experimental results showed that the diameters of prepared nanoparticles in the solution had sizes between 1 and 100 nm. The whole plant body of *Brassica oleraceae*had possessed aphrodisiac activities, and it had a significant role in maintaining maleness. The nanoparticles showed antibacterial activity against both Gram-positive and negative bacteria. The antibacterial activities increased as the concentration of Zinc oxide nanoparticles increased

2. According to Raut and Thorat2015studied on preparation, characterization and application of zinc oxide nanoparticles by leaves extract solution and boiled upto 600-80 0C by using a stirrer-heater. When temperature of solution reached at 60 0C then 5 grams of $Zn(NO_3)_2$ were as added to the solution. The mixture was then boiled upto reduce to a deep yellow coloured paste. This paste then collected in a ceramic crucible. This paste heated in an air heated furnace at 300 0C for 120 min. A light yellow coloured powder was prepared and this was carefully collected. The powder was mashed in a mortar-pestle so as to get a finer nature for characterization.

Conclusion:

Zinc oxide is a multifunctional material because of its many interesting properties (piezo- and pyroelectric), a wide range ~ 1100 ~ of UV absorption, and high photostability, biocompatibility and biodegradability. ZnO can also be obtained with a variety of particle structures, which determine its use in new materials and potential applications in a wide range of fields of technology. Zinc oxide nanoparticles were synthesized by different methods such as wet chemical method,sol-gel method, green leaf extract methodand UV. The crystallite size of the prepared zinc oxide nanoparticles varies from 25-30 nm. All the prepared nanoparticles showed wurtzite structure.

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Antagonism of Microbial Flora Isolated from Garden Rhizospheric Soil

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Abstract:

The microbes can have capacity inhibit the growth of other microbes for their own survival. The strategy of the microbes which makes them fittest for extreme conditions is its capacity to secrete some of the metabolites responsible for inhibitions of growth of other microbes we can say antibiosis. The phenomenon of these microbes helps to survive them in extreme conditions. For this purpose we have taken garden soil for the investigations and from this soil samples microbial flora were isolated and purified.

The isolated microbial cultures were tested against each other and we found very significant result. Initially we speeded soil samples after dilutions on agar plates we observed around 10 fungal cultures on PDA plates. Further among 10 cultures we got three pure cultures showing positive antagonistic activity against each other. We further calculate activity of antibiosis and we found in multifold inhibitions. From microscopy under light microscope we found that the green spore mat appear similar to Penicillium digitatum, black fungal spore mat similar to Aspergillus niger, while brown fungal spore mat appears to be as blood fungi also known as Tinea versicolor.

Keywords: Antagonism, Rhizosphere, fungal culture

Introduction:

The microbes or pathogens are one of the members of natural soil flora. These microbes are present normally in rhizosphere, which helps crop plant to prevent their predators (George et al., 2002; Reynolds and Barrett, 2003; Gerba and Smith, 2005; Arnone and Walling, 2007). The microbes are important biotic factor of ecosystem and govern distinct functional traits with respect to ecological principles. For the microbes, it is better to compete with other microbes for food and nutrients for their own survival. For the maintenance of microbial communities, microbes start secreting some biomolecules which makes unfavorable conditions for the survival of other microbes like that of antibiosis (Garcia-Bayona and Comstock, 2018). The fittest microbes create interference competition, which harms other microbes.

This phenomenon helps in maintenance of plant health, crop productivity and preservations of functions of ecosystems. Microbes to microbes or organisms to organism there are several interactions within the same community like synergistic and mutualistic in which one organisms helps in the survival of other organisms. Other interactions involved antagonistic or parasitism where one organism is benefitted while one is harmed. These characteristics of microbes exploited in biocontrol of plant pathogens. This effect of antagonism can enhance the biocontrol of plant pathogens or disease causal organisms which helps in the integrations of green farming. Microbes to adapt the characteristics of antagonisms need to have several interactions with other microbes like pathogens. The microbes possessing the characteristics of antagonisms also have the capability to detoxify, can repressed the genes of biocontrol, can actively efflux biomolecules like antibiotics and have antibiotic resistance too (Duffy et.al. 2003).

Materials and Methods:

To find the mechanisms of antagonism in soil micro flora, we have taken soil sample rhizosphere of garden plants and try to effect of antibiosis. The secondary metabolites or chemicals secreted by plants or microbes prevents attack some of the pathogenic microbes or animals. Soil samples were collected from different locations of garden rhizosphere soil. The collected samples were serially diluted and further inoculated on agar plates by spread/streak plate techniques. During the isolation we got numerous fungal and bacterial species and we observed more zone of inhibitions around fungal species so further we have taken these fungal species on Potato Dextrose Agar plates. These isolated species were thought to be secreting extracellular biomolecules which are responsible for antibiosis, hence we have mass cultivated isolated fungal species and extracellular biomolecules were collected by removing biomass through centrifugations. The collected extracellular extract further tested for antimicrobial activity against each other and other bacteria.

Media:

Different types of media were used for selective growth, enrichment culture, and indication of specific properties. Media preparation and sterilization were done according to the protocol and standard recipe.

Sample collection:

Soil samples were collected from nearby rhizosphere sites of School of Life Sciences, Campus and from collected sample numerous fungi were isolated and identified.

Assessment of increase in fold area:

The increase in fold area was assessed by calculating the mean surface area of the inhibition zone of each fungal extract along with distil water as the solvent by using the formula (B2 – A2)/A2, where B is extract in solvent, A is pure solvent (water).

Results and Discussion:

The rhizosphere soil samples were taken from different locations or sites of School of Life Sciences (Fig. 1). Soil samples taken were serial diluted and spread on agar plates for their isolations. During isolations we observed several fungal species are showing antagonistic properties. Further such microbes we purified and tested for antimicrobial properties and we found positive results for the same and found enhanced antimicrobial activity with respect to the solvents.

Figure 1: Collection of rhizosphere soil from different sites of School of Life Sciences.

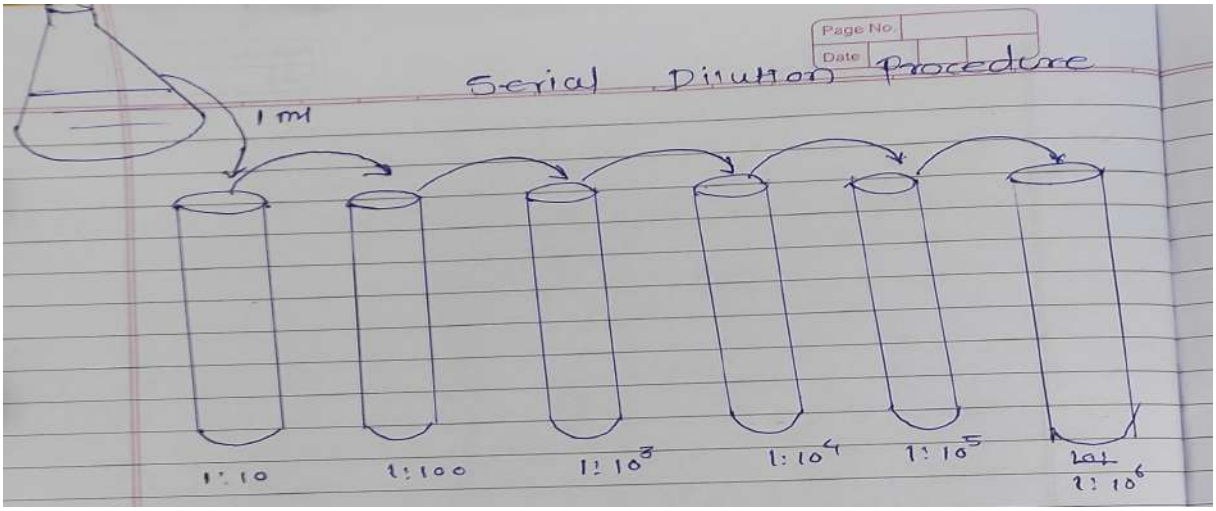


Figure 2: Serial dilutions of collected soil samples in saline water.

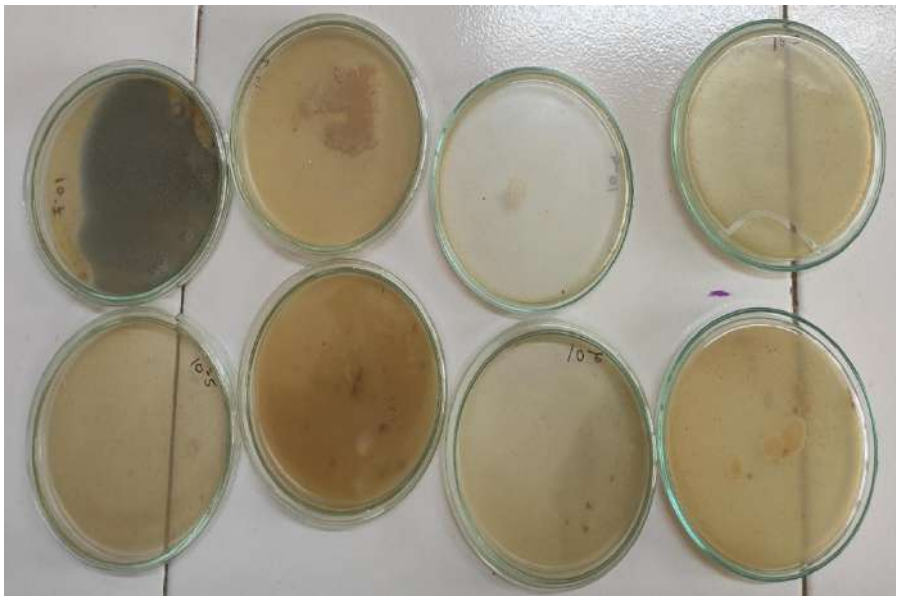


Figure 3 Cultures obtained after serial dilutions and further isolated it.

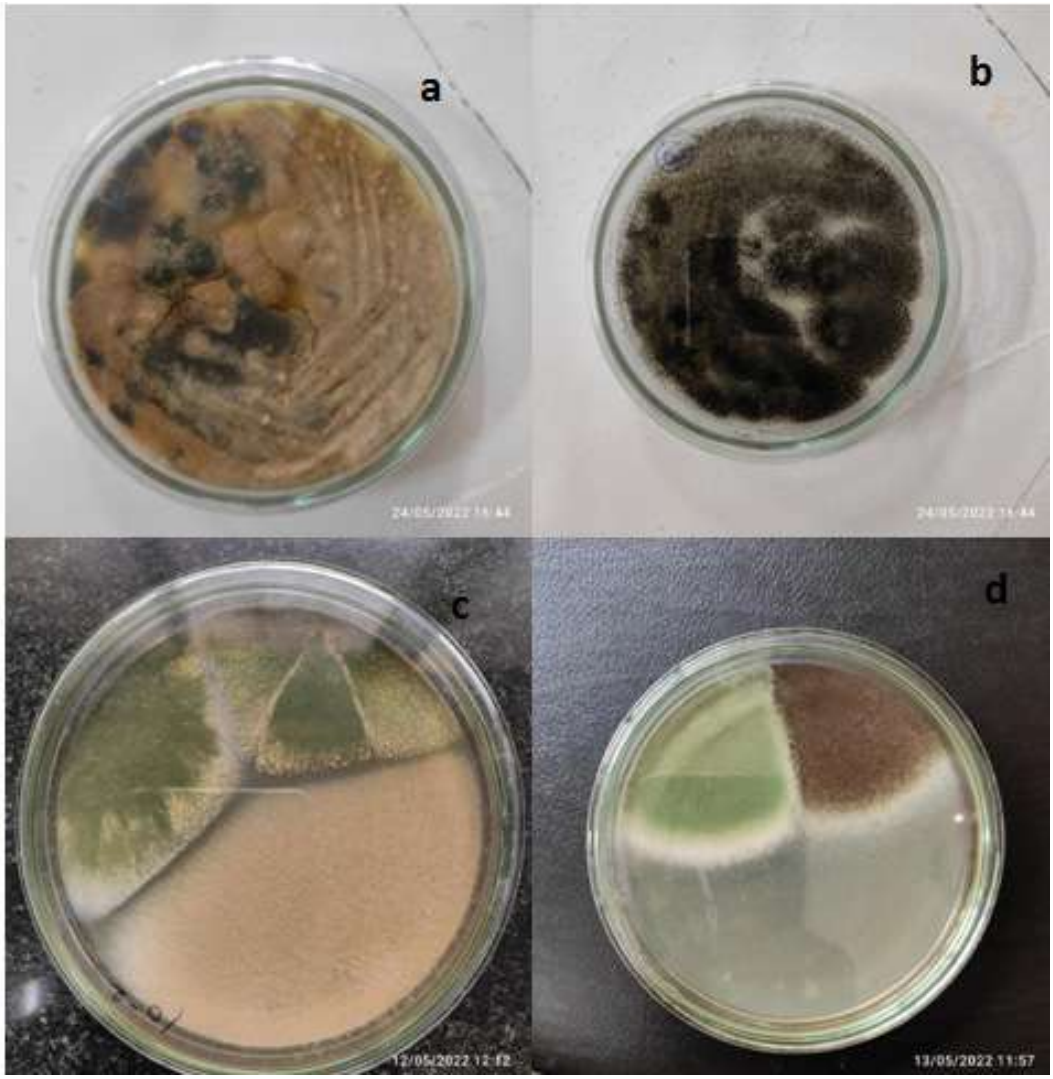


Figure 4: a, b: isolation of fungi from soil samples, c & d fungal cultures had shown antagonism.

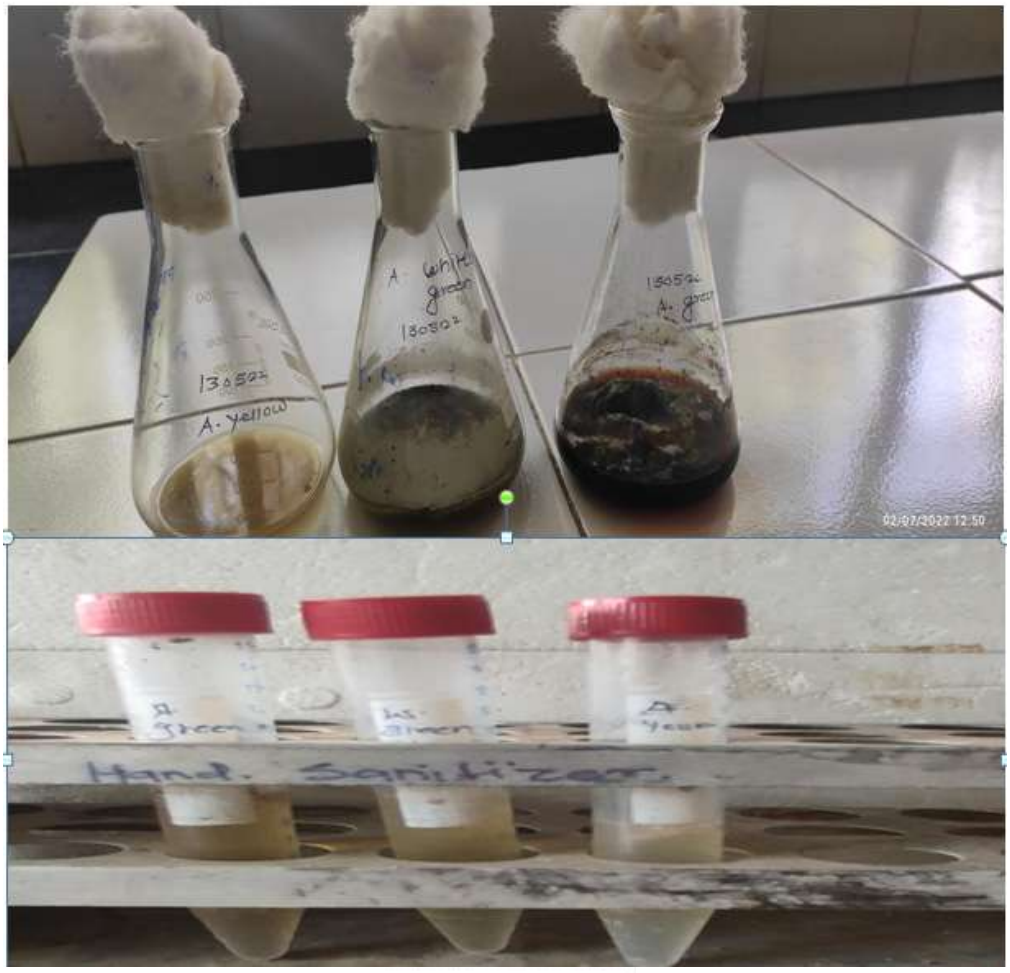


Figure 5: Purified fungal cultures, isolated from soil samples.

Table 1: Antimicrobial or antagonism shown by experimental fungi in fold activity

Sample	Experimental fungi	Control	Fold activity
1	12	08	1.25
2	09	07	0.65
3	11	07	1.46
4	12	09	0.49
5	10	06	1.49
6	12	07	1.93
7	13	06	1.69
8	13	07	2.44
9	09	06	1.25
10	10	07	1.04
11	12	06	3
12	13	06	3.69
13	13	08	1.64
14	13	09	1.64

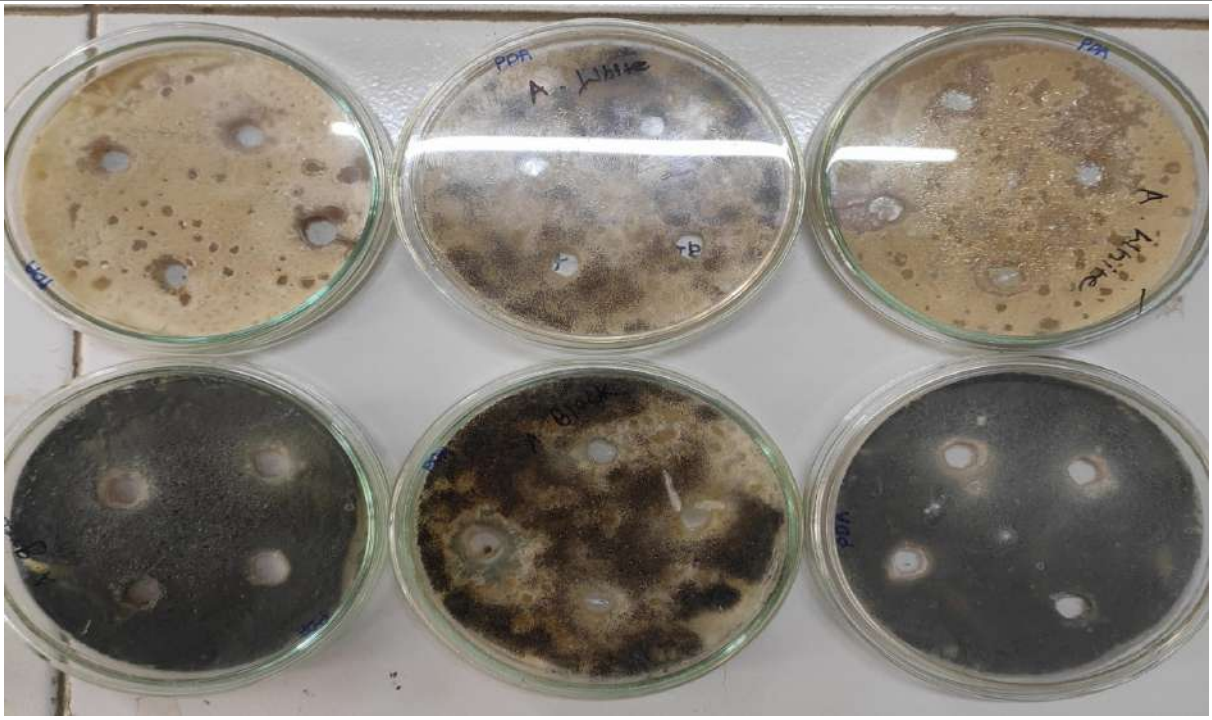


Figure 6 : Antimicrobial activity shown by isolated fungal cultures

The fungal spores or cultures isolated from soil samples were tested against each other to find antimicrobial or antagonism. In this experiment we detected very significant results and we observed clear zone between to fungal mat. Further these cultures when tested for antimicrobial activity we found multifold inhibition activity against fungi and bacteria (Table 1). In this investigation, we are particularly looking some of the compounds which are responsible for growth inhibitions of plant pathogens. We can see with modern agriculture, we are exploiting farm field for production enough amount food as the population day by day increasing. To get higher yield, we are using synthetic fertilizers, to prevent loss of crop yield by pathogens and pest we are applying enormous of biopesticides. After the use of these synthetic materials, they are not easily degraded or we can say their half time is very long, so can face its remnant and products on farm field. These remnants and products after some time makes fertile farm land into sterile one, where we cannot take any sort of crop or food.

