



Investigation of cestode parasite infection and prevalence in freshwater fishes collected from local market

Dipti B Kadu

Department of Zoology, Arts and Science College, (Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University), Pulgaon, Wardha, Maharashtra, India

Abstract

The present investigation was carried out in freshwater fishes collected from local market of wardha district which are *Mastacembalus armatus*, *Mystus seenghala* and *Wallago attu* (Bleaker, 1857) collected fresh water fishes cestode were identified by standard method described by Yamaguti, S., 1959. Among freshwater fishes were contaminated with cestode parasite during dissection of fishes. Three species were detected viz. *Circumonchobothria sp.*, *Gangasia sp.* and *Senga sp.* Also, in the present studies recorded prevalence of cestode parasite infection of selected freshwater fishes were high demand in local market of wardha district. Freshwater fishes infected by cestode parasite are positively correlation with season that are summer, winter and rainy. Out of that high infection of cestode found in summer season. It menaces that environmental factor both that are biotic and abiotic, positively effect on 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.

Keywords: *Mastacembalus armatus*, *Mystus seenghala*, *Wallago attu* (Bleake, 1857), *Circumonchobothria sp.* and prevalence, local fish market wardha district etc

Introduction

The production of freshwater fish's infestation of various fish parasites compared other diseases and it multiply rapidly under favourable environmental conditions affecting the health of fishes. Sandeep P. in 2016 concluded that Parasites interfere with nutrition of hosts, disrupts metabolism and secretory functions of alimentary canal and damage nervous system. Protein is an essential factor for maintenance of damaged tissues and proteinaceous product such as intestinal epithelial cells, enzymes and hormones and also overall growth of fish but nutritive value may be degraded and damaged