

Seasonal infections of intestinal cestodes in freshwater fishes from Yeldari Dam, India

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Abstract

In present study cestode parasite of freshwater fishes from yeldari dam and seasonal infection were analysed. *Mastacembelus armatus* (Lacepede, 1800), *Channa punctatus* (Bloch, 1793), *Mystus seenghali* (Sykes, 1839) and *Wallago attu* (Bleaker, 1857) collected from Yeldari Dam. Among freshwater fish intestine were contaminated with cestode parasites during dissection of fishes. Three species were detected that are *Circumonchobothria* sp., *Gangesia* sp. and *Senga* sp. Also, Prevalence and density of cestode parasites during oct 2019 to nov.2020. The maximum prevalence of cestode parasites observed in summer month (March2020 to May 2020). In March to May 2020 maximum cestode parasites were collected from freshwater fishes.

Keywords: *Mastacembelus armatus*, *Channa punctatus*, *Wallago attu*, cestodes, parasites, seasonal infections, *Circumonchobothria* sp., yeldari dam etc.

Introduction

Freshwater fishes are great source of animal protein and its production, conservation and parasitology of fishes is one of the important aspects since fish parasites are responsible for various pathogenic diseases resulting in their death, particularly in younger stages. Effect of parasitism results in the destruction of hosts tissues, either by mechanical action due to migration of parasites or their larvae or their multiplication in organs or tissues, or by insertion of attachment organs of parasites (hooks, suckers) etc. into tissues as anchors. (Taqdees Farooq *et al.*, 2016) [12]. Asian tapeworm ability to infect a wide variety of fish and copepod host (Korting, 1975; Dove and Fletcher 2000) [7]. Asian tapeworm has reportedly caused considerable mortality in hatchery ponds (Liao and Shih 1956; Korting 1975) [8, 7].

Healthy and quality fish meat, it is necessary that the fish should be free from all types of pathogens like bacteria, algae, protozoans, helminths, annelids, arthropods and molluscs. Parasites of fish constitutes one of the major problems to fish health.

Second most host of cestode is a fish. In fish, juvenile cestode stages (metacestodes) are found in internal organs or muscle, with the adult stages in the intestine. Cestodes lack a digestive system in both larval and adult stage. The exchange of nutrients and waste products taking place through the body wall or integuments. Adult worm is hermaphrodites that is both male and female reproductive organ present in each proglottids.

Indian researcher carried out on some aspect from different Dam localities, Pawar R.T. *et.al*, 2016 reported that In *Circumonchobothrium* sp. the mean values for *Mastacembelus armatus*, the seasonal influence of the percentage of incidence was highest 13.57% *Circumonchobothrium* sp. from Aurangabad district the (Aurangabad) whereas lowest value is 13.38% (Nanded). incidence, intensity, density and index of infection was the value for intensity, density and index of infection high in

winter, moderate in rainy season and lowest in from Nanded district was higher as compared with summer season, in Nanded district the infection was high Aurangabad district. Also, Asawari Fartade *et.al* (2018) [11], investigated the high infections of helminth parasite (incidence, intensity, density and index of infection) were occurred in summer season. Then it was followed by winter where as very low in monsoon season.

So, present investigation on prevalence of cestode parasite in freshwater fishes from Yeldari Dam located in Parbhani district Maharashtra, India.

Material and Method

Fishes sample were collected from Yeldari Dam, Jintur district Parbhani at the GPS latitude N 19° 43' 12.4'' longitude E 76° 43' 55'' during the year 2019 and 2020.

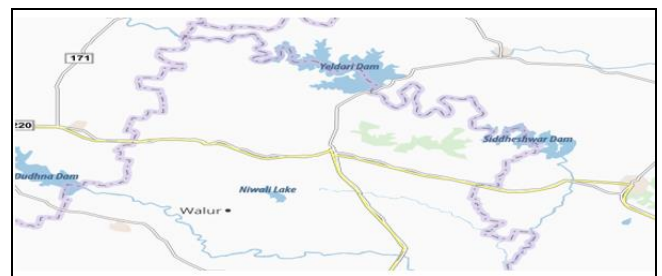


Fig 1

In present investigate cestode parasite prevalence from freshwater fishes are *Mastacembelus armatus*, *Channa punctatus*, *Mystus seenghali* and *Wallago attu* they collected and examined for cestode infection. Also, other freshwater fishes taken for examination of cestode infection in intestine of fishes. Then cestode parasite were preserved in 4% formalin, washed in saline and water, dehydrated in various alcoholic grades, stained with Harris haematoxylin and Borax carmine, cleared in xylene, mounted in D.P.X. Drawings were made with the aid of camera Lucida and

identification by standard methods (Schmidt, 1934; Yamaguti, 1959; Hiware *et al*, 2003; Bhure, 2008) ^[11, 13, 9, 2]. Prevalence (Incidence) of infection were recorded and calculated according to Pennyuck K.L. (1973) ^[10] and Bhure *et.al.* (2016) ^[5].