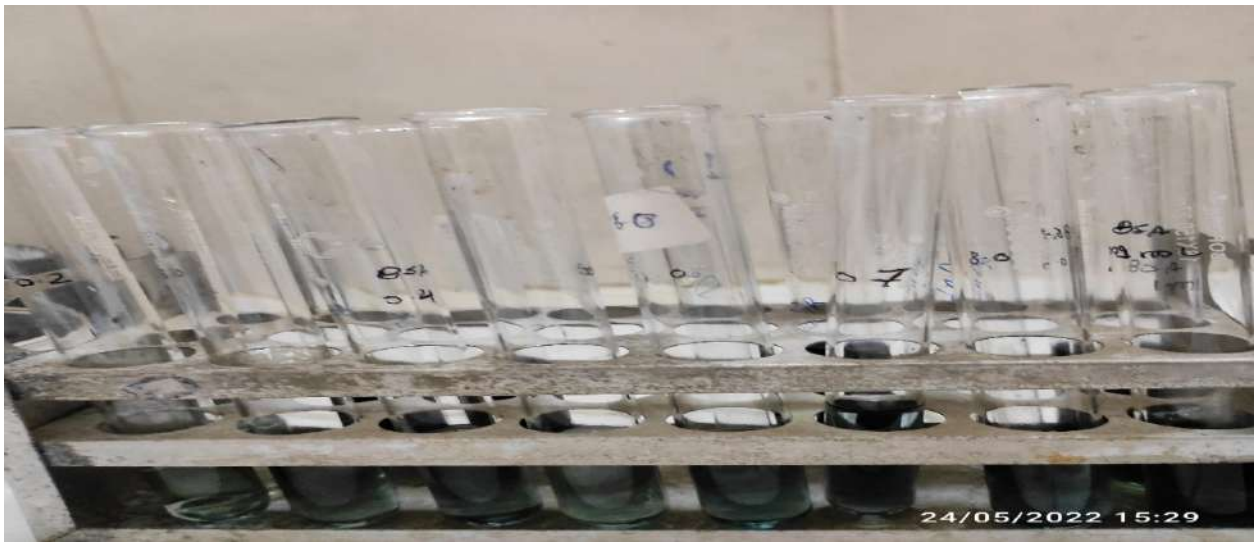


Figure 7: Protein estimation in purified fungal cultures

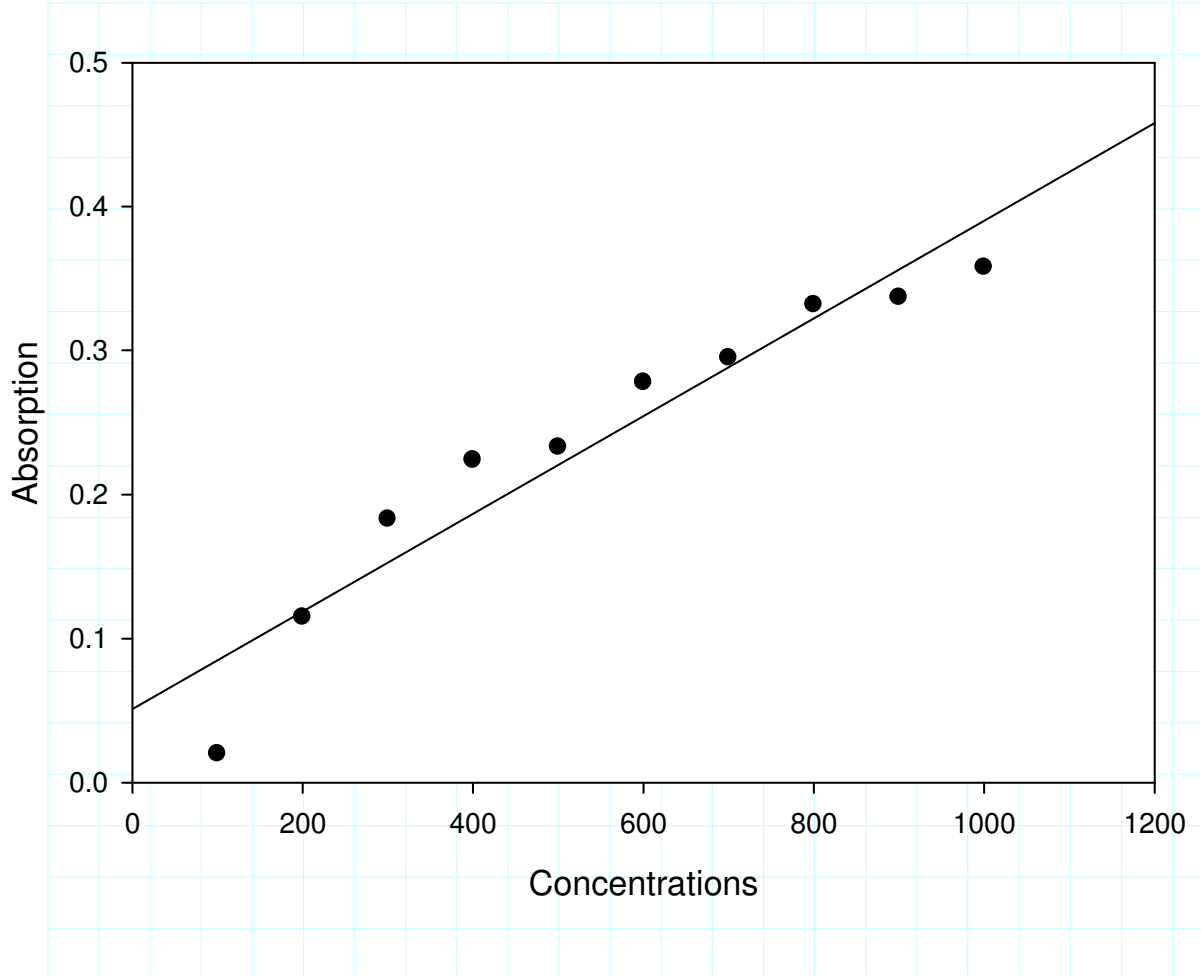
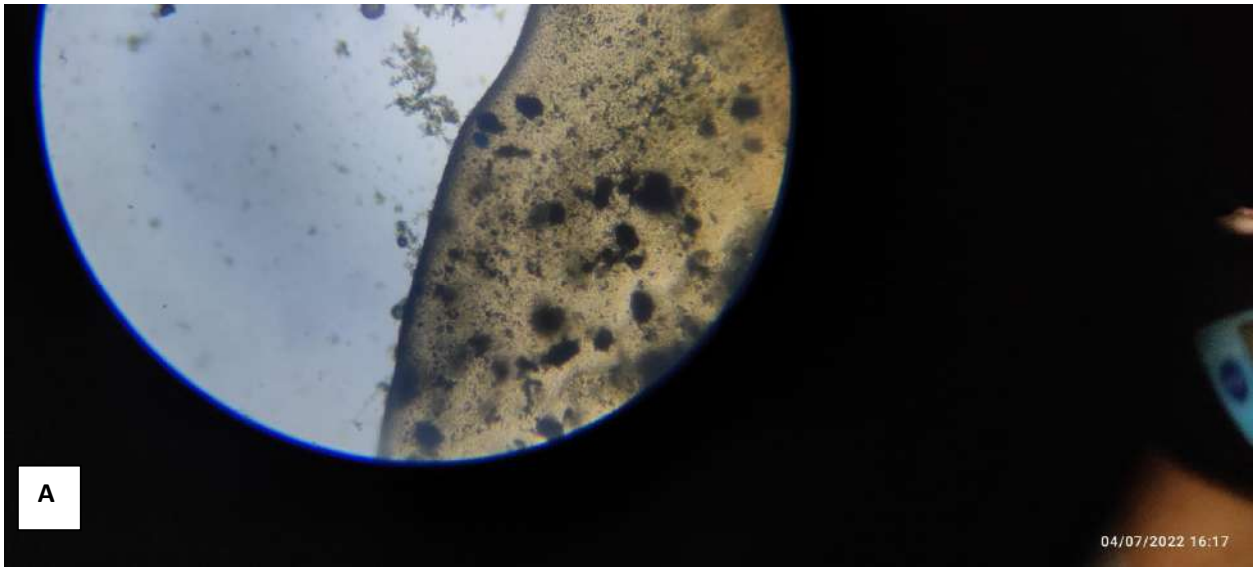


Figure 8: Standard graph for protein estimations

In present investigations we have estimated protein samples by taking bovine serum albumin as the standard protein. And we have found that the microbes or fungi having higher antimicrobial or antagonism are having good contents of protein.



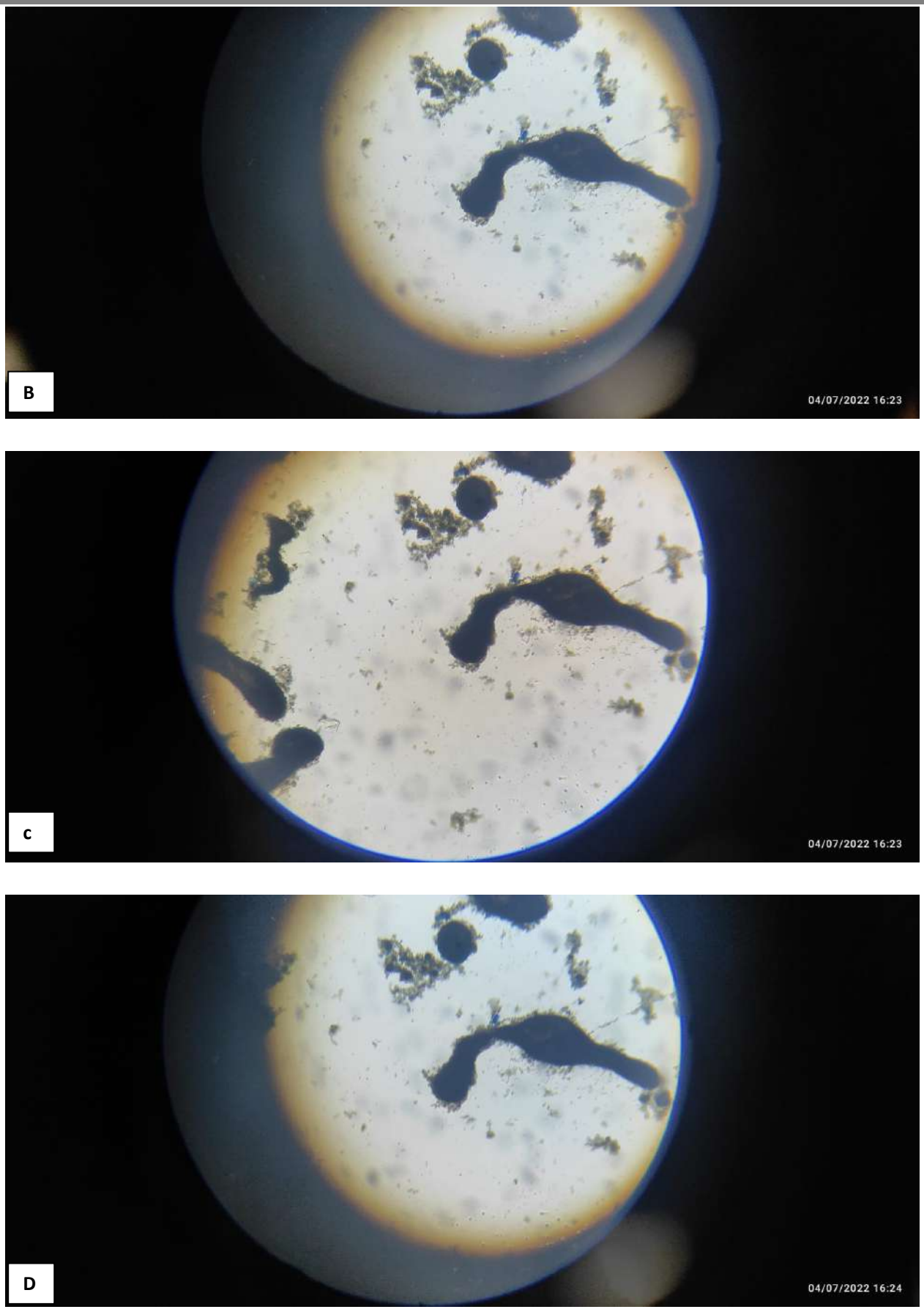


Figure 9: (A-D) Microscopic identifications of fungal spores isolated from soil samples.

From microscopy under light microscope we found that the green spore mat appear similar to *Penicillium digitatum*, black fungal spore mat similar to *Aspergillus niger*, while brown fungal spore mat appears to be as blood fungi also known as *Tinea versicolor*.

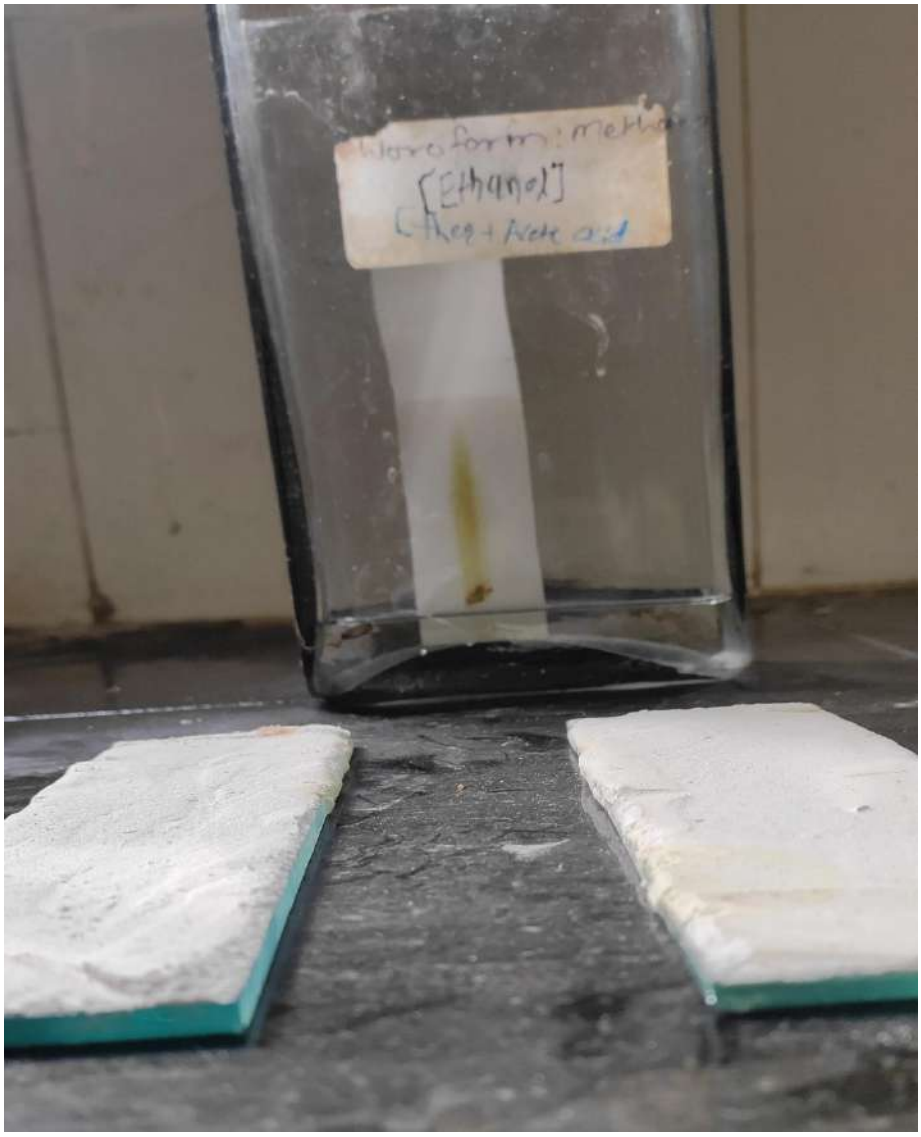


Figure 9: Extracellular components obtained from purified fungi were characterized by Thin Layer Chromatography.

Conclusion:

In the presence on sort of organisms, other organisms cannot be able to survive is supposed to antibiosis. This sort of phenomenon also called as antagonism. Here we can use this sort of phenomenon for the increment in crop yield and for formulations of biopesticides. We can see, if you use such microbes through which we can prevent the growth of pathogenic microbes.

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Synthesis, Characterization of Fe_3O_4@ Sio_2 Andit's Application for Removal of Methylene Blue Dye

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Abstract-

In this study, we successfully synthesized core shell structured Fe_3O_4@SiO_2 nanocomposites by microwave assisted solvothermal method using sodium silicate (Na_2SiO_3), which is more suitable than the conventional silane precursorTEOS (tetraethyl orthosilicate). In the process of surface coating of particle to form a core–shell structure with Fe_3O_4, the Na_2SiO_3 was neutralized with aq. HCl to form silane groups, and the resulting silane groups combined with hydroxyl groups (OH^-) present on the surfaces of the Fe_3O_4 nanoparticles. Then, the Fe_3O_4 nanoparticles and Fe_3O_4@SiO_2 composite nanoparticles were characterized by using X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR), scanning electron microscope (SEM). The SEM and PXRD results show that the synthesized nanocomposite has a semispherical structure with an average particle size of 16-20 nm and excellent magnetization properties (27.9 emu/g). The synthesised Fe_3O_4@SiO_2 nanocomposites also aiming to remove methylene blue (MB) from aqueous solution. This adsorbent combined the magnetic property of magnetic Fe3O4 with the strong adsorption performance on methylene blue. The adsorbent exhibited a typical superparamagnetic, which could be rapidly separated from aqueous solution under external magnetic field. When the initial concentration of MB was 24 mg/L, the maximum adsorption capacity of methylene blue at room temperature was 30.14 mg/g within 30 s at pH 11.

Keywords: Fe_3O_4, Fe_3O_4@SiO_2, structure, nanocomposite, Microwave, methylene blue.

I. Introduction:

In the recent decan, with the development of industrial production, environmental problems have become one of the one of the most challenges facing mankind in this century. Nowadays, organic dyes are one of the most dangerous and serious environmental pollutants [1]. These dyes and their degradation species are toxic in nature, which are regarded as primary cutthroat for potentially carcinogenic and mutagenic effects on human beings [2–5]. For example, methylene blue (MB), a kind of synthetic basic dye, has been widely applied in textiles, tannery, plastics, paper, and paints [6]. However, MB can cause skin irritation, allergy, eye burns, and cancer in humans owing to its toxicity. Therefore, developing relevant methods and materials to remove MB efficiently have aroused considerable attention in the last few decades [7].

The various traditional methods are removed methylene blue such as chemical oxidation, membrane filtration, electrolysis and photocatalytic degradation. However, the traditional methods' conversion and utilization is endowed with two major technological challenges such as the high cost and strictly operation conditions [8-9].Compared with other methods, adsorption method is one of the promising approaches due to its high efficiency and economy.

Many of Researcher published their papers onmagnetic Fe3O4 can be used for wastewater purification, such as to adsorb arsenite, arsenate, chromate, cadmium, nickel. They are also used toalkalinity and hardness removal, desalination, decolorisationof pulp mill effluent and removal of natural organiccompounds.After adsorption, Fe_3O_4 can be separatedfrom the medium by a simple magnetic process. Thus, anefficient, economic, scalable, and nontoxic in nature. But however, due to the large surface energy of the magnetic nanoparticles, they may cause aggregation during catalytic reactions. These nanoparticles have another prone to oxidation in the air, which reduces their magnetic properties. Various studies have also proven that the magnetite nanoparticles without modification have low thermal stability, low water solubility. This drawback can be overcome by using stabilizers for nanoparticles to be used as acoating or supported. The main function of these support of coating is to control the particle size, morphology and dispersion of nanoparticles [8-9]. Therefore, Magnetite (Fe_3O_4), they must be functionalized by various polymers [10], silica [11,12], and metals [13].

Various chemical methods including microemulsions [16], sol-gel syntheses [17], sonochemical reactions [18], hydrothermal reactions [19], hydrolysis and thermolysis of precursors have been used to synthesize Fe_3O_4 magnetic nanoparticles. In the specific synthesis of nanosheets, the methods of solvothermal process, solid-state thermal decomposition route, supercritical fluid technique and bottom-up technique have been attempted [20]. These synthesis methods are usually one-step reaction, and the surface modification procedure is incorporated with the synthesis of particles.

Several previous works, prove that the SiO_2 particles have been proven to be able to give protection to Fe3O4, moreover to the high toxicity properties [11,14]. Silicon is a biocompatible and one of the trace element in the human body and has been the subject of important research due to its distinctive structural properties such as large surface area and specific surface area [14]. Silica (SiO_2) is the stable in acidic conditions and has hydroxyl groups that bind magnetite to various biological ligands. Silica is non-toxic and used as a vitamin supplement and food additive [15].To optimize the structure, size and stability of the magnetic pores, the surface must be modified by adding a silica template (SiO2) so that the size and pore can be more controlled.The combination of Fe3O4 and SiO2 in the nanocomposite system has more advantages such as having biocompatibility, high biostability, and excellent response in catalyst & adsorption. Hence, the selection of synthesis method and the materials for synthesis become difficult to improving the performance of Fe_3O_4/SiO_2 nanocomposites.

The objective of this study, we used microwaveassisted solvothermal reductionsynthesis method of synthesis of Fe_3O_4 and $Fe_3O_4@SiO_2$NPs and study their structure by itscharacterization of using various analytical methods such as X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR), scanning electron microscope (SEM) and vibrating sample magnetometer (VSM).

In the present work our intended is to develop a simple, rapid and cost-effective method for the surface modification of Fe_2O_3 NPs by mesoporous silica with high specific surface area using an inexpensive source of silica source as sodium meta silicate. In this study, we also study an approach of methylene blue (MB) removal from wastewater using $Fe_3O_4@SiO_2$.

II- Methodology:

2.1 Chemicals-

Ferric chloride hexahydrate (FeCl3·6H2O), ferrous sulfate heptahydrate ($FeSO_4$·7H2O), sodium hydroxide (NaOH), hydrochloric acid (HCl, 34.5 %), and sodium meta silicate (Na_2O_3),

were purchased from sigma-aldrich chemical co. ltd. Ethanolwas purchased from Loba chemicals co.ltd.All chemicals mentioned above were of the A.R. Grade and used without further purification.Demineralised water was used in all experiments.

2.2 Synthesis of Fe_3O_4-

Magnetic nanoparticles (Fe-NPs) were prepared by using prevision which is slightly modified the solvothermal reductionmethod [21]. Two solutions were prepared to synthesize the nanoparticles as follows. For solution 1, 5 mM $FeSO_4$. $7H_2O$ (1.39g)were dissolved in 50 mL of distilled water and for solution 2, 10 mM $FeCl_3.6H_2O$ (2.76 g) were dissolved in 50 mL of distilled water. Both solutions 1 and 2 were combined in 250 mL R.B. and then in this solution add 50 mM mercaptoethanol. This mixture placed inmicro-oven at 80 $^oC$for 2 min at 560 w pawer with continuous stirring. The pH of solutions was adjusted to 10 by the dropwise addition of NH4OH (25%) along with continuous stirring until the solution become black. Then again solution placed in heat in the micro-oven at 80 ^oC for 2 min at 560 Wpawer. The resulting magnetic NPs was collected using external magnet. After separation, nanoparticles were washed five times with ethanol and then with distilled water, followed by drying overnight in an oven at 80 ^oC.

2.3 Preparation of sodium silicate solution

The weighed 10 grams of sodium meta silicate (Na_2O_3) and add it into 100 mL of 4MNaOH solution in Conical flask. Then this solution was placed in sonication bath for 20 min make it homogeneous. Then solution is filtered and the filtrate is taken. Theresulting filtrate is a sodium silicate solution which is used to make for further.

2.4 Synthesis of core–shell Fe_3O_4@SiO_2 –

Fe_3O_4@SiO_2core-shell nanoparticle was synthesized by slightly modified Stöber method [22]. 0.2 g Fe_3O_4NPs and mixture solution containing 80 ml ethanol and 20 ml deionized water were dispersed in an ultrasonic bath for 30 min to make the homogeneous solution. Then, sodium hydroxide (1 mL) and 2% solution of sodium silicate added drop by drop with constant stirring in above dispersion solution of Fe_3O_4 NPs and then this solution was placed microvan at 50 ^0C for 2 min at 560W Power. Then adjust the pH= 6 of mixture, by using 1 M HCl and the reaction mixture further heated in micro-oven at 50 ^0C for 10 min at 560W Power. Finally, the resultant Fe_3O_4@$SiO_2$was separated by an external magnet, washed three times with distilled water, and dried in an oven at 50 ºC.

2.5 Adsorption experiments -

All adsorption experiments were performed in 100 mL of plastic tubes containing 30 mL MB aqueous solution. The amount of Fe3O4@ SiO2 adsorbent was kept at 30 mg. After the solution pH was adjusted with negligible amounts of 0.1 mol/L KOH and HCl solutions to designated values, the suspensions were shaken at 298 K for 3 h. The effect of solution pH on the adsorption of MB was studied in the range of pH 2–11. The adsorption percentages (η%) and adsorption capacity (mg/g)) was measured by the amounts of MB adsorbed on Fe3O4@SiO2, which was calculated according to the equation as follows,

$$\eta\ (\%) = \frac{(C_0 - C_e)}{C_0} \times 100\ \% \qquad \text{……(1)}$$

$$q_e = (C_0 - C_e) \times \frac{V}{M} \qquad \text{……..(2)}$$

Where V (mL) is the volume of the MB dye, M (g) is the mass of Fe3O4@SiO2, and C_0 (mg/L) and Ce (mg/L) are the initial and the equilibrium concentrations of MB, respectively.

2.5 Characterization Techniques -

The obtained powder samples at were characterized by various sophisticated techniques were for identification of their structure and particle size.

2.5.1 Fourier transform infrared spectroscopy – Fourier transform infrared spectroscopy (FT-IR) spectra were obtained by using the Fourier-transform infrared (FTIR) analysis (Perkin Elmer - Spectrum RX-IFTIR). FT-IR spectra of the particles of samples were recorded by scanning the sample in the range of 400–4500 cm−1.

2.5.2 X-ray diffraction -The structure and phase of silica were examined by X-ray Diffraction (XRD) Cu K-alpha-1 where as nickel metal is used as beta filter with λ = 1.54060 Å.

2.5.3 Scanning electron microscopy and energy dispersive X-ray analysis –The morphology and elemental analysis of the sample were characterized by using Scanning ElectronMicroscopy (SEM) Carl Zeiss SMT Ltd., Zeiss EVO 18.

III. Results And Discussion:

3.1 Powder X-ray diffraction –

The The crystallinity of the synthesized samples was investigated with X-ray diffraction analysis (XRD). Fig. 1. shown XRD patterns of the Fe3O4. Six characteristic peaks at 30,2, 35,5, 43,3, 53,7, 57,2 and 62,9 were corresponding to the (220), (311), (400), (422), (440) &(511) crystal planes of a pure Fe_3O_4 with a spinal structure [17].

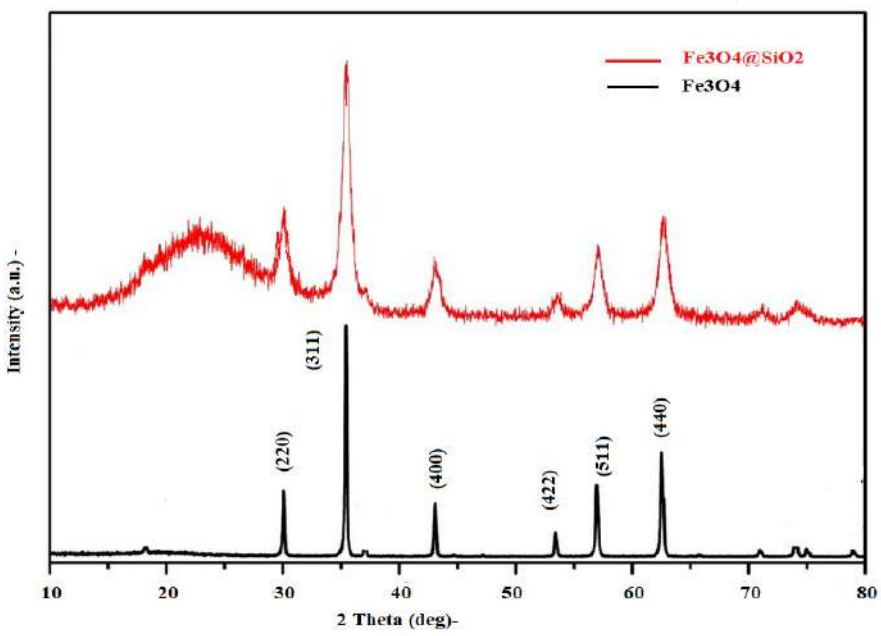

Fig. 1 XRD Pattern for synthesis samples Fe_3O_4 & Fe_3O_4@SiO_2

The peaks indicating that Fe_3O_4 with a spinal structure and no characteristic peak of impurities are detected in the XRD pattern.The highest intensity of diffraction peak (311) was analyzed using the Scherer equation (as shownin Equation 1) generated the particle sizes of 16 nm and 20 nm.

$$D = \frac{K\lambda}{\beta \cos\theta} \text{----------(1)}$$

where variable D is crystal size (nm), K is lattice constant (0.98), λ is wavelength (0.154 nm), β isfull width half maximum (FWHM) of the maximum intensity, and θ is Bragg peak angle.

3.2 **FT-IR analysis-**

FT-IR spectra analysis were used to identify the synthesized structure, and the results are shown in Figure 1. The broad peak at 3424 cm-1 and 1624 cm-1 are assigned to stretching and bending vibrations of the hydroxyl group of water, respectively. The characteristic peak for the vibration mode of the Fe-O bond of Fe3O4 is located at 565 cm−1 shown in the fig. 2. By comparing Figure 2, Fe3O4 & Fe3O4@SiO2 , we can be seen new peak around 1091, 950, and 799cm-1 in the FT-IR spectrum of $Fe3O4@SiO_2$, which is related to asymmetric stretching, symmetric stretching, and vibration modes of Si-O-Si bonds that indicate that the SiO_2 on the surface of Fe3O4 nanoparticles[3]

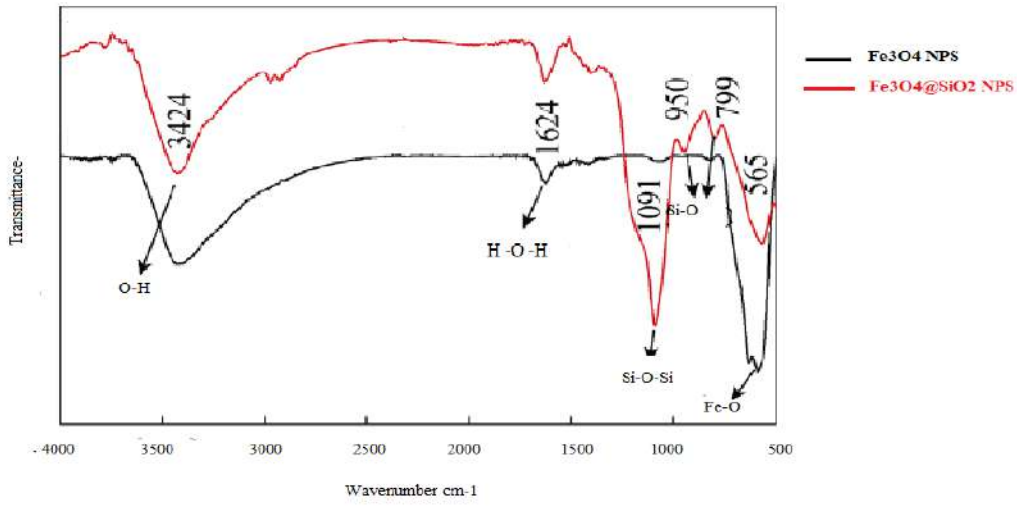

Fig.2 FT-IR spectra analysis

3.3 Surface Morphology (SEM) -

In order to investigate the morphology of prepared material, scanning electron microscopy (SEM) and the FTIR spectrum were employed to observe the surface morphology of Fe_3O_4, $Fe_3O_4@SiO_2$ NPS as shown in Figure 3. Based on the observation from SEM micrographs Fe_3O_4, $Fe_3O_4@SiO_2$ particles composed of small particle. A. shown the SEM image, the Fe_3O_4 nanoparticles were spherical, regular in shape, and uniform in size. The Fe_3O_4 nanoparticles were found to be approximately 16 nm in size, which was consistent with the results from the Scherrer equation based on the XRD data. Comparing Figs. 3(A)–(B), it is obvious that the Fe_3O_4 particles were coated with SiO2, as verified by FTIR analyses described in subsequent sections. The control of the monodisperse size is very important because the properties of nano crystal strongly depend upon the dimension of nanoparticles [24].

3.4 Magnetic properties –

A vibrating sample magnetometer (VSM) were used to investigate the magnetic properties of synthesized materials. As shown in Figure 4, magnetic hysteresis loops do not show obvious remanence or coercivity at room temperature, indicating that all samples Fe_3O_4 & $Fe_3O_4@SiO_2$have superparamagnetic properties. The magnetic saturation values (Ms) of Fe_3O_4 & $Fe_3O_4@SiO_2$ were 58.7, 27.9 emu/g, respectively. They decrease in the magnetic saturation values (Ms) value after coating confirms that it has been done successfully [23]. Fig.4 , shows the VSM measurements for analysing changes in magnetization caused by formation of the SiO2 layer on the surfaces of the Fe3O4 nanoparticles.

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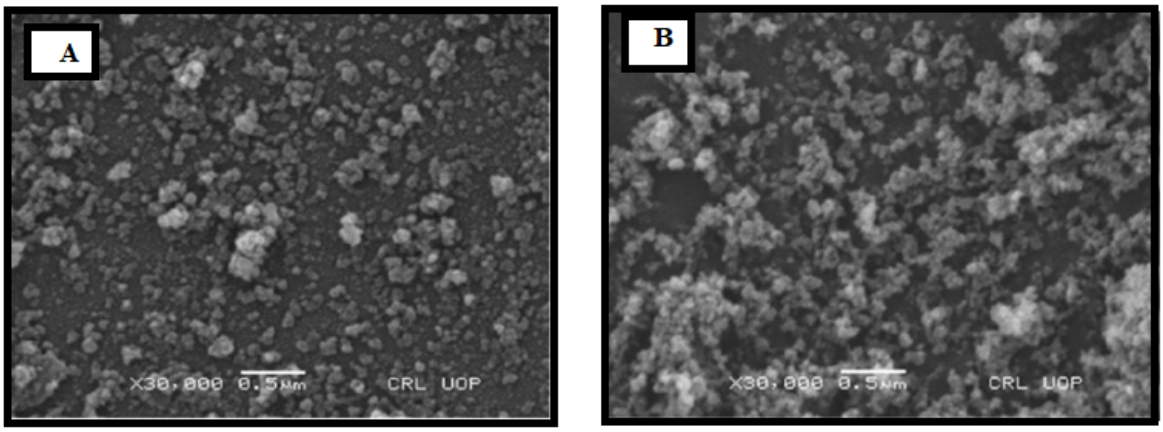

Fig.3 SEM micrograph of Fe3O4 nanoparticles (A) and Fe3O4@ SiO2 nanocomposites (B)

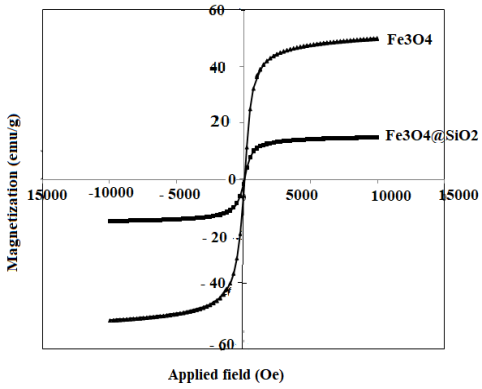

Fig. 4 Room temperature hysteresis loops Fe_3O_4 & Fe_3O_4@SiO_2 samples

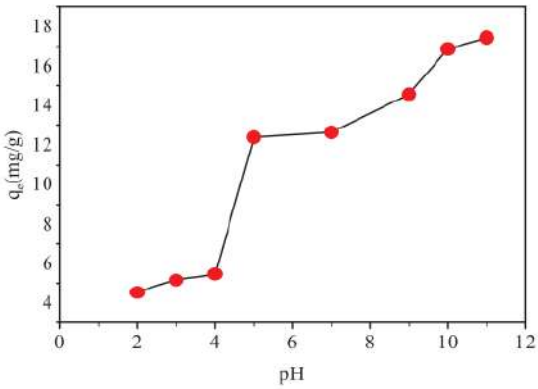

Fig. 5 Effect of initial solution pH on the and adsorption of MB by Fe3O4@SiO2, initial = 15 mg L–1 .at T = 298 K,

3.5 Effect of pH on the adsorption-

The effect of pH on the adsorption of MB on the prepared Fe3O4@SiO2- was investigated in the pH range of 2–11. The pH values were adjusted by HCl (0.1 mol/L) and NaOH (0.1 mol/L). As can be seen from Fig. 6, the adsorption capacity and dye removal rate increased with the increase of pH values from 2 to 11. The variation tendency is governed by the electrostatic attraction between the MB and the surface charge of Fe3O4@SiO2 R-spheres [24]. MB is a cationic dye, which exists in solution in the form of positively charged ions due to a large amount of H+ at low pH values. The amino group and sulfonic acid group on the sorbent have an electrostatic repulsion force to the MB cations, therefore resulting in a low adsorption capacity. As the pH increases, the amino group and sulfonic acid group are deprotonated, and the electrostatic attraction between the Fe3O4@ SiO2-CR and MB becomes stronger. The adsorption capacity suddenly increases at pH 5 may be due to the relatively weak protonation of amino and sulfonate, and the enhanced electrostatic adsorption. In addition, such as hydrogen bonding, van der Waals interaction as well as physical sorption had important impacts in theadsorption.Therefore, the adsorption capacity of MB on Fe3O4@SiO2 can be improved at high pH and reached the best with strong alkali solution.