$$\text{Prevalence of Infection (\%)} = \frac{\text{Number of Infected Host}}{\text{Number of Total Host Examined}} \times 100$$

$$\text{Density \%} = \frac{\text{No. of parasites collected in sample}}{\text{Total Hosts examined}}$$

Results and Discussion

The present investigation was carried out in freshwater

fishes from Yeldari Dam which *M. armatus*, *Ch. punctatus* and *W. attu* collected from Yeldari Dam. Among freshwater fishes were contaminated with cestode parasite during dissection of fishes. Three species were detected from *Circumonchobothria sp.* *Gangesia sp.* and *Senga sp.* mentioned in Table 1.

Bhure *et al.* (2016) ^[5] reported the diversity of *piscean* Cestodes including 26 species of five genera. Ten species of *Senga*, seven of *Gangesia*, four of *Silurotaenia*, three of *Polyoncobothrium* and two of *Proteocephalus* were reported from *Channa sp.* from different localities of Marathwada Region of Maharashtra.

Table 1: Cestode parasites found in freshwater fishes from Yeldari Dam

Cestode Parasite sp.	Host	Habitat	Locality
1 <i>Circumonchobothria yelderensis</i>	1) <i>Mastacembelus armatus</i>	Intestine	Yeldari dam
2 <i>Gangesia sp.</i>	2) <i>Channa punctatus</i>		
3. <i>Senga punctatusae</i>	3) <i>Wallago attu</i>		
	4) <i>Mystus seenghali</i>		

Table 2: Monthly variation of Cestode parasites in freshwater fishes from Yeldari Dam

Sr. No	Month & Year	No. of dissected Hosts	No. of infected Hosts	Prevalence %	Density %	No. of Cestode Parasites collected
1	06 Oct. 2019	15	04	26.66	0.57	26
2	17 Nov. 2019	16	06	37.50	0.69	23
3	21 Dec 2020	15	08	53.33	0.83	18
4	27 Jan. 2020	18	05	27.77	0.62	29
5	26 Feb 2020	17	07	41.17	0.70	24
6	30 Mar.2020	24	19	79.16	0.7	19
7	29 Apr 2020	23	18	78.26	1.3	32
8	30 May 2020	26	22	84.61	1.3	34
9	30 Jun. 2020	21	09	42.85	0.77	27
10	28 Jul. 2020	16	07	43.75	0.44	36
11	30 Agu.2020	21	04	19.04	0.53	39
12	24 Sept. 2020	22	03	13.63	0.70	31
13	21 Nov. 2020	26	06	23.07	0.76	34