IV. Conclusion:

Fe_3O_4@SiO_2core–shell magnetic composite nanoparticles were prepared successfully by a cost-effective one-pot microwave assisted hydrothermal process. The Fe_3O_4 magnetic particles

were approximately 16 nm in size, and the SiO_2 coating was approximately 4 nm thick. Based on the SEM results, the Fe_3O_4 was spherical, regular in shape, and uniform in size, and the SiO_2 coating layer was uniform. The saturation magnetization of the Fe_3O_4 nanoparticles was 58.7 emu/g, while that of the Fe_3O_4@SiO_2 composite nanoparticles was 27.9 emu/g. This difference could be attributed to the SiO2 coated layer.

In this study, magnetic composites Fe3O4@SiO2 were successfully synthesized as a novel adsorbent and applied to remove MB from wastewater. The excellent adsorption performance can be attributed to the strong electrostatic interactions between MB and Fe3O4@SiO2. Besides, the adsorption of MB on Fe3O4@SiO2 is also strongly dependent on solution pH. Fe3O4@SiO2 nanospheres can be quickly and easily separated by magnetic separation from MB solutions. Therefore, the prepared Fe3O4@SiO2 magnetic nanospheres can be potentially used as a highly effective material for the removal of MB from organic contaminated wastewater.

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A Study on Ethnobotanical Resources of Jaunsar Bawar Region of Garhwal, Uttarakhand

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Abstract:

Ethnobotanical resources are the indigenous knowledge of people about plants and medicine. Ethnography is the study of human society while botany refers to the study of flora or plants. The study area which is the Jaunsar Bawar region, houses two primitive groups of people – the Garhwalis and the Jaunsaries who still follow their traditional system of medicine extracted from plants. The Jaunsar Bawar is a hilly region in Garhwal division of Uttarakhand in northern India located in the north-western part of Dehradun district.The methods used in this ethnobotanical research work are pre-structured interview schedule of the local healers and elderly people who has a better knowledge and experience about herbal medicines for the treatment of various illnesses. This research work took approximately five months of field work. It is known from the societies living in surrounding that the indigenous people majorly use the ethnobotanical species such asAnogeissuslatifolia, Terminilia species, Lanneacoromandelica, Anogeissuslatifolia and Adina cordifolia that surrounds the Jaunsar Bawar region. A few samples of these plant species were also sent for scientific examination.The traditional knowledge of herbal medicine of these primitive groups of people may be scientifically validated with Ayurveda through phytochemical analysis.

Keywords: Ethnobotany, Jaunsar Bawar, Primitive, Herbal Medicine, Garhwalis, Jaunsaries.

Introduction :

India is known for its rich heritage of the knowledge of natural products, particularly of its herbal medicine. Indian people are using medicinal plants from prehistoric period.[1,6] Tribal, living mostly in the remote forest areas, still depend to a great extent on the indigenous system of medicine. Indigenous healing practices have been culturally accepted during all phases of human culture and environmental evolution. About 85% of traditional medicines are plant derived.[2,5] Medicinal plants have a long-standing history in many indigenous communities, and are an integral part for treating various diseases, particularly to curve daily ailments, and this practice of traditional medicine is based on hundreds of years of belief and observations. With enormously diversified ethnic groups and rich biological resources, India represents one of the great emporia of ethno-botanical wealth.[3,4]Nothing is more fundamental to human life than health (Strange), good physical and mental health helps a man go to the top or his or her destination very easily. But if any problem arises, physically or mentally then survive within the environment become effected. 'Health is the level of functional and metabolic efficiency of a living organism'. The WHO defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". Cited [7,8]

Different types of tree or plant parts like bark, leaves, roots etc. as well as shrub also they have been used to made their herbal remedies for their treatment. Even now days sometribal groups are using ethno-medicinal practices for their treatment. As we all know that tribes are mainly depending on their natural resources and they also worship nature. Now days they always try not to use modern medicine for their minor ailments. The present study 'Ethno-medicinal practices among people of Jaunsar Bawar Region of Dehradun district of UttaraKhand. The livelihood of people in area is mainly depends upon forest collection and trading. They are very hard working and as a result mostly of the adult family members have been suffering from different types of fever and body pain. The most interesting thing is that; to heal this problem they do not go to hospital or any modern health care practitioners. When they cannot tolerate the pain then few of them take ethno-medicines to cure the problem and others go to near modern medicinal practitioners. However, when serious problems like breathiness, chest pain etc has been appeared then they must go to hospitals to getting the health facilities.

The primary objective of the present study is to find out the use of ethno-medicinal practices among people of the Jaunsar Bawar Region of Dehradun district of UttaraKhand. Apart from this the present study also try to find out different types ethno-medicinal herbs and systems among the studied people and area.

Materials And Methods :

The present study is a cross-sectional study. And the study has been done among people of Jaunsar-Bawar Region of the Dehradun district of UttarKhand. Field work have been carried out in the area for around six months in three phases in different seasons to encounter different medicines for different health problems. Pre-structured interview schedule has been used to collect the primary data. Face to face interview of local healers, patients and senior members of society have been carried out. To verify the data some, focus group discussions also made of local healers, older male and older women groups. The primary data have been classified and systematised with their botanical name with consultation of Botanists. Further data is classified as medicines using for communicable and non-communicable diseases.

Results And Discussion:

Different type of morbidity and it's healing process are presented below:

Viral disease:

For cough and cold, symptoms of the disease were watering from nose and cough. Causes of the disease were weather change and cold. Treatment was as follows- (a) traditional treatment-leaf, root and bark of Abiespindrow Royale, Abrusprecatorius L., and Acacia catechuWilld.bark of the Totla tree. They used the bark of this tree by boiling with water, and eat biscuits; (b) modern treatment was using antibiotic, antacid, syrup, and antihistamine.

Fever :

Local name was Bukhar. Symptoms of the disease were high temperature, headache, and body ache. Causes of the disease were weather change, cold, and hard working. Treatment of the disease was as follows: (a) traditional treatment was they used the leaf, root, flower of the Justiciaadhatoda L. and leaf and stem of NernerisasiaticaRoxb. Ex DC.Extract of neem leaves, and use the bark of deshim tree, and chewed the root of ultekhara tree, eat honey, use a piece of wet clothes on the forehead, and use jadibuti; (b) modern treatment was using antibiotic (tablets-Amoxyclav, Lifflaxi, PPI, paracetamol, vitamins, ORS, azithromycene).

Pain in abdomen :

Local name was pet dard. Symptoms of the disease was heavy pain in abdomen. Causes of the disease were polluted water, unhygienic conditions and bad food habit. Total individuals who were suffering from this disease were 14. Treatment followed was- (a) traditional treatment was chewing peyarapata (leaves of guava tree), using mantra andingboileded water; (b) modern treatment was using pain killer (Decolic, Cyclopam), ORS, antacid (Rantac, Pancid, Aciloc).

Headache :

Local Name wasmathadard. Symptoms of the disease was headache and feeling irritated. Causes of the disease was high blood pressure, hard work and cold. (a) Traditional treatment was the leaf, root, stem of VitexnegundoL.consuming cooked sojinaand consume it, use to eat the bark of the lagakomache and arjun tree; (b) modern treatment was using painkiller such as Parasafe, disprins, crocin.

Acidity :

Local name was gas. Symptoms of the disease were pain in abdomen and vomiting. Cause of the disease was wrong food habit. Treatment followed was- (a) traditional treatment was the leaf, stem, fruit, bark and root of Callicarpa Vahl utilising extracts of tree sugarcane, use branches of sandhi tree, extracts of guava leaves, bark of chatuhal tree, mantra, the root of gurjer tree; (b) modern treatment- antacid (PPI, Aciloc 300, Rantac).

Rashes :

Local name of the disease was khujali. Symptom of the disease was rashes on skin. Causes of the disease were water pollution, weather change and uncleaning. Treatment of the disease was- (a) traditional treatment- use the leaf, bark, seed, flower and fruit of the herb, Cannabis sativa L. extract of neem, ambashi, toltla, dunche, vutta tree; (b) modern treatment was using B-tex, lifeboy, amoxyclave, Amaxycol, Azythromycal, flouconazole, antihistamine, BB lotion and Detol.

Chest Pain :

Local name was chhatidard. Symptom of the disease was pain in chest. Causes of the disease were hard work, acidity, cough, and heart disease. Treatment followed was (a) traditional treatment was chewing brikhma and punga flowers; (b) modern treatment was using pain killer, antacid and use few other medicines after pathological test.

Foot pain :

Local name was pairdard. Symptoms of the diseases were pain in foot, and swelling in pain. Cause of the disease was hard work. Treatment followed was- (a) traditional treatment was oiling on foot, one type of jadibuti (Cinnabar, china rose, incense, clove, oil, half boiled rice binding with white string); (b) modern treatment was using Moov, pain killer.

Pulmonary obstructive disease:

Local name was sans samasya. Symptoms of the disease was shortness of breath. Causes of the disease were cold, dust and weather change. Treatment followed was- (a) traditional treatment was chewing the roots of ultekhara tree, the bark of gamari tree, using the root of beetle nut tree; (b) modern treatment was using Vetolin HFA, ProAir HFA.

Pain in back :

Local name was pith dard. Symptoms of the disease were pain in mid-section, problem in up down movements. Cause of the disease was hard work. Treatment followed was- (a) traditional treatment was giving massage with oil, and mantra, one type of jadibuti (Cinnabar,

china rose, incense, clove, oil, half boiled rice binding with white string); (b) modern treatment was using Moov and pain killer.

Pain in waist :

Local name was kamardard. Symptoms of the disease was pain in mid-section and problem in up down movements. Cause of the disease was hard work. Treatment of the disease followed was- (a) traditional treatment was giving massage with oil, and mantra, one type of jadibuti (Cinnabar, china rose, incense, clove, oil, half boiled rice binding with white string); (b) modern treatment followed was using Moov and pain killer.

Eye Problem :

Local name was najarkisamasya.Symptoms of the disease was pain in eye and vision problem. Cause of the disease was aging. Treatment given was- (a) traditional treatment– they do not use any traditional healing process; (b) modern treatment was using various eye drop.

Decrease of blood cells :

Local name was khunki kami. Symptoms of the disease were fading skin color, weakness, white eye colour and migraine. Cause of the disease was improper food habits. Treatment was- (a) traditional treatment used was marusai and rai leaves as a vegetable, and use to eat fishes, and meat; (b) modern treatment followed was using iron tablet and folic acid tablet.

Liver problem :

Local name was libharkisamasya. Symptoms of the disease was loss of appetite, weakness, reddish eye and stool problem. Cause of the disease was bad food habit, hard work and using polluted water. Treatment followed was- (a) traditional treatment was using- extracts of lauribedh tree, root of beetle nut tree, extract of sugarcane, branch of sandhi tree, boiled papaya, use tika (give them one type of chemical, which can make a mark on their forehead) on their forehead; (b) modern treatment was using poyratynimide and injection of streptomycine.

Tumor:

Local name was massa. Symptoms of the disease was lump on body parts pain. Cause of the disease was nil. Treatment was as followed: (a) traditional treatment was using jarivuti and mantras; (b) modern treatment was operation.

Tooth pain :

Local name was dathdard. Symptoms of the disease were pain in teeth, sometime blood appear from tooth. Cause of the disease was over pressure on teeth and something enter into teeth (meat). Treatment was (a) traditional treatment was utilising bark of satankadana and neem trees with honey; (b) modern treatment was using pain killer, antibiotics, and antacid.

Neck Pain :

Local name was gale me dard. Symptom of the disease was pain in neck. Cause of the disease was hard work and bad life style. Treatment used was- (a) traditional treatment was massaging oil on neck; (b) modern treatment was nil.

Rural and tribal people residing in area are having trust on ethno-medicine and sometimes on magico-religious practices. But at present with the pace of civilization these people of the state is continuously face the westernization and as result a huge acculturation in their daily behavioural life takes place. At present most of t people give up their traditional dress and start to wear western dress and blindly follow the western culture to fulfil every need of their life, they also give up their age old traditional medicinal practices which are entirely based on the natural resources. Instead of that they are now mostly depends on the western medicine to treat

their ailments. From the present study it has been observed that only 15 % families still believe on ethno-medicine. And these families practice ethno-medicinal system due to trust on nature. They think nature has all healing power of human's problem. Now the present situation has changed. More than sixty-five percent (65.5%) of families now practice both ethno-medicinal and modern medicinal system. The individuals of these families choose ethno medicine first. After that when ethno-medicine fails to heal the problem then they go for getting treatment from modern medical system. Beside this rest 34.5% families totally depend upon on modern medicinal system. They do not believe in any traditional health care system. Various types of tree barks, roots and leaves has been used to treat the alignment. The traditional medicine practitioners known as Ojha always extend their helping hand to sort out the health problem of the villagers. And the bonding between traditional local healers and villagers is very strong and healers are from the same society.

Conclusion :

Jaunsar- Bawar region is mostly dominated by tribal and rural families. They occupied the region from ancient time and live in symbiosis with nature. Impact of Education in general and medical education in particular is below then the state and national average. Present study reveals this is the basic reason of their belief on traditional medicine. Ethnobotanical medicine using by people in this region needs phytochemical analysis and validity. Further the rich natural resources and their traditional knowledge on herbal medicine may be an asset to the Government of Uttarakhand and AYUSH Department, Ministry of Health and Family Welfare ,Government of India if it will be taken up for scientific and medicinal uses for the region and country.

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Study on Measuring The Effectiveness of Online Marketing on Integrated Marketing Communication : A Special Reference to Anand City

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Abstract :

IMC mergers various promotional tools and communication / marketing / advertising services and techniques to maximize profit. IMC is ultimately achieved through concise and reliable messaging that fosters familiarity and consumer affinity. In the this research study, Descriptive research is followed. Descriptive research is usually a fact-finding view generalizing a cross - sectional study of current situation. The main goal of descriptive research is to describe any particular event, phenomenon and situations on the basis of observations. Survey for research work was conducted in the Anand city for keeping in mind that online marketing is still a metropolitan phenomenon in the developing country like India. Sample of 200 respondents was selected for survey.

Key Words: Marketing communications, advertising, online marketing

Introductions

Integrated marketing communication (IMC) is an approach used by organizations to brand and to align their communication efforts for objectives accomplishment. The American Association of Advertising Agencies defines IMC as "a concept that recognizes the added value of a comprehensive plan that evaluates the strategic roles of a variety of communication disciplines, and combines these disciplines to provide clarity, consistency and maximum communication impact." The primary objective behind an IMC strategy is to create a unified experience for consumers across different aspects of the marketing mix. As each marketing communication channel works together in unity with the brand's core image and messaging, rather than in isolation.

As per Don Schultz (2008), IMC is a strategic business process used to plan, develop, execute and evaluate coordinated, measurable, persuasive brand communication programmes over time with consumers, customers, prospects, and other targeted, relevant external and internal audiences. The key difference in this definition of IMC from that of simple Marketing Communication is highlighted by use of three words: i) strategic, ii) appraise and iii) quantifiable. In essence, IMC applies use of marketing communication mix in such a way that strategically designed to accomplish organizational objectives, it is used to measure to accountability over marketers and are evaluated over time. These elements are also stressed on by various IMC authors (Schultz, 1996; Duncan & Caywood, 1996), who believe that although the concept of IMC is not new, but the fact that previously marketing communication was not coordinated strategically and strategy is now believed critical, gives this concept a new look.
Since the major domains of research topic are – Integrated Marketing Communication & Online Marketing. The review of literature will revolve around these.

Research objectives:

Based on the above research problems, the research objectives are as follows:

i. To analyze the effectiveness of online marketing as compared to traditional marketing tools.
ii. To know sources of information for various brands amongst customers of Anand City.
iii. To find awareness about Internet advertising amongst customers of Anand City

iv. To find purpose/reasons of using Internet amongst respondents of Anand City
v. To know customers' perception for online marketing strategies amongst respondents of Anand City.

In the this research study, Descriptive research is followed. Descriptive research is usually a fact-finding view generalizing a cross - sectional study of current situation. The main goal of descriptive research is to describe any particular event, phenomenon and situations on the basis of observations.

In present research study, the required data was collected through Sample survey using structured questionnaire. Since 'Customer`s inclination towards Online marketing' is the core focus of the study, a structured & closed ended questionnaire was prepared for customers only. The questionnaire incorporated questions related to customers' preference for online marketing and other traditional mediums for getting awareness on various brands and making purchase decision.

In the present study, researcher has used published and unpublished sources of secondary data. Secondary data was collected to provide this research paper necessary conceptual clarity. Information related to IMC, online marketing & its implication etc. was collected through various secondary sources such as research journals, reference books, business magazines and content sharing websites.

In present study researcher has used stratified probability sampling with -

- Sample size: 200 (Sample size is selected on the basis of discussion with the research expert)
- Area covered – Anand District
- Sample frame – Households

Data Analysis & Interpretation

In the present study researcher used descriptive statistical tools. Primary data is used while analyzing and drawing inferences.

This part of study is mainly focused on verifying main objectives of study. Researcher used statistical tools like mean, standard deviation and graphs for analysis of primary data.

Profile of Respondents

Survey for research work was conducted in the Anand city for keeping in mind that online marketing is still a metropolitan phenomenon in the developing country like India. Sample of 200 respondents was selected for survey. The questionnaire included a segment on customers profile as a classification of their demographic factors such as gender, age & occupation. During data collection phase, due care was taken in order to make sure that the given questionnaire is completely filled by the respondents.

The detailed respondent profile is as follows:

Table no. 1 Respondent's profile

Age	Occupation				Gender		
	Student	Service	Self Employed	Total	Male	Female	Total
18 to 25	81	0	0	81	38	43	81
25 to 35	19	41	3	63	31	32	63
35 to 45	0	47	9	56	29	27	56
Total	100	88	12	200	98	102	200

From the above table no. 1, Out of 200 respondents - 100 are students out of which 81 are between the age 18 to 25 years & 19 are between the age 25 to 35 years. There are 88 respondents who are jobber out of which 41 are between the age 25 to 35 years & 47 are between the age 35 to 45 years. Also, there are total 12 respondents who are self-employed out of which 3 are between the 25 to 35 years & 9 are between the age 35 to 45 years.

As far as gender wise segmentation is concerned, there are total 98 males out of which 38 are between the age 18 to 25 years, 31 are between the age 25 to 35 years & 29 are between the age 35 to 45 years. And there is total 102 males out of which 43 are between the age 18 to 25 years, 32 are between the age 25 to 35 years & 27 are between the age 35 to 45 years.

The details of responses given regarding the medium to get knowledge are given in the following table.

Table no. 2 Do consumers rely on just one medium to get knowledge about any brand?

Particulars	Frequency	Percent
No	82	41.0
Somewhat	47	23.5
Yes	71	35.5
Total	200	100.0

From table no.2, it is observed that when respondents were asked if they rely onjust one medium to get knowledge about any brand; 41% have given negative response, 35.5% respondents have given complete positive response while only, 23.5% responded that they rely partially.

Table no. 3 Sources of awareness for various brands

Sources of awareness	Frequency	Percent
Print ads	22	11.0
Television commercials	53	26.5
In-store promotion	37	18.5
Outdoor media	18	9.0
Online media	70	35.0
Total	200	100.0

From table no. 3, it is observed that when respondents were asked about through which source do, they refer the most to get information about various brands; 11% have chosen print ads, 26.5% respondents have chosen Television commercial, 18.5% have chosen In-store promotion, Only 9 % have chosen Outdoor media, 35 % respondents have chosen Online media, which is the higher of all.

Table no. 4 Details for information and time spend to take purchase of any commodity

	Do not require much information to take purchase decision		Do not prefer to spend much of my time in purchase of any commodity	
	Frequency	Percent	Frequency	Percent
Strongly disagree	33	16.5	27	13.5
Disagree	80	40.0	38	19.0
No opinion	36	18.0	34	17.0
Agree	28	14.0	68	34.0
Strongly agree	23	11.5	33	16.5
Total	200	100.0	200	100.0

From table no.4, it is observed that when respondents were first asked whether they require much information to take purchase decision; secondly whether they spend much time for purchasing any commodity; 16.5% respondents shown strong disagreement to the first question and 13.5% to second question, whereas 40% respondents were disagreeing to the first question and 19% to second question. Considering data of complete sample of all respondents' descriptive statistics parameter scores are calculated and tabulated below.

Table no. 5 Descriptive statistic scores for information and time spend to take purchase of any commodity

Parameter	Do not require muchinformation to take purchase decision	Do not prefer to spend much of my time in purchase of any commodity
Mean	2.6400	3.2100
Median	2.0000	4.0000
Mode	2.00	4.00
Std. Deviation	1.24020	1.30168

From table no. 5, it is observed that

1. Mean value scores for parameter much information to take purchase decision is not required is 2.64 which indicates respondent disagreement. It means they really required much information to take purchase decision. Median and mode values are equal to 2 also support this result.
2. Mean value scores for parameter much time is required to spend to take purchase of any commodity is 3.21 which indicates respondent agreement. It means they do not prefer to spend much of their time in purchase of any commodity.

Importance of Online advertising in changing market scenario:

Online Marketing refers to a set of powerful tools and methodologies used for promoting products and services through the internet. It connects organizations with qualified potential customers and takes business development to a much higher level than traditional marketing.

Knowledge about the use of internet:

Today, Internet is one of the most important parts of our daily lives. There are large numbers of activities that can be done using internet and so it is very important. Most of the traditional communication media including telephone, music, film, and television are being reshaped or redefined by the internet.

To understand whether respondents are convergent with the use of Internet; they were asked about their knowledge about use if internet. The details of which are tabulated below.

Table no. 6 Knowledge about the use of internet

Code	Response	Frequency	Percent
1	Not knowledgeable about	14	7.0
2	Somewhat knowledgeable about	28	14.0
3	Knowledgeable about	67	33.5
4	Very well knowledgeable about	91	45.5
	Total	**200**	**100.0**

Interpretation:

From table no. 6, it is observed that 7% were not knowledgeable about internet and 14% were somewhat knowledgeable about internet.

It means major percentage of respondents is very well knowledgeable about internet. They are well aware with various usage, functions and benefits being offered by internet. While out of 200 respondents, only few i.e., 7% were not awared about internet. So, it reveals that there is high degree of knowledge for internet usage.

Frequency of being online:

Table no. 7 Descriptive statistic scores for knowledge about the use of internet andfrequency of being online

	Are you convergent with the useof Internet?	Frequency of being online
Mean	3.1750	3.5650
Median	3.0000	4.0000
Mode	4.00	4.00
Std. Deviation	.92120	1.23832

From table no. 7, it is observed that Mean value scores for parameter their convergence with internet is 3.17 which indicates respondent agreement of being convergent with internet.

Hence, most of the consumers are well versed with the usefulness of internet and they actually make maximum utilization of the various functions served by internet and therefore their tendency of being online is high.

Purpose for using Internet:

To understand the real purpose for using internet respondents were asked to ranking each purpose between the scales of 1 to 5, where 1 is the most important and 5 is least important. The details are tabulated in the following table.

Table no. 8 Purpose for using internet

	Social networks		Media sharing sites		Blogs		Podcasts & RSS		Collaborative websites		Other content sharing websites		Online shopping	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Most important	73	36.5	50	25	26	13	33	16.5	32	16.0	43	21.5	60	30.0
2.00	65	32.5	48	24	42	21	32	16.0	43	21.5	43	21.5	42	21.0
3.00	20	10	22	11	45	22.5	25	12.5	25	12.5	29	14.5	21	10.5
4.00	20	10	34	17	40	20	47	23.5	38	19.0	37	18.5	40	20.0
Least important	22	11	46	23	47	23.5	63	31.5	62	31.0	48	24.0	37	18.5
Total	**200**	**100**	**200**	**100**	**200**	**100**	**200**	**100**	**200**	**100**	**200**	**100**	**200**	**100**

From table no. 8, it is observed that Social networks are considered most important 36.5% respondents andleast important by 11% respondents, Media sharing sites are considered most important 25% respondents and least important by 23% respondents.

It means that Social networking is the foremost purpose for which majority of respondents use internet. Certain social networking sites such as Facebook, Orkut, LinkedIn etc. have become popular in recent times, used to share the personal & professional views with known and unknown people who can be found out through these sites. After Social networking, second preference given to the online shopping. It allows flexibility to the consumers to view a

wide range of products & brands, evaluate them online by reading their features and making an online purchase. Media sharing is at third place. It allows them to share media material such as photos, music, video, news etc.

To analyze in detailed, some important statistics (parameter) were calculated, andthe results of analysis are tabulated below.

Table no. 9 Descriptive statistic scores Purpose for using internet

	Social networks	Media sharing sites	Blogs	Podcasts& RSS	Collaborative websites	Other content sharing websites	Online shopping
N	200	200	200	200	200	200	200
Median	2.00	3.00	3.00	4.00	3.50	3.00	2.00
Mode	1.00	1.00	5.00	5.00	5.00	5.00	1.00

Hence, respondents strongly feel that the most important activities to be done through internet are social networking as it connects them with others, online shopping as it offers them convenience of shopping and media sharing site as it allows them to download their favorite enticing material such as songs, video, games etc.

Use of online activities by companies in their marketing efforts:

Online advertising is geared towards defining markets through unique and useful applications. Having an onlinepresence will first bring their business to the potential customer's attention. If online presence is complete with positive reviews and a professionally updated website; customers will see the reputation of the brand and will be more likely to choose those brands. To analyze in detailed respondents were asked to give their view on agreement scale considering two different attributes.

Table no.10 Do companies include online activities in their marketing strategy?

Code	Response	Frequency	Percent
1	Strongly disagree	32	16.0
2	Disagree	41	20.5
3	No opinion	22	11.0
4	Agree	43	21.5
5	Strongly agree	62	31.0
	Total	**200**	**100.0**

From table no. 10, it is observed that when respondents were asked whether companies should use online activities in marketing efforts; 16% were strongly disagreed, 20.5% shown disagreement and 21.5% shown agreement whereas 31% were strongly agreed.

It means majority of respondents are completely agreed that companies should use online activities in their marketing efforts. Since online activities facilitate good access and higher reach to the customers; companies must take this advantage by incorporating online advertising in their marketing strategy.

Hence, consumers are with the strong opinion that companies use online activities to spread awareness & sell their product.

Table no. 11 Importance of factors motivating respondents to like the brand on internet

	Discount		Stay informed ab theactivities of company		Get updates on brands and its future extensions		For fun, entertain-ment		Get access to the exclusive content		Interaction	
	F	%	F	%	F	%	F	%	F	%	F	%
Most important	49	24.5	52	26.0	36	18.0	33	16.5	53	26.5	48	24.0
Important	66	33.0	52	26.0	49	24.5	56	28.0	59	29.5	61	30.5
Least important	44	22.0	42	21.0	61	30.5	45	22.5	42	21.0	36	18.0
Not important	41	20.5	54	27.0	54	27.0	66	33.0	46	23.0	55	27.5

It means majority of respondents are motivated to use internet as it offers them products at discounted rates, gives access to exclusive content such as specific functional & emotional benefits of the brand and facilitates interaction about the brand directly with the company.

Table no. 12 Preference for the print ads or television commercials

	Frequency	Percent
Strongly disagree	23	11.5
Disagree	41	20.5
No opinion	19	9.5
Agree	79	39.5
Strongly agree	38	19.0
Total	**200**	**100.0**

From table no. 12, it is observed that whether they don't prefer the print ads or Television commercials much to get the brand awareness, 11.5% respondents have shown strong, 20.5% respondents were disagreeing and 39.5% respondents were agreed

It means majority of respondents agreed that they do not prefer Television commercials or print ads to get brand related awareness. So, these popular traditional mediums are no longer remained first preference for the consumers to receive ad messages.

Table no. 13 Descriptive statistic scores for Preference for the print ads or televisioncommercials

Parameter	Value
N	200
Mean	3.3400
Median	4.0000
Mode	4.00
Std. Deviation	1.30880

Hence, it reveals that today consumers do rely on print ads television commercials much to get awareness.

Table no. 14 Benefits of online marketing over traditional marketing

	Frequency	Percent
Wide range of information	48	24.0
Ease of shopping	46	23.0
Time saving	31	15.5
Low cost	24	12.0
Interactive medium	51	25.5
Total	**200**	**100.0**

From table no. 14, it is observed that 24% of respondents find online marketing advantageous as it offers wide range of information about the brand, 23% of respondents find online marketing advantageous as it offers ease of shopping and 25.5% of respondents find online marketing advantageous as it is an interactive medium.

Table no. 15 Loopholes in online marketing over traditional marketing tools

	Frequency	Percent
More Susceptible	33	16.5
More scope for fraudulent activities	52	26.0
Lack demonstration	40	20.0
Privacy Issue	42	21.0
Often interrupting	33	16.5
Total	**200**	**100.0**

From table no. 15, it is observed that 16.5 % of respondents find online marketing is not safe as it is more susceptible, 26% of respondents find online marketing is not safe as there is more scope of fraudulent activities, 20% of respondents find online marketing is not safe as it lacks demonstrations and 21% of respondents find online marketing is not safe as it may result in some serious privacy issues.

Conclusion :

The study concludes that consumers rely upon more than one medium in order to enhance their brand related knowledge. It means that they use the combination of various sources for making final purchase decision. Along with the traditional sources, they heavily rely on modern marketing tool i.e., online advertising.

Consumers do require detailed information about the brand so as to evaluate its strengths & weaknesses; this ample amount of information then saves their time by allowing them to make the purchase decision quickly. This shows that consumers try to get more information before they make purchase. They receive this information through various mediums; so, integration of these mediums is necessary to feed the required information to the customers for brand evaluation which in turns will save consumers' time & efforts while making an actual purchase.

The study also reveals that main reason for growing importance of online marketing is the increasing literacy about internet among people. They have identified that internet is truly advantageous through which they can serve their various purposes mainly social networking, online shopping & media sharing (photo, music, video). This efficacy of internet has intensified their tendency of being online.

Today's consumers strongly feel that every company must use this efficacy to strengthen its marketing efforts. So that they will get motivated to use online

Marketing with the intent of getting access to exclusive content about the brand and getting discount and sharing their feedback about brand with the advertiser.

With the advent of internet technology, consumers' preference towards traditional marketing tools has decreased. Most popular traditional marketing tools are television & print media. The major benefits of online marketing are its capability of interaction between consumers and advertisers followed by availability of wide range of information & ease of shopping. These benefits make online marketing superior than traditional marketing.

But at the same time consumers are susceptible about the user-safety side of internet. They feel that online marketing is unsafe as it may lead to increase in frauds & privacy issue.

Recommendation :

Conclusion given above reveals that consumers use more than one medium to make brand choice, therefore it is recommended that Companies should mix & match various mediums to reach their desired target audience. This will help to spread awareness among them and to influence buyer's behavior thus companies must formulate an effective Integrated Marketing Communication plan where they can combine various tools to grasp maximum prospects.

It is also revealed that consumers have good enough knowledge about internet technology and they are in favor of using online marketing, therefore it is recommended that Every company big or small should grab this advantage and include online marketing in their marketing efforts. Online marketing forms can be mainly web marketing, E-commerce, social media marketing. Consumers find certain benefits in online marketing over traditional marketing; therefore, companies can spend more on online media rather than the traditional tools.

But along with its advantages, online marketing has certain limitations also, limitations like possibility of fraudulent activities or privacy issues are beyond control. Cybercrime cannot be eradicated easily or completely therefore, it is recommended that Companies should not rely entirely on online marketing; they must make it a part of Integrated Marketing Communication strategy. As a result of which limitations of online marketing will be covered as the other mediums will build the required credibility and positive image about the brand. This credibility will generate trust among consumers towards the brand.

The study could be extended; so as to cover all the states of India as the researcher believes that consumer buying behavior w.r.t online marketing may be at the variance in different states.

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आधुनिक समाज में वृद्धों की समाजिक एवं मानसिक स्थिति का

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''वृद्धावस्था या बुढ़ापा जीवन की उस अवस्था को कहते हैं जिसमें उम्र मानव जीवन के औसत काल के समीप या उससे अधिक हो जाती है। बुढ़ापा जीवन का अंतिम पड़ाव होता है, इस पड़ाव में आते-आते जीवन अशक्त हो जाता है, वे शारीरिक एवं मानसिक रूप से कमजोर हो जाते है। वृद्धों की यह स्थिति उनकी समस्याओं का मुल कारण बन जाती है।

भारतीय परम्परा एवं संस्कृति ने हमेराा बुजुर्गो का सम्मान किया है, जिससे उन्हें समाज में एक सम्मानजनक स्थान मिला है। मनुष्य के औसत जीवन चक्र में वृद्धावस्था या बुढ़ापा सभी समाजों में श्रेष्ठ मानी जाती है, लेकिन किस उम्र में व्यक्ति को वृद्ध माना जाए इस पर एक राय नहीं है। दुनिया के विकसित देशों में जहाँ वृद्ध होने के उम्र का आकलन ६५ वर्ष से अधिक को माना गया है, वहीं दुसरी ओर भारत में इनके उम्रों का आकलन ६० वर्ष के पश्चात् से प्रारंभ कर दी जाती है।

वर्ष १९५१ में वृद्धों की जनसंख्या १.९८ करोड़ थी जो वर्ष २००१ में बढ़कर ७.६ करोड़ हो गई तथा २०११ की नवीनतम जनगणना के अनुसार वृद्धों की आबादी (६० वर्ष से उपर) १०.३८ करोड़ है जो भारत की कुल आबादी का ८.५८ प्रतिशत है। इससे स्पष्ट है कि वृद्ध लोगों की संख्या में निरतंर बढ़ोतरी जारी है।

आज तेजी से बढ़ते आधुनिकीकरण एवं शहरीकरण ने मात्र एक शताब्दी के अंतराल में हीं उन्नती कर नई-नई तमाम आवश्यक वस्तुओं की खोज की है जो आज लगभग सारी जरूरत की आवश्यकताओं में शामिल हो चुकी है, आज इनके बिना मानव जीवन की कल्पना करना नामुमकिन है। भोग विलासिता की जीवन जीने की होड़ ने सामाजिक-ताने-बाने को तोड़ कर रख दिया है। युवा अपने परम्परागत कार्य को छोड़कर मशीनीकरण की ओर आसानी से अग्रसरित हो रहे हैं, जिससे उन्हें कहीं भी जाकर रोजगार करना संभव बना दिया है। अंततः संयुक्त परिवार एकल परिवार में परिवर्तित होने को मजबूर हो गए है। युवा वर्ग के अपने गांव-शहर छोड़ जाने तथा व्यक्ति अपने बच्चों के पढ़ाई-लिखाई, अच्छी नौकरी हेतु परिवार से अलग होने को बेबस हैं जिसके कारण घरों में वृद्ध अकेले रह गए हैं जिससे उनकी सुरक्षा और गंभीर बन गई है।

आज बुजुर्ग की स्थिति अकल्पनीय है। वृद्धावस्था अभिषाप सदृश होती जा रही है। उनका जीवन यापन बहुत कठिन होता जा रहा है। कोई चलने में असमर्थ तो कोई अपाहिज सदृश बेड को ही अपनी नियत्ति मानकर जीवन निर्वाह कर रहे हैं। अगर किन्हीं का जीवन भौतिक सुख सुविधा से परिपूर्ण हो फिर भी समय किस तरह व्यतीत करें इसकी समस्या उन्हें आहत्त करती है। जिन बच्चों के लालन-पालन में उनका सारा जीवन व्यतीत हो गया वे बच्चे अपने परिवार में ही व्यस्त हैं। कुछ मजबुरीवश लाचार हैं तो कुछ माता-पिता के कर्तव्यों से विमुख, बेचारे बुजुर्ग सोचते हैं कि कोई उनसे दो बातें कर लें। बेचारे बुजुर्ग उपेक्षित जीवन जी रहे हैं। वे पड़ोस की दया पर निर्भर रहते हैं कि कोई पड़ोसी मित्र आए तो दिन कट जाए। विडम्बना यह है कि न तो वे अपनी स्थिति के विषय में कुछ कह सकते हैं और न तो अपने बच्चों की गलतियों को अनदेखा कर सकते हैं, समाज में वे अपनी संतानों की छवि को कम नहीं करना चाहते

फलतः उन्हें घुट-घुट कर जीवन जीना पड़ता है। आज समाज का रूप परिवर्तित हो रहा है। आजकल बच्चों के पाठ्यक्रमों को भी इतना विस्तारित किया गया है कि उन्हें समय नहीं मिलता कि वे अपने दादी-नानी के पास बैठकर किस्से या कहानियाँ सुन सके। ऐसी बहुत सारी महत्वपूर्ण बातें जो बुजुर्गो से सीखी जा सकती है वे उनसे वंचित रह जाते हैं, जिसके कारण बच्चों में वह गुण नहीं आ पाते। बच्चों को बुजुर्गों के प्रति लगाव भी उतना नहीं हो पाता जिसकी वजह से बुजुर्गों को अकेलापन का एहसास होने लगता है। कभी-कभी स्थिति ऐसी हो जाती है कि बहु-बेटे भी उनसे बात नहीं करते वृद्ध किसी कोने में बैठ कर उपेक्षित जीवन जीने को मजबूर हो जाते हैं। तमाम कठिनाइयों को झेलकर अपना पेट काटकर माँ-बाप अपने बच्चों को बड़ा करते हैं, उन्हें पढ़ा-लिखा कर एक मुकाम दिलाते हैं लेकिन बड़े होकर वहीं बच्चे उनसे विमुख हो जाते हैं। ऐसे किस्से कहानियाँ रोज सुनने को मिलते हैं जब कोई कपुत अपने पिता या माँ को किसी अनाथाश्रम में या कहीं दर-दर भटकने को छोड़ जाता है, बेचारे लाचार दर-दर की ठोकर खाने को मजबूर हो जाते हैं। बच्चों को उंगली पकड़कर चलना सिखाने तथा उन्हें चांद सूरज की संज्ञा देने वाले बुजुर्गों को जब सहारे की बेहद जरूरत होती है, बच्चे उनका हाथ छोड़ जाते हैं।

वस्तुतः वृद्धावस्था अपने आप में एक ऐसी बिमारी है जिससे उबर पाना इस उम्र में संभव नहीं रह पाता है। 'वेद व्यास महाभारत में कहते हैं कि वृद्धावस्था और मृत्यु के वश में पड़े मनुष्य को औषधि मंत्र, होम और जप भी नहीं बचा पाते हैं।''

आज के बुजुर्ग अचानक आए परिवर्तनों को स्वीकार नहीं कर पा रहे हैं। आधुनिकीकरण एवं वैश्वीकरण के कारण मानव का रहन-सहन, खान-पान एवं सोच में बदलाव आ रहे हैं। बुजुर्ग ये चाहते हैं कि उनके बच्चे उसी आदर्श और संस्कारों के साथ चले जैसे पहले हुआ करती थी, उन्हें अपने समय के जीवन मूल्य और आदर्श ही अच्छे लगते हैं, अतः इसके लिए वे नए जमाने और नयीं पीढ़ी को दोषी मानते हैं, परन्तु नयी पीढ़ी को उनकी सोच एवं उनके सिद्धान्त नहीं पसंद आते वे उसे नकार देते हैं और पुरानी पीढ़ियों से दूरियाँ बनाने लगते हैं जिससे परिवार में सामंजस्य का अभाव उत्पन्न होने लगता है जो घर के बुजुर्गों के लिए दुखदायी होता है।