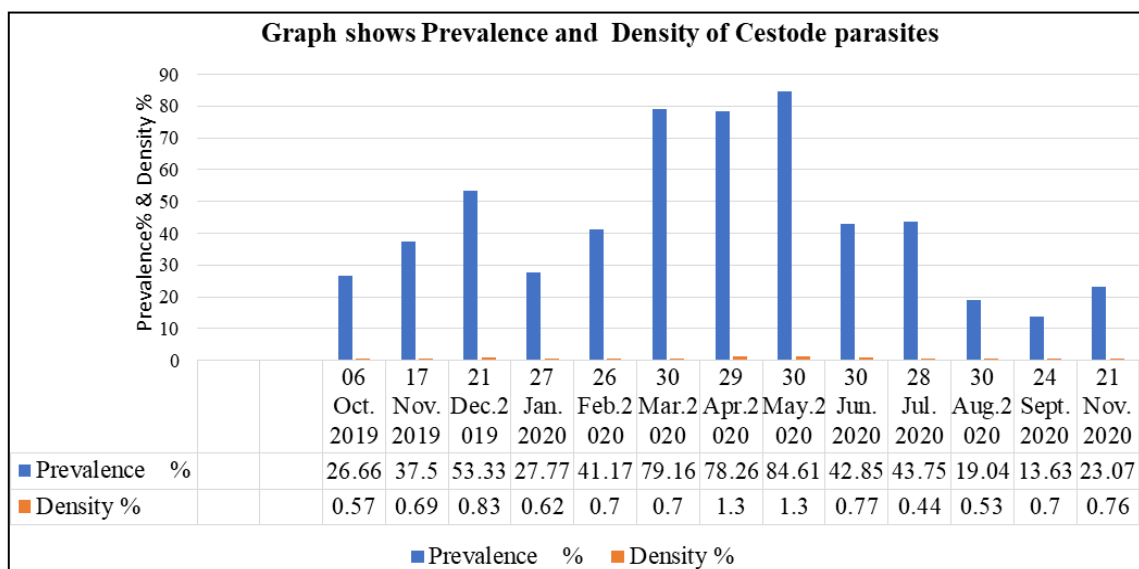


Fig 2



Fig 3: *Wallago attu*



Fig 4: *Mastacembalus armatus*



Fig 5: *Channa punctatus*

In present investigation graph shows that Prevalence and density of cestode parasites during oct 2019 to nov.2020. The maximum prevalence of cestode parasites observed in summer month (March2020 to May 2020). In March to may 2020 maximum cestode parasites were collected from freshwater fishes mentioned in table. From above table and graph shows that considerable difference in prevalence of fish cestode parasites among different month of year. The highest cestode prevalence 84.61% followed by 79.16% and 78.26% recorded during month of summer.

Bhure and Nanware, 2010^[3], reported that high prevalence of cestode parasites found in cyprinid fish in summer followed by winter and rainy season. Also, Borde and

Jawale (2012) reported high cestode infection to *Clariasbatrachus* in summer season.

Bhure and Nanware (2014)^[4] reported high cestodes infection from *Ch. puntatus* in summer season and Deshmukh Shaziya Sultana K. A. and J. M. Gaikwad, (2019)^[1] Also reported high incidence of infections of all the cestode species were recorded in summer followed by winter where as low in monsoon season.

Conclusion

Freshwater fishes infected by cestode parasite are positively correlated with season that are summer, winter and rainy. Out of that high infection of cestode found in summer season. highest cestode prevalence 84.61% followed by 79.16% and 78.26% recorded during month of summer and temperature is positively impact on prevalence of cestode in freshwater fishes. Also, these result help for further studies about effect of cestode parasite on fish health and their biochemistry and also it helps to awareness within consumer.

References

1. Asawari Fartade, Ravindra Chati, Sandhya Salunkhe, Usha Gavhane. Seasonal study of parasitic infection in fresh water fishes from Solapur and Osmanabad District (M.S), India. IJFAS. 2018; 5(5):198-201.
2. Bhure DB. Faunal diversity of helminth parasites of freshwater fishes from Maharashtra State, India. Ph.D. Thesis, Dr. B. A.M.U. Aurangabad, M.S. India, 2008, 1-178.
3. Bhure DB, Nanware SS. Population Dynamics of *Silurotaeniaraonii* from *Mystus seenghala*. The Ecosphere (An International Biannual Journal of Environment and Biological Sciences). 2010; 2(12):9-12.
4. Bhure DB, Nanware SS. Studies on prevalence of cestode parasites of freshwater fish, *Channa punctatus*. Journal of Entomology and Zoology Studies. 2014; 2(4):283-285.
5. Bhure DB, Nanware SS, Jadhav AN. Prevalence and Diversity of Cestode Parasites of Freshwater Fishes of Genus *Channa* Scopoli, 1777 World Scientific News. 2016; 33:15-26.
6. Deshmukh Shaziya, Sultana KA, Gaikwad JM. Studies on Prevalence of Cestode Parasites in Freshwater Fishes from Parbhani district (M.S) India, Advances in Fisheries, Biological and Allied Research JM, 2019, 1(1).
7. Korting W. Larval development of *Bothriocephalus sp.* (Cestoda: *Pseudophyllidea*) from carp (*Cyprinus carpio* L.) in Germany. J Fish Biol. 1975; 7:727-733.
8. Liao H, Shih L. Contribution to the biology and control of *Bothriocephalus gowkongensis* Yeh, a tapeworm parasitic in the young grass carp (*Ctenopharyngodon idellus* C. & V.) Acta Hydrobiol Sin. 1956; 2:129-185.
9. Hiware CJ, Jadhav BV, Mohekar AD. Applied Parasitology A practical manual. Mangal Deep Publ. Jaipur, 2003, 243.
10. Pennyuck KL. Seasonal variation in the parasite population of three spined stickles backs *Gateposts aculeatus* L. parasitol. 1973; 63:373-388
11. Schmidt, GD. Handbook of Tapeworm Identification. CRC Press, Inc. Boca Raton, Florida, 1934, 1-675.
12. Taqdees Farooq, Imran Khan, Irfan-ur-Rauf Tak,

- Shoaib Ali Dar, Yousuf AR. Endoparasites of some economically important food fishes of River Jhelum, Kashmir (India), *Journal of Parasitic Diseases*. 2016; 40(3):860–871.
13. Yamaguti S. *Systema Helminthum*. II. The Cestodes of Vertebrates. Inte, science Publ., NY, 1959, 860.