पिछले कुछ दशकों में पूरे विश्व में वृद्धों की जनसंख्या तेजी से बढ़ी है। संयुक्त राष्ट्र जनसंख्या कोष का यह आकलन है कि २०५० तक समूचे विश्व में प्रत्येक छः सर्वाधिक बुजुर्गों में से एक भारत का निवासी होगा तथा चीन एकमात्र ऐसा राष्ट्र होगा जहाँ विश्व के सर्वाधिक संख्या में बुजुर्ग लोग जीवन व्यतीत करेंगे। वर्ष २०११ के आवास संबंधी आंकड़ों से यह भी स्पष्ट होता है कि पिछले एक दशक में घरों की संख्या में भारी वृद्धि हुई है, ऐसा समझा जाता है कि आगामी समय में ग्रामीण एवं शहरी क्षेत्रों में निवास कर रहे बुजुर्गों की जीवनयापन व्यवस्थाओं में भारी परिवर्तन आ सकता है। अतः उन्हें विशेष प्रकार का सामाजिक, आर्थिक एवं मनोवैज्ञानिक सहारा देने की आवश्यकता है, जिससे उनकी स्थिति को सुदृढ़ बनाया जा सके। आज हमारे देश में समस्याओं के बढ़ने के अनेक कारण है जो समाज की देन हैं, लेकिन जैसे-जैसे आधुनिकीकरण, वैश्वीकरण एवं भौतिकवाद का विकास हुआ वृद्ध लोग उपेक्षा का शिकार होकर समस्याओं से घिर गए उनकी स्थिति दयनीय हो गई। उनकी स्थिति इस प्रकार है-

वृद्धों की सामाजिक स्थिति :

बुजुर्ग हमारे समाज की धरोहर होते है, उनका परिवार में होना सिर्फ परिवार के लिए नहीं बल्कि पूरे समाज के लिए जरूरी है। भारतीय संस्कृति एवं परम्परा ने हमेशा बुजुर्गों को सम्मान किया है, जिससे उन्हें समाज में एक सम्मानजनक स्थान मिला है, लेकिन शहरीकरण तथा औद्योगिकरण के परिणामस्वरूप संयुक्त परिवार प्रणाली कमजोर हो गई है। आज संयुक्त परिवार एकाकी परिवार में बंटते जा रहे हैं। घर में वृद्ध बेबस और बेसहारा बच जाते है। अकेलेपन की भावना वृद्धजनों में आत्मसम्मान एवं विश्वास की कमी को उत्पन्न करता है। प्रायः ऐसा देखा जाता है, वृद्ध महिलाएँ घर के कामकाज में अपने आपको थोड़ा व्यस्त रखती है तथा पुरूष घर के बाहर के कामों में अपने परिवार की सहायता करते है, इस सबके बावजुद वृद्धों को परिवार में वह सम्मान नहीं मिलता जिसके वे हकदार होते है।

सामाजिक क्षेत्र में जीवन के प्रांरभिक चरण में जब व्यक्ति वयस्क हो जाता है तो उसके कार्य कलापों में वृद्धि हो जाती है, जैसे-विवाह कार्य, परिवार का पालन-पोषण सामाजिक संगठनो में सदस्य बन जाना आदि। इस कार्यकलापों में उनके अधेड़ होने तक अनुभवों एवं जिम्मेदारियों में बढ़ोतरी होती रहती है, वृद्धावस्था में उनकी भुमिकाएँ या तो समाप्त हो जाती है या तो उनके उत्तरदायित्व शक्ति में कमी आ जाती है। अतः व्यक्ति के वृद्ध होने पर जीवन के सभी क्षेत्रों में उसकी समाज में सामजस्य स्थापित करने की क्षमता कम हो जाती है। नौकरी या व्यवसाय से मुक्त होने के कारण समाज एवं परिवार में उनका वर्चस्व, मान-सम्मान में कमी होने लगती है जिससे इन्हें अपना जीवन-यापन कठिन लगने लगता है।

कभी-कभी ऐसा देखा जाता है कि बच्चे को अपनी नौकरी या किसी अन्य कारणों से शहर से दूर जाना पड़ता है तथा वे अपने माता-पिता की सेवा करने में असक्षम होते हैं तो उनकी सुरक्षा के लिए उन्हें वृद्धाश्रम भेज देते हैं।

वृद्धों की मानसिक स्थिति :

वृद्धावस्था में शारीरिक बदलाव के अनुसार मानसिक परिवर्तन भी होता है। इस अवस्था के प्रवेश करते ही मानसिक तनाव की स्थिति बनने लगती है तथा लोगों से संपर्क बनाना सहयोगी या मित्रों के निधन हो जाने से मानसिक तनाव उत्पन्न होने लगती है। यह सर्व विदित है कि पति या पत्नी में से किसी एक की मृत्यु हो जाने से हीन भावना की वृद्धि होती है तथा आत्मविश्वास का अभाव दिखने लगता है, जिससे मानसिक विकृत, अकेलापन आदि जैसे दोष निर्माण होते हैं। अतः समाज में वे ज्यादा सहयोग नहीं दे पाते जिससे उनमें निरूपयोगिता की भावना उत्पन्न होने लगती है। परिवार में सामंजस्य की कमी तथा आपसी मतभेद के कारण उनकी मानसिक स्थिति खराब होने लगती है। आर्थिक दृष्टि से सम्पन्न होते हुए भी बहुत से वृद्धजन अकेलेपन के कारण डिप्रेशन का शिकार हो जाते है; जिससे उनमें शारीरिक एवं मानसिक रोगों की उत्पत्ति होती है।

बुढ़ापे में उनकी इन्द्रियाँ कमजोर हो जाती है जिससे उनकी आँखों की नजर घट जाना, जोड़ो में दर्द होना, स्वाद और सूंघनें की चेतना कम हो जाना तथा सुनने की शक्ति घट जाना आदि रोग से वे पीड़ित हो जाते हैं। उनकी सोचने समझने की शक्ति कम हो जाती है। उन्हें हर समय लगता है सब उनकी उपेक्षा करते है और वे अपने आपको बिल्कुल अकेला समझने लगते है।

आधुनिकीकरण से पूर्व संयुक्त परिवार ही वृद्धजनों की मानसिक सुरक्षा प्रदान करता था परन्तु अब इसके विघटन के परिणामस्वरूप कोई ऐसा विकल्प उनके सामने नहीं है जो उन्हें संयुक्त परिवार जैसी मानसिक सुरक्षा प्रदान कर सके। अभी हाल ही के अध्ययनों से यह स्पष्ट हुई है कि संयुक्त परिवार में रहने वाले वृद्धजनों में अकेलेपन एवं मानसिक असुरक्षा का एहसास एकाकी परिवार में रह रहे वृद्धजनों के मुकाबले काफी कम हाता है।

वृद्धों के प्रति सरकारी नीति एवं कार्यक्रम ½Goverment Policy and Programe for Eletorly½

सर्वप्रथम संयुक्त राष्ट्र संघ ने १९४८ ई. में वृद्ध आयु अधिकार पर एक घोषणा पत्र तैयार किया जो १९६९ ई. में आम सभा तथा १९७२ ई. में संयुक्त राष्ट्र संघ की आर्थिक एवं सामाजिक कॉन्सिल में रखा गया तथा उस पर विस्तारपूर्वक विचार विमर्श किया गया। १९८२ ई. में Vienna International Plan of Action on Ageing पारित किया गया जिसमें निम्नलिखित सुझाव दिए गए-

१) स्वास्थ्य एवं पोषण २) आर्थिक सुरक्षा ३) सामाजिक सहभागिता ४) आवास एवं पर्यावरण ५) उपभोक्ता एवं संरक्षण ६) अनुसंधान एवं संरक्षण

१९९० ई. में संयुक्त राष्ट्र संघ की आम सभा में ५ अक्टूबर को ''वृद्ध लोगों का अधिकार दिवस'' मनाने की घोषणा की गई।

१९९१ ई. में संयुक्त राष्ट्र ने वृद्ध लोगों हेतु नियमों पर अपनी मोहर लगाई। जिसमें भोजन, पानी, आवास तथा वस्त्रों तक पहुँच, स्वास्थ्य रक्षा हेतु सामाजिक एवं कानूनी सेवाएँ कार्य हेतु अवसरों की उपलब्धता, सम्मान सुरक्षा एवं बिना शोषण के जीने जैसे अधिकार पर बल दिया गया।

राष्ट्रीय सामाजिक सहायता कार्यक्रम :

इस कार्यक्रम की शुरूआत १५ अगस्त १९९५ को हुई थी यह कार्यक्रम गरीब परिवारों में वृद्धावस्था, जीविकोपार्जन करने वाले मुख्य सदस्य की मृत्यु तथा मातृत्व जैसे स्थिति में लाभ पहुंचाने के लिए सामाजिक सहायता की एक राष्ट्रीय नीति प्रस्तुत करता है। इसके तीन अंग है-

I. राष्ट्रीय वृद्धावस्था पेंशन योजना
II. राष्ट्रीय परिवार लाभ योजना
III. राष्ट्रीय मातृत्व लाभ योजना

१९९८ में इन योजनाओं में आंशिक सुधार किया गया जो इस प्रकार है-

इंदिरा गाँधी राष्ट्रीय वृद्धावस्था पेंशन योजना :

- आवेदनकर्त्ता (पुरूष या महिला) ६० वर्ष या इससे ज्यादा उम्र के हो। पहले उम्र ६५ वर्ष थी, पर जून २०११ में संशोधन कर इसे ६० वर्ष कर दिया गया। इसके अलावा ८० वर्ष से अधिक आयु के वृद्धों को ५०० रू० प्रतिमाह पेंशन प्राप्त होंगे।
- ऐसे आवेदनकर्त्ता जो अपने जीविकोपार्जन के लिए परिवार या दुसरे पर निर्भर होंगे वे दरिद्र की श्रेणी में आएंगे। केन्दीय सहायता के दावे के लिए वृद्धापेंशन की राशि २०० रूपए प्रतिमाह है।
- इस स्कीम की उपर्युक्त शर्तें पूरी करने पर ७५० रूपए प्रतिमाह की राशि उपलब्ध कराई जाती है।

झारखण्ड राज्य में कुल ५.९८ लाख लोग वृद्धावस्था पेंशन के अंतर्गत लाभ पाते हैं, जिसमें ३,६६,२३६ व्यक्ति राष्ट्रीय वृद्धावस्था पेंशन के तहत एवं २३१६७१ व्यक्ति राजकीय वृद्धावस्था पेंशन के तहत प्राप्त करते हैं।

वृद्धजनों के लिए राष्ट्रीय नीति ¼NPOP½

यह नीति जनवरी १९९९ में वृद्धजनों के कल्याण और प्रतिबद्धता सुनिश्चित करने के लिए घोषित की गई।

नई राष्ट्रीय वृद्धजन नीति २०११ में लागू की गई इसका मुख्य उद्देश्य व्यक्ति को स्वयं या अपने सहयोगी के वृद्ध जीवन की तैयारी हेतु प्रोत्साहन देना, गंभीर हालत वाले वृद्ध लोगों के स्वास्थ्य की देखभाल और संरक्षण तथा वृद्धों में ऐसी जागरूकता पैदा करना जिससे वे स्वयं आत्मनिर्भर बन सके।

राष्ट्रीय वृद्धजन परिषद् ¼NCOA½

केन्द्र सरकार द्वारा वर्ष २००५ में इसे पुर्नगठन किया गया। जो वृद्धों के बारे में नीतियों और कार्यक्रमों के विकास के लिए सरकार को सलाह और सहायता देती है।

वृद्धों के लिए समन्वित कार्यक्रम :

इस योजना के अंतर्गत गैर-सरकारी संगठनों पंचायती राज संस्थाओं और स्थानीय निकायों को परियोजना लागत की ९० प्रतिशत वित्तीय सहायता दी जाती है। यह सहायता वृद्धाश्रम बनाने और उसकी देखभाल करने, वृद्धों को गैर संस्थागत सेवाएँ उपलब्ध कराने पर व्यय की जाती है।

वृद्धजनों के लिए भारतीय रेल में रियासत :

न्यूनतम ६० वर्ष से अधिक आयु के व्यक्तियों के लिए कुल किराये पर ३० प्रतिशत की छूट तथा महिला वरिष्ठ नागरिकों को ५० प्रतिशत तक की छूट प्रदान की जाती है।

बैंक जमाओं पर अधिक ब्याज : बैंकों में वरिष्ठ नागरिकों को उनके निवेश पर तुलनात्मक रूप से आधे से पौन प्रतिशत अधिक ब्याज दिया जाता है।

वरिष्ठ नागरिक बचत योजना : वरिष्ठ नागरिक बचत योजना पर ब्याज दर ९ फीसदी की होती है। इस योजना में प्रवेश करने की उम्र ६० वर्ष है तथा सेवानिवृत्त रहे व्यक्ति की उम्र ५५ साल या इससे अधिक है।

वरिष्ठ नागरिक अधिनियम २००७ ¼Senior Citizen Act, 2007½

- आय अथवा अपनी संपत्ति से अपना खर्च उठाने में असक्षम है। माता-पिता अपने बच्चों से रख रखाव के लिए उचित भोजन, आवास, कपड़े और चिकित्सा, उपचार के व्यय के लिए आवेदन कर सकते हैं।
- संतानहीन वरिष्ठ नागरिक जो ६० वर्ष या इससे अधिक के हैं, वे भी अपने रिश्तेदारों से रख-रखाव का दावा कर सकते हैं जो उनकी संपत्ति पर कब्जा रखते हैं या बाद में इसकी संभावना है।
- रख-रखाव के लिए ट्रिब्युनल द्वारा अंतरिम मासिक भत्ता, वरिष्ठों की अपेक्षा तथा देखभाल से इंकार किया तो १०,००० रूपए की मासिक भत्ता देने का आदेश का प्रावधान है।
- इसके विरूद्ध जाने पर दोषी व्यक्ति को ३ माह का कैद या ५००० रूपये का जुर्माना अथवा दोनों दण्ड दिया जा सकता है।
- इस अधिनियम में लाभार्थियों के लिए वृद्धाश्रम की स्थापना तथा अस्पतालों में वृद्ध नागरिकों के लिए अलग से सुविधाएँ प्रदान करने का प्रावधान है।

इस प्रकार वृद्धों के सुरक्षा हेतु अनेक नीतियाँ एवं कार्यक्रम चलाए जाते हैं जिससे वृद्धों की स्थिति अधिक से अधिक बेहतर बन सके।

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माध्यमिक शिक्षा में सूचना प्रौधोगिकी की भूमिका का समाजसास्त्रीय अध्ययन

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शोध सार

शिक्षा व्यक्ति का मानसिक, सामाजिक, नैतिक चरित्रिक तथा सांस्कृतिक विकाश करता है। शिक्षा लोगों की मनोवृतियों में परिवर्तण ला कर, उन्हें इस प्रकार के व्यवहार के लिए प्रेरित करती है जो व्यवहार खुलें समाज की विशेषता है।

शिक्षा मानव जीवन की अमूल्य धरोहर है शिक्षा के द्वारा मानव सुसंस्कृत बनाता है शिक्षा मनुष्य की सभी प्रकार की दास्ताओं पर प्रहार करके उसें तार्किक एवं ज्ञान वान बनाती है। शिक्षा व्यक्ति के व्यक्चि के सर्वांगीण विकास के लिए अत्यन्त महत्वपूर्ण है। शिक्षा व्यक्ति में आत्मनिर्भता, स्वामत्तता और अधिकार सम्पन्नता की भावना विकसित करती है। इससे व्यक्ति सामाजिक सरोकार पारस्परिक सदभाव और सहनशीलता जैसे गुण प्राप्त कर जीवन मूल्य और शालीनता अपनाने में सफल होता है। शिक्षा से ही मानव की संपूर्ण प्रतिभा योग्यता एवं संम्भावनाओं का विकास संभव होता है। अशिक्षित व्यक्ति किसी भी समाज के लिए अभिशाप होता है, क्योंकि वह समाज का जिम्मेदार नागरिक नहीं बन सकता है।

शिक्षा का समाजशास्त्रीय परिप्रेक्ष : *अलग-अलग विद्वान शिक्षा का आकलन एवं मूल्यांकन अलग-अलग प्रकार से करते है। कभी-कभी इनका दृष्टिकोण एक दुसरे के विपरित होता है। फ्रासीसी समाजशास्त्री एमिल दुर्खीम (१८५८-१९१७) ने शिक्षा को एक विद्या के रूप में स्थापित करने का प्रयास किया। इन्होंने कहा शिक्षा कैसी भी हो, इसे नैतिकता पर जोर देना चाहिए। दुर्खीम के बाद वेबर ने शिक्षा को अपने अध्ययन का केन्द्र बनाया। १९४० के दशक के बाद युरोप और अमेरिका में यह समझा जाने लगा कि विज्ञान तथा प्रोद्योगिकी की शिक्षा प्रदत गुणो पर जोर नहीं देती है। जहाँ-जहाँ औद्योगिक समाज में शिक्षा का प्रसार हुआ है वहाँ सामाजिक संस्तरण में बदलाव आया है।*

कीर्वड : आनलाईन लर्निग, सूचना तकनिकी, कम्पयुटर, माध्यमिक शिक्षा, मोबाइल ।

फ्रासीसी विद्वान पी. बोरदयू ने कहा है शिक्षा का मुख्य कार्य शासक वर्ग की संस्कृति, अधार्त विचारधारा, मूल्यों एवं हितो का ''सास्कृतिक पूर्णउत्पादन'' करना है। प्रभुवर्ग शिक्षा के माध्यम से विशेष प्रकार के अर्थ को लोगों पर थोप देते है, उन्हें सही साबित करते है।

बोरदयू ने कहा है कि निम्न वर्ग के बच्चे यही समझते है कि उन्हें कुछ विशेष हासिल नही होना है, इसलिए वे प्रयास ही नहीं करते है वे समझते है कि चाहे कुछ भी कर ले, बड़ो की सुविधायें उन्हे नहीं मिल सकती है। बोरदयू ने शिक्षा को ''सांस्कृतिक पूँजी'' का है।

शिक्षा के प्रकार्यात्मक परिप्रेक्ष :

इमाइल दुर्खीम ने कहा है कि शिक्षा समाज की आवश्यकता को पूरा करती है शिक्षा से समाज में एकता, सुदृढ़ता एवं स्थिरता उत्पन्न होती है। शिक्षा से समाज में समरूपता उत्पन्न होती है। स्कूल में बालक निश्चित नियमों के अन्तर्गत ही अन्य लोगों के साथ अर्न्तक्रिया करता है। यह अनुभव बालक को समाज के अन्य सदस्यो के साथ अन्तः क्रिया करने हेतू तैयार करता है। दुर्खीम के समान पारसन्स भी यही मानते है कि विद्यालय समाज का लघु रूप में प्रतिनिधित्व करता है। विद्यालय बच्चों को समाज के मूलभूत मूल्यों में समाजीकृत करते है। टालकॉट पार्सन्स भी प्रकार्यवादी दृष्टी से शिक्षा की चर्चा की है। शिक्षा से सार्वभोमिक मूल्य पनपते है, अपनाये जाते है। शिक्षा से समाज में मूल्य सिखये जाते है।

जान डी.वी. (J.DEWEY) मानते थे शिक्षा का उद्देश्य अपनी सम्पूर्ण क्षमता को विकसित करने हेतू प्रोत्साहन देना है। इवान इलीच (IVANILLICH) ने अपनी पूस्तक (DESCHOOLING SOCIETY) (१९७१) में वर्तमान औपचारिक शिक्षा पद्धति को

अनुपयोगी बतलाया है उनके विचार से समाज को विद्यालय विहिन करने की आवश्यकता है। इलीच ऐसी शिक्षा की बात करते है जो अनौपचारिक तथा आत्म निर्देशित हो। इन्होंने (WEB LEARNING) बेब शिक्षा पर काफी बल दिया है, ऐसी शिक्षा जिसे व्यक्ति स्वतंत्र होकर कम्पयुटर पर अर्जित कर सकता है।

भारत में शिक्षा का स्वरूप : भारत में बुनियादी शिक्षा की तस्वीर काफी डरावनी है। इसे आकड़ों में साफ देखा जा सकता है। निरक्षरों की आबादी के मामले में भारत का स्थान आज विश्व में पहला है। विश्व के कुल निरक्षरों में उनकी ३०: आबादी भारत में है। ६ से १४ वर्ष आयुवर्ग के २०: से अधिक बच्चे स्कूली शिक्षा से वंचित है। भारतीय शिक्षा व्यवस्था में अनेक समस्याये है घर से स्कूल की दूरी यातायात की सुविधा का अभाव जातीय एव लिंगभेद तथा विद्यालयों का अनुप्युक्त वातावरण।

शिक्षा का स्तरी करण : आधुनिक समय में शिक्षा एक बाजार वस्तु के रूप में तीन भागों में विभक्त है सबसे ऊपर उच्च कोटि की शिक्षा है, जिसपर कवेल संभ्रान्त वर्ग का कब्जा है। जो शिक्षा के निजीकरण और को क्रय करने के लिए बाध्य है। मध्य स्तरीय शिक्षा पर मध्यमवर्गीय लोग तथा कुछ मात्रा में निम्न वर्ग के लोगों का प्रभुत्व है। अंतिम स्तर पर सकारी स्कूलों में शिक्षण पाने वाला निम्न वर्ग है जो वंचित अवश्य है, लेकिन संतुष्ट है।

माध्यमिक शिक्षा : शिक्षा पैमाना के अर्न्तराष्ट्रीय मानक वर्गीकरण पर दो चरणों को शामिल करती है। स्तर-२ को बुनियादी शिक्षा का अंतिम और दुसरा चरण माना जाता है हर देश का उद्देश्य बुनियादी शिक्षा प्रदान करना है। माध्यमिक शिक्षा आम तौर पर प्राथमिक शिक्षा के छः साल बाद होती है। अधिकांस देशो में माध्यमिक शिक्षा "अनिवार्य" है कम से कम १६ वर्ष की आयु तक। बच्चे ११ वर्ष की आयु में निम्न माध्यमिक चरण में प्रवेश करते है। १९८९ से, शिक्षा को एक बच्चे के लिए बुनियादी मानव अधिकार के रूप में देखा गया है। बाल अधिकार के कन्वेंशन के अनुछेद २८ में कहा गया है कि प्राथमिक शिक्षा निशुल्क और अनिवार्य होनी चाहिए। माध्यमिक शिक्षा हर बच्चों को उपलब्ध और सूलभ होने चाहिए। कुछ देश १६ वर्ष से कम आयु के सभी युवाओं के लिए अनिवार्य और मुफ्त शिक्षा की और बढ़ रहे है।

सूचना प्रौद्योगिकी : वर्तमान समय में सूचना **प्रौद्योगिकी** ने मानव जीवन में क्रांति ला दी है और यह नगरीय क्षेत्रों के साथ-साथ ग्रामीण क्षेत्रों में अपनी दस्तक दे दी है आज समाज की विभिन्न आवश्यकताओं की पूर्ति सूचना क्रान्ति ही कर रही है। टेलीफोन, मोबाइल फोन, कम्प्युटर, लैपटॉप जैसी अनेक सूचना यंत्र आज लोगों को तरह-तरह की जानकारियाँ उपलब्ध करवा रही है जैसे-कृषि, शिक्षा, स्वास्थ्य की जानकारी, राष्ट्रीय घटनाये आदि भारत में कम्प्यूटर उपभोक्ताओं की संख्या ८१ मिलियन तथा डैन्सिटी ७.१: है जो भारत में सूचना क्रांति के बढने का सूचक है।

सूचना **प्रौद्योगिकी** क्षेत्र के विस्तार हेतु अनेक योजनाये तथा परियोजनाएँ भारत सरकार द्वारा संचालित की जा रही है। इसमें राज्य सरकारे भी अपना योगदान दे रही है। आज किसी भी देश में शिक्षा एव तकनीकी शिक्षा में जो सूधार हो रह है वह बहुत कम समय में दुनिया के अधिकांस देशो तक पहुँचाये जा रहे है। जैसे कम्प्यूटर का प्रयोग अब अधिकांश लोगों द्वारा होने लगा है। १९८४ में टेक्नॉलोजी मिशन ग्रामीण दूर संचार मिशन, भी सरकार द्वारा चलाए गये जिससे संचार क्रांति हर गाँव तक पहुँच सके औंर लोगों को नवीनतम तथा त्वरित जानकारी प्राप्त करने में सहायता मिले।

माध्यमिक शिक्षा में सूचना प्रौद्योगिकी : कक्षा में मोबाइल उपकरणों का उपयोग करना छात्र की रूची को बनाये रखने का साधन बन गया है। 'एडुटोपिया के नवीनतम गाइड' 'मिडिल स्कूल फार लर्निंग' यह मोबाइल एप है। जिसके द्वारा शिक्षण की सामग्री उपलब्ध रहती है। टेलीविजन पर शैक्षिक प्रसारण द्वारा एक साथ बड़े क्षेत्र और बहुत बड़ी संख्या तक पाठ्य सामग्री पहुचाना सलुभ हो गया हैं। कक्षा में रूबरू अध्ययन के साथ-साथ दूर शिक्षा के मामले में कक्षा आधारित अध्ययन के विकल्प के एक रंग के रूपमें इन प्रसारण का महत्व असंदिग्ध है। इन दृष्य श्राव्य माध्यमों को कैसेटो द्वारा उपलब्ध करा कर विद्यार्थियों को समय और स्थान की सीमाओं से मुक्त कर दिया है। जब चाहे शैक्षणिक कार्यक्रम देख और सुन सकते है। कई प्राइवेट ट्यूटर अपने विद्यार्थियों को पढाने के आडियो विडियो का प्रयोग कर रहें है।

सूचना प्रौद्योगिकी के द्वारा विद्यार्थी उन स्थानों को अपनी आखों से देख सकता है। जिसके बारे में वह पढ़ता है। विज्ञान का विद्यार्थी प्रयोगशालाओं, अनुसंधान केन्द्रों और विविध प्रकार के प्रयोगों से दृष्य माध्यम के द्वारा परिचित हो रहा है।

फ्री आनलाइन कोर्स योजना : १. स्वयं प्रभां⟶ मानव संसाधन विकास मंत्रालय ने छात्रों के लिए कए नई योजना शुरू की है इस योजना से सरकार छात्रों को मुफ्त में आनलाइन शिक्षा प्रदान करेगी। स्वयं (SWAYAM) के ३२ चैनल के जरिए भी पढाई कर सकेगें। इस योजना से स्कूल से लेकर कॉलेज तक के छात्रों को मदद मिलेगी। स्वयं खुद २००० पाठ्यक्रय की मेजबानी करने में सक्षम है।

२. ई. पाठशाला : केन्द्रीय मानव संसाधन मंत्रालय ने ई-पाठशाला नाम से मोबाइल फोन एप और बेवसाइट पोर्टल लांच कर दिया है। इस एप के जरिये एन.सी.आर.टी की किताबों को मुफ्त में डाउनलोड़ किया जा सकेगा हिन्दी और अंग्रेजी दोनों माध्यम से सभी विषयों की किताबें उपलब्ध होती है।

३. टॉप पैरेंट एप : तीन से आठ साल तक के बच्चों के अभिभावकों के लिए निःशुल्क मोबाइल एप है। ''इस एप से मध्यप्रदेश राज्य के सभी विद्यार्थी घर बैठे स्कूल शिक्षा विभाग द्वारा अध्ययन सामग्री प्राप्त कर, आनलाइन अध्ययन कर सकेगें।

४. दीक्षा एप : NCTE के द्वारा जारी किया हुआ एंड्राइड एपलीकेशन है, जिसे मोबाइल में इंनस्टाल करने के बाद घर बैठे अपने मोबाइल से ही पढाई कर सकते है। इस एप से पहली कक्षा से लेकर दसवी कक्षा तक, की पढाई आनलाइन अपने मोबाइल से कर सकते है।

५. बाइजू एप (BYJU'S) : यह आनलाइन अपलीकेशन है जिसके द्वारा स्कूल के पाठ्यक्रम को इन्टरनेट के माध्यम से पढाया जाता है। इंडिया के वेस्ट शिक्षक के द्वारा पाठ्यक्रम को पढाया जाता है,। यह शिक्षण मोबाइल, लैपटॉप, टैबलेट, आदि के द्वारा उपलब्ध किया गया है।

६. वेदान्तु एप (Vadantu App) : यह ई-लनिग एप है जिसका उपयोग कर बच्चे लाइव कलास के साथ-साथ स्टडी मेटेरियलल क्लास-१-१२ तक स्कोलरसिप क्युिज, टेस्ट इत्यादि पा सकते है यह इंडिया एप है जो सभी वर्ग के बच्चों को शिक्षा से जोडने का काम करती है।

७. डाउटनर एप (Doubtner App) : यह एपलिकेशन २४ घंटे विधार्थी के समस्या के सुझाव के लिए बनाया गया है।

पूर्व साहित्य का अध्ययन (Review of Earlier studies.)⟶ पान्डेय, रवि प्रकाश (२०१२) इसमें इन्होंने लिखा है- आज दुनिया के विभिन्न विश्वविद्यालय ई-लर्निग के माध्यम से शिक्षण प्रशिक्षण का कार्य सम्पन्न कर रहे है दुनिया के एक कोने में बैठा व्यक्ति अथवा संस्था इन्टरनेट के माध्यम से ज्ञान एवं विर्मश को दुनिया के दुसरे कोने पर बैठे व्यक्ति या संस्था को उपलब्ध करा रहे है। इसमें समय और दूरी समाप्त हो गई है। भारत में विभिन्न मुक्त विश्व विद्यालय आज इसी के प्रयोग से ज्ञान बाट रहे हैं।

चौबे, सरयू प्रसाद (1990) : इसमें इन्होंने कहा है कि चलचित्र एव आकाशवाणी द्वारा व्यक्ति अपनी मनोदशा को पूनर्जीवित कर रूचिकर बनाता है, परन्तु ये शिक्षा के दृष्टिकोण से अत्यधिक प्रभावशाली है। वे घटनाये जो दूर-देश में वातावरणों में घटती है, उन्हें इसकी सहायता से कक्षा में सजीवता के साथ प्रदर्शित किया जा सकता है, और तत्सम्बंधी शिक्षा प्रदान की जा सकती है।

साहु, गायत्री (2007) : इन्होंने लिखा है कि शिक्षा कैसी हो, उसका उद्देश्य कैसा हो, किस प्रणाली द्वारा शिक्षा दी जाए ये सब शिक्षा की महत्वपूर्ण बाते है। शिक्षण को सरल, सहज बोधगम्य, रोचक, तथा मनोरंजक बनाने के लिए मिडिया के विभिन्न साधनों का प्रयोग शिक्षकों द्वारा किया जाता है जिसमें टी.वी. कम्प्यूटर इन्टरनेट आदि प्रमुख है। शिक्षा के लिए कई तरह की नई प्रौद्योगिकी का प्रयोग स्वयं भारत में किया जा रहा है।

सिंह जे.पी. (२०१३) : शिक्षा आवश्यक ज्ञान और दक्षता प्रदान करती है जो व्यक्ति को समाज में आर्दश रूप में कार्य करने योग्य बनाती है। विज्ञान तथा तकनीकी के माध्यम से हम अपनी शिक्षा प्रणाली को २१ शताब्दी के लिए तैयार कर सकते है सूचना तथा संप्रेषण प्रौधोगिकी में आये ताजा बदलाव शिक्षा की अलख जगा सकते है। आज शिक्षा ज्ञान और सूचना की पूँजी

का आधार बन गयी है। राष्ट्रीय शिक्षा नीति १९८६ यह मानती है। कि "एक निश्चित स्तर तक हरेक शिक्षार्थी को बिना किसी जात पात, धर्म स्थान या लिंग भेद के लगभग एक जैसी अच्छी शिक्षा उपलब्ध हो।

श्री वास्तव, राजीव कुमार (२०१२.१३) : इन्होंने लिखा है कि दुनिया बहुत छोटी हो गई है, एक गाँव बन गई है जहाँ सब लोग सब कुछ जान सकते है आज सूचना प्रौधोगिकी की विश्व स्तर पर एकीकरण हुआ है। इसके अधिकाधिक प्रयोग से विशेष रूप से इन्टरनेट के तीव्र विस्तार के फलस्वरूप विभिन्न क्षेत्रों में मानव गतिविधियों में क्रांतिकारी परिवर्तन दृष्टिगोचर होते है।

दाधीच, बालेन्दु शर्मा (योजना २०२१) : डिजिटल इंडिया की बदौलत एक अरब भारतीय को आनलाइन लाने कि दिशा में बड़ी सफलता प्राप्त की जा चूकी है। भारत में सस्ती दरो पर उपलब्धी स्मार्टफोनों के साथ-साथ सस्ती दरो पर इन्टरनेट कनेक्टिविटी की उपलब्धता और दुर संचार की विश्व-स्तरीय आधार भूत ढाचे ने डिजिटलीकरण की अदभुत क्रांति को साकार कर दिखाया है।

निशंक, रमेश पोखरियाल (योजना २०२१) : शिक्षा अन्य बातो के अलावा सांस्कृतिक जागरूकता और सहानुभूति दृढता धेर्य, टीमवर्क नेतृव संवाद सहित ज्ञान सम्बंधी सामाजिक और व्यवहारिक कौशल विकसित करती है इस प्रकार २०२२ तक नया भारत एक ऐसी शिक्षा प्रणाली के लिए मजबूत आधार प्रदान करेगा जो आसनी से सुलभ निष्पक्ष, गुणवर्त्तापूर्ण, किफायती और जवाब देही के सिद्धान्तों पर आधारित होगी। नये भारत की शिक्षा विद्यार्थी को लाभकारी और संतोष्प्रपद रोजगार के लिए तैयार कर चरित्र निर्माण का बढावा देने में सक्षम बनायेगी।

प्रस्तावित शोध का महत्व :(Significance of the studies.*)* प्रस्तुत शोध अध्ययन का महत्व वृद्ध स्तर पर होगा। आज कल वैश्विक महमारी कोरोना के कारण सभी स्कूल बन्द है और बच्चों की शिक्षा पर कोई प्रभाव नहीं पड़े इसलिए प्रत्येक वर्ग की पाठ्यक्रम को सूचना प्रोद्योगिकी के स्त्रोत, कम्प्यूटर मोबाइल, इन्टरनेट के द्वारा जारी किया गया। जिसमें प्रत्येक आय समूह के लोगों ने सराहनीय योगदान दिया। माध्यमिक शिक्षा काल में ही बच्चों का चरित्रिक विकाश के साथ-सथा उनकी रूचियों एवं व्यवहारिक गुणों एवं रचनात्मक प्रवितियों आदि का विकाश होता है। वैसे तो सूचना प्रोद्योगिकी शिक्षा का अच्छा माध्यम है जो शिक्षा से संबंधित कई आवश्यकताओं की पूर्ति करता है।

कोविड़ जैसे महामारी के समय में भी भारत नही बल्कि पूरे विश्व स्तर पर सूचना प्रौधोगिकी ने अहंम भूमिका निभाई चाहे वह क्षेत्र अर्थव्यवस्था हो या सांस्कृतिक, सामाजिक, अन्तःक्रिया या शैक्षणिक व्यवस्था ही क्यो न हों।

आज के समाज की समस्याओं और आवश्यकताओं की दृष्टि से इस अध्ययन की प्रासंगिकता : (Relevance to the present Day problems and needs of society.) आज के युग में स्मार्ट फोन, कम्प्यूटर, ई-लर्निग की महत्ता से हम सभी परिचित हैं। राष्ट्रीय शिक्षा नीति में विद्यालयी स्तर से ही कम्प्यूटर शिक्षा पर अधिक बल दिया गया हैं ताकि बालक शुरू से ही सभी स्तर का ज्ञान को और भी तीव्र गति से विकषित कर सके। १९८५ में पहली बार शिक्षा को विद्यार्थों तक पहुँचाने के लिए दृष्य एवं श्राव्य माध्यम को आवश्यक हिस्से के रूप में प्रयोग आरंभ किया गया १९९९ से 'ज्ञान दर्शन" के नाम से दुरदर्शन का एक स्वतंत्र चैनल आरम्भ किया गया। जो पहला शिक्षण चैनल कहा जाता है। आज प्रोद्योगिकी के जिस दौर से हम गुजर रहे है उनमें शिक्षा के लिए कई तरह की नई प्रोद्योगिकी का प्रयोग स्वयं भारत में किया जा रहा हैं दूर शिक्षा के व्यापकीकरण के चलते इनकी उपयोगिता की बढ़ रही है। अब फोटो कम्पोजिंग का इस्तेमाल ज्यादा हो रहा है। फोटो कापीयर ने विद्यार्थियों के लिए अधिक बड़े स्तर पर तरह तरह की पाठ्य सामग्री आसानी से उपलब्ध कराने में मदद की हैं

इस प्रकार शिक्षा के क्षेत्र में सूचना प्रोद्योगिकी ने संभावनाओं के नये द्वार खोल दिये है, परन्तु प्रश्न यह उठता है कि भारत जैसे देश में जहाँ अभी भी एक तिहाई से अधिक आबादी निरक्षरता के अभाव से ग्रस्त हैं, जहा लगभग इतनी आबादी गरीबी की रेखा से नीचे जीवन यापन कर रही है, वहां क्या शिक्षा के सार्वभौमिकरण के अभियान को सिर्फ सूचना प्रोद्योगिकी के माध्यम से सफल बनाया जा सकता है? क्या इस प्रोद्योगिकी का प्रयोग गरीबी रेखा से नीचे जीवन यापन करने वाले वर्ग भी कर रहे है? जिन तक शिक्षा पहुचाना सबसे पहली प्राथमिकता है। इस दृष्टि से विचार करे तो स्थिति कतई संतोषप्रद नहीं है।

गांव में ट्राजिस्टर तो फिर भी उपलब्ध हो जाते है, परन्तु टेलीविजन खरीदना गरीब परिवारों के लिए अब भी असंभव है। भारत के अधिकांस गांवों में बिजली की आपूर्ति बहुत कम है।

ऐसी स्थिति में यह संभव नहीं लगता कि, प्रसारण केन्द्रों और सैंकड़ो चैनल के बावजूद गाँवों और सुदूर क्षेत्रों में रहने वाले गरीब और पिछडे लोगों को इन सभी सुविधाओं का लाभ सचमुच मिल सकेगा।

अतः इन समस्याओं को देखते हुये आज के वर्तमान समाज में शोध कार्य की अत्यंत आवश्यकता है। वर्तमान शिक्षा के क्षेत्र में जो परिवर्तन या विकास हो रहा है,। अतः इस संदर्भ में यह मेरा यह शोध अध्ययन विधार्थी तथा मानव समाज के लिए उपयोगी होगा।

आकडों का अभिसारण एंव विश्लेषण : (Suggestion)

प्रस्तुत शोध अध्ययन का योगदान इस बात को अनुरोखित करेगा कि पिछले कुछ वर्षों में सूचना प्रोद्योगिकी ने शिक्षा और विज्ञान के क्षेत्र में अमूलय योगदान दिया है। विश्व की आबादी का लगभग ३.१ मिलियन लोग रोजाना सूचना प्रोद्योगिकी का प्रयोग कर रहे है, परन्तु भारत में संसाधन की पहुँच लोगों तक समुचित रूप से नहीं हो पाई हैं कठिनाई भी यही है कि शिक्षण में सूचना प्रोद्योगिकी का प्रयोग उसी सम्पन्न वर्ग तक ही सीमित है जो कम्प्यूटर खरीदने की क्षमता हासिल कर चुके है। २१वीं सदी में सूचना के माध्यम का विस्फोटक युग एक नये तरिके से समाज की संभावनाओं का निर्माण करेगा। माध्यमिक शिक्षा पर सूचना प्रोद्योगिकी की बढ़ती हुई भूमिका को देखते हुये सरकार को कोई ठोस कदम उठाना चाहिए, जिससे हर क्षेत्र, वर्ग के विद्यार्थी को उचित और मूल्यवान शिक्षा प्राप्त हो सके। शोध के होन से मौजूदा ज्ञान में बढ़ोतरी होती है तथा कार्य क्रम क्रियान्वयन करने में सहायता मिलती है। वर्तमान समय में स्मार्टफोन, कम्प्यूटर में इन्टरनेट के द्वारा शिक्षा ग्रहण करनें में सबसे ज्यादा बच्चे प्रभावित हो रहे है उनपर इसका नाकारात्मक प्रभाव भी पड़ रहा हैं अतः यह शोध विद्यार्थियों के शिक्षण से सम्बंधित समस्याओं के सामाधान में सहायता पहुँचायेगा इसके साथ ही इस विषय पर नया प्रकाश पड़ेगा, जो भविष्य के कार्य योजना निर्माण में सहायक हो सकता है।

संदर्भ सूची

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लोकविधी जागरण : एक विधिनाटय

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सोनई ता. नेवासा जि. अहमदनगर पिन कोड नं. ४१४१०५

प्रस्तावना :

विधीनाटयात एकाच वेळी विधी व नाट्य प्रकटत असते. विधिनाटय ही लोकानाटयाची पूर्ण अवस्था असते. विधी, भक्ती व नाट्य या गोष्टीविधीनाटयात एकत्रपणे येतात. खंडोबाच्या नावाने जागरण घालणे हा विधीनाटयाचाच प्रकार आहे. महाराष्ट्र, कर्नाटक, आंध्रप्रदेश आणि तामिळनाडू या प्रदेशात अनेक जाती जमातीत खंडोबाचे जागरण घालणे हा एक कुलाचार आहे. ज्या घराण्याचे कुलदैवत खंडोबा आहे, अशा कुटुंबात वर्षातून एकदातरी स्वतःच्या घरी किंवा देवस्थानाला जावून खंडोबाच्या नावाने जागरण घातले जाते. जागरण केल्याशिवाय खंडोबाच्या उपासानाविधीस पूर्णत्व येत नाही, अशी लोकांची धारणा असते. म्हणून जागरण घालून देवाची शक्ती जागृत करावी व त्यांची कृपा आपल्या कुटुंबावर व्हावी, संकटे तळावीत म्हणून जागरण हा विधी कुलाचाराच्या माध्यमातून केले जातात. लोकांची धार्मिक भावना जागृत करण्यासाठी हि विधीनाटयासारखे विधी उपयोगी ठरतात.

जागरण हा कुलाचार व कुलधर्माचाच एक भाग मानला गेला असून त्याचे सादरीकरण जागरणाच्या स्वरुपात केले जाते. वाघ्यामुरळीची उपास देवता जेजुरीचा खंडोबा ही होय. त्या दैवताच्या उपासनेसाठी करावयाचा विधी जागरण या नावाने ओळखला जातो. या विधीत पुरोहित म्हणून वाघ्याआ-मुरळी व त्यांचा संच आलेले असतात. यजमानाने त्यांना मुद्दाम श्रद्धापूर्वक बोलविलेले असते. सगे-सोयरे, मित्रपरिवार, गावकरी हे त्यात श्रद्धापूर्वक सामील होतात. या विधीसाठी विशिष्ट वस्तू वाघे व त्यांचा मांड असे घटक समाविष्ट झालेले असतात. हे घटक एकात्मतेने विधीनाटय सादर करतात.

श्रीकृष्णाने पहिले जागरण घातल्यामुळे हिंदूधर्मात ते शास्त्रसंमत झाले. विशेष म्हणजे खंडोबाची पूजा ही शंकराची पूजा मानली जाते. म्हणून आजही भाविक भक्त वाघ्या-मुरळीला बोलावून जागरण गोंधळ घालतात.

"तिळा इडा पावड पूजा |
देव आले भक्ता काजा
भक्ती भावाची माळ तुळशीची |
पुत्र पंचावन्न लक्ष्मी
गाई, म्हशीन भरतील वाडं |
ताक दुधानं भरतील ड़ेरं
जो भाव भरला कोटंबा तो भाव
सिद्धीस ने मल्हारी म्हाळसा राव" ||

त्यानंतर जागरण स्थळी देवताची स्थापना केली जाते. पूजाविधी मांडला जातो. त्याचे एक पारंपारिक शास्त्र आहे. त्यानुसारच पूजाविधी मांडतात.

वाघ्या-जागरणाच्या पूजेसाठी यजमानाला खालील सामग्री आणावयास सांगतो. त्यात पाच नारळ, हळद-कुंकू, लाल गाचे वस्त्र, खोबरं, सात खारका, सात हळकुंडे, सात फळे,फुले व फुलांचे हार, भंडारा, गोडेतेल, सात बदाम, सात लाल सुपाऱ्या, नागवेलीची पानं, कापूरवड्या, गुलाल, खंडोबाचा टाक, चांदीचा गाडा, दिवटी-बुधली, लंगर, पाच ज्वारीची ताटे, गहू, गांडूळ, कलश, बाजरीच्या कडकन्या इ. सामुग्री तयार ठेवण्यास

सांगतो. परंपरेने पाच वस्तू व सात वस्तू यांना शुभ संकेत आहे. त्यामुळे पाच सात असा शुभ अंक कल्पून या वस्तू मांडल्या जातात असे वाघे सांगतात.

❖ पूजाविधी :

जागरणाच्या पूजेसाठी सामुग्री आणल्यानंतर वाघे प्रथम गायीच्या शेणाने जमीन सारवून घेवून त्या जागेवर व आजूबाजूला मुत्र शिंपून वातावरण शुद्ध करून घेतात.

रंगभूमी भरल्यानंतर पूजा मांडली जाते. हि पूजा मांडताना प्रथम उसाच्या अथवा ज्वारीच्या ताटांची तिकाटणी एका रंगावर उभी केली जाते. चौरंगावर लाल वस्त्राची गादी करून ठेवतात.व त्यावर भंडार्याची भरणी करतात.तिकाटणीवर लांच्या माळा सोडतात. नागवेलीची पाने ठेवून त्यावर नारळाचा घट बसवितात. चौरंगावर असे दोन घट बसविले जातात. प्रात एक घट खंडोबाचा व दुसरा घट देवीचा असतो. घटाच्या समोर देवीचा टाक ठेवून यजमान त्या घटाची व टाकाची पूजा करतो. वाघे व इतर जमलेल्या सर्व मंडळींच्या कपाळावर भंडारा लावून व यजमानालाही भंडारा लावून "यळकोट यळकोट जय मल्हार" म्हणून जागरणाला प्रारंभ केला जातो.

जागरणाचा पूर्वरंग :

जागरणाचा प्रमुख वाघ्या हातात खंजिरी घेवून आपल्या पारंपारिक वेशात उभा राहतो. त्याच्या गळयात भंडाऱ्याने गरीबाच्या चामड्याची पिशवी असते. त्याच्या सोबत मध्ये मुरळी आणि मागे इतर साथीदार वाघे तुणतुणे,इफ,टाळ,पाटी,दिमडी अशी पारंपारिक वाद्ये घेवून ही मंडळी उभी असते. जागरणाचा प्रारंभ गणेशाचे नमन करून होतो. त्यास,

गण- १ :

"महाराजा गणराया, तुझ्या चरणी नमन माझे
गण हा गौरीचा नंदन, चौदा विद्येचा हो साधन
मलदार मार्तंड तुझे ध्यान आम्ही लागतो तुमच्या पाया
महाराज गणराया"

याप्रमाणे गण गायिल्यानंतर आवतन होते त्यात देवदेवतांना जागरणासाठी येण्याचे आवाहन केले जाते.

पुर्वरंगाच्या या टप्यात वाघ्या-मुरळी देवदेवतांना जागरणासाठी येण्याचे आवाहन करतात. हे आवाहन करण्यामागे देवदेवतांची आपल्यावर कृपा होईल आणि सादर करीत असलेला कार्यक्रम निर्विघ्न पार पडेल अशी भूमिका जागरण सादर करणाऱ्या वाघ्या-मुरळींची असते.वाघ्या-मुरळीं देवतांना आवाहन खालील गितातून करतात.

"जागरण मांडिले मल्हारी जागरणाला यावे"
सोबत म्हाळसा-बाणु आणावे |
खंडोबा जागरणाला यावे |
सकळीक देवा जागरणाला यावे |
आपल्या भक्ताला वारंवार तारावे" ||

अशा गीतातून वाघ्या-मुरळींदेवदेवतांनाजागरणासाठी येण्याचे आवाहन करतात. यावेळी मुरळीचा पदन्यास असतो. सर्व वाद्येही खालच्या स्वरात वाजविली जातात.

गीतातून गण आणि देवदेवतांना आवाहन केल्यानंतर जागारानातील प्रमुख वाघ्या संचातील इतर वाघ्यांना व मुरळींना रंगमंचावर स्थान ठरवून देत असतो. त्यात उजव्या किंवा डावीकडे सर्व बाजूकडून देव जागरणाला

आले असे गृहीत धरून डोबाची अध्यात्मिक उपासना गीते गायली जातात. त्यातून खंडोबाचे गुणगान केले जाते.

"सोन्याची जेजुरी | गडाला नवलाख पायरी |
तेथे नांदतो देव मल्हारी |
संग म्हाळसा-बाणाई या दोन्ही नारी |
झेंडे लावती अहो जेजुरीला नवसाचे |
काय वर्णू गुण या खंडेरायाचे |
होऊन घोड्यावर स्वार निघाले खंडेराया |
मार्ग चालली फौज भक्तांची लावली माया" ||

म्हाळसा-बाणाईचा संदर्भ घेतल्याशिवाय खंडेरायाच्या जीवनाला पूर्णत्व प्राप्त होऊ शकत नाही. त्यामुळे वाघ्या-मुरळी रेखाबाविषयीची महानता नोंदवतात. त्याठिकाणी म्हाळसा आणि बाणाई यांचाही उलगडा नकळत वाघ्या-मुरळी यांच्या गीतातून पास होत असतो.

साध्या -मुरळी जागरणात जी गीते गातात ती सहसा ग्रामीण संस्कारातून आलेली असतात. त्यामुळे ग्रामीण धर्मविषयक कल्पना, देवदेवतांच्या संदर्भातील श्रद्धा, ग्रामीण जिवनातील सुखदुखांच्या प्रसंगाचे देवतेच्या संदर्भातील आरोपण, महाराष्ट्रातील संस्कार, अध्यात्मिक कुटाचा स्पर्श, ग्रामीण शृंगार आदी बाबींचा स्पर्श वाघ्या-मुरळीच्या गीतांना झालेला असतो.

पूर्वरंगातील गीते :

"तू तालात घाटी वाजव
तू डोक्यात दिमडी वाजव
तू तुनतुना संबळ वाजव
जागरण गोंधळाची रात गाजव
खंडेरायाच चांगभल बोलायचं
रूप हे पाहून भंडारा उधळून लंगर तोडायचा
मल्हारी मार्तडांचा यळकोट गजर करा
देवाचिया तळी भरा, भक्तीभाव धरा
देव हा मायाळू आहे तो कृपाळू
मल्लू देवाला जागरणाला उठून बोलवायचं
तू डोक्यात दिमडी वाजव" ...

जागरणाचा उतररंग :

जागरणाचा पूर्वरंग संपल्यानंतर दहा-पंधरा मिनिटे विश्रांती घेवून वाघ्या-मुरळी उत्तररंगाला सुरुवात करतात. यात डाबाची महात्म्यपर गीते, पौराणिक स्वरुपाची गीते, खंडोबा,म्हाळसा,बाणाई यांची सांसारिक कथा आणि कथागीते, नृत्य, संगीतासह सादर केली जातात. तसेच राजे महाराजे यांची उदाहरणे देवूनही काही गीते वाघ्या-मुरळी या भागात गातात. शिवाय लंगर ताडणं, भार उतरणे आदी बाबीही उत्तररंगात येतात. त्यामुळे गोंधळापेक्षा जागरण विधीनाटय अधिक रंगतदार असते. भगत याच्या नृत्यात पदन्यासाची विशिष्ट पद्धत असते. कृपाणी **कथागीते**

जागरणाच्या या उत्तररंगात सादर केली जाणारी कथागीते म्हणजे जागरणाची नाट्यसंहिताच असते. ती अलिखित स्वरुपाची आहे. मौखिक परंपरा ही वाघ्या-मुरळीत परंपरेनेच आलेली असल्यामुळे आणि ते

खंडोबाचे उपासक असल्याने याविषयी आणि म्हाळसा बाणुविषयांच्या गीतांची संख्या त्यांच्याकडे विपुल प्रमाणात असते. त्यांच्या गीतातील विषय हे जीवनातील घटना प्रसंग आणि जीवानुभव खंडोबा देवाच्या माध्यमातून उत्कटतेने चित्रित केलेले असतात. जागरणाच्या रंगात वाघ्या-मुरळी खंडोबाच्या लग्नाचे, खंडोबाच्या सांसारिक जीवनाचे, दोन बायकांचे, त्यातील सवती मत्सराचे, खंडोबाच्या प्रसिद्ध स्थळांचे, बाणाईच्या सौंदर्याचे, म्हाळसाच्या केविलवाण्या अवस्थेचे चित्रण अनेक गीतात अतिशय कुशलतेने सादर करीत असतात. त्यांचे नृत्यही पाहण्यासारखे असते.

त्यादृष्टीने काही कथागीते पाहता येतील.

"काळाचा कर्दनकाळ मल्हारी तो कैवारी, दैत्याची
धडकेने खडक फोडतो, भैरवनाथ जय मल्हारी |
नाथाचा नाथ मल्हारी, भक्तांना पावतो जय मल्हारी ||
दर्शन देतो जय मल्हारी ...
गडाचा राजा मल्हारी हाय गं , तो येडा हाय गं , तो कुपनी चेडा
त्यांचा ढवळा घोडा त्याचा लंगर तोडा , त्याची वारी चढा
जेजुरीच्या राज्याचं लगीन पालीला ठरलं , देवाच्या हे लग्नात तांदूळ वाटलं
चला चला जाऊ ग पालीला म्हाळसाईच्या लग्नाला
हळद लावा देवाला बोई , तेलचं लावा देवाला बाई , बाशिंग बांधा देवाला बाई,
कंगण बांधा देवाला बाई
पालीला पाली देवाचं व-हाड गेलं , देवाच्या लग्नाला गौरीचा गणपती आलं
ब्रम्हा , विष्णू आलं ग पार्वतीच शिव आलं , सभेचा इंद्र आला गं ...
अन केदारनाथ आला गं आला , गडाचा राजा मल्हारी हाय गं ...
ते शंभूश शिवगण आलं , सांर भाविक भक्त आलं
जेजुरीत दिवाळी साजरी झाली , देवाची पटराणी पालीची भारता आली
गडावर बिपमाळ पेटवली जेजुरी सारी नटवली
जेजुरी गाव सजून गेलं , वरात पाहून भाऊन गेलं ...
देवाला पाहून सारं हारलं, देवाचं चरण भक्तांनी धरलं
गडाचा राजा मल्हारी देव मल्हारी हाय गं
असा पाहून सोहळा आहा , भक्त आनंदी झाला पाहा ...

लंगर तोडणे :

काही ठिकाणी जागरणाची सांगता करताना लंगर तोडण्याचा विधी केला जातो. उत्तर रंगात कथा सादरीकरणाचा पहाटेपर्यंत चालतो. तो संपल्यानंतर जसे काही लोक भार उतारतात तर काही लोक लंगर तोडण्याचा विधी करतात. किलो वजनाची अठ्ठावीस कड्या लोखंडाची साखळी म्हणजे लंगर होय. एक पहार जमिनीत रोवून त्याला हा लंगर लावतात. प्रथम या लंगराची पूजा केली जाते. विशिष्ट प्रकारचे गीतही लंगर तोडताना म्हणतात, "मारी मातंड घेऊन खंडा तोडी मुंडा या वैऱ्याचा".

असे गीत म्हटल्यानंतर वातावरण भारले जाते. या वातावरणाने वाघ्याच्याही अंगात देवाचे वारे येते व त्या अवस्थेत वाघ्या किंवा भगत लंगर तोडतो. लंगर तोडण्याचा हा विधी अत्यंत काटेकोरपणे केला जातो. या विधीत नाट्य भरलेलं असल्याने जागरणाची जमलेले भाविक भक्तही तनमनधनाने या विधीचा सोहळा पाहत असतात.

या लंगर तोडण्यालाही खंडोबाच्या भक्तीत आणि जागरणात अतिशय महत्वाचे स्थान आहे. कारण हा लंगर जर नाही तर जागरण घालणार्याचे काही तरी चुकले आहे, या जागरणाला देव पावला नाही असे म्हटले जाते. आणि जर सदानंदाचा यळकोट यळकोट म्हणत तर जागरण खंडेरायाजवळ पोहोचले असे समज वाघ्या-मुरळी आणि जागरणासाठी जमलेल्या श्रोत्यांचा असतो. लंगर तोडण्याचा विधी अतिशय काळजीपूर्वक केला जातो.

जागरणातील उत्तररंगात लावलेले आख्यान संपल्यानंतर लंगर का तोडला जातो याचे सविस्तर वितरण देवाची प्रचात सोपान खुडे पुढीलप्रमाणे करतात. "वाघ्याजवळ कोटंबा आणि लंगर या वस्तू असतात.कोटंबामधील कोट नाम आणि अंबा याचा अर्थ आई असा आहे. थोडक्यात मातृदेवतेचे म्हणजेच स्त्रीत्वाचे लंगर हे प्रतिक आहे. "लंगर" हा "नांगर" या शब्दाशी संबंधित आहे. नांगर हा शेतीच्या बीजवपन करीत असत. त्या काठीच्या हा प्राचीन ऑस्ट्रीक शब्द वापरलेला आहे. लंगर या शब्दाचे मूळ "लक" हा शब्द आहे. म्हणजे लंकर , लंगर प्रक्रियेशी संबंधित आहे. अशा प्रकारे लंगर या शब्दाचा उलगडा सोपान खुडे यांनी केलेला आहे.

समारोप :

वरील विवेचनावरून वाघ्या-मुरळी हे समाजानेच जन्माला घातलेले अपत्य आहे. समाजाच्या मानसिकतेतून काही खातर हा विचार बाहेर आलेला दिसतो. कारण जुन्या काळी देवाला माणसांचा बळी देला जात असे. तसेच प्राचीन काळी देवाला मानुस वाहण्याची परंपरा होती. नंतर त्या प्रथेला पायबंद बसला. आणि कोंबडे, पशुपक्षी, जनावर देवाला बळी देण्याची प्रथा अस्तित्वात आली. गुलाम म्हणून माणसे विकायची परंपरा होती. याचाच मागळातील माणसांची किंमत शून्य होती.

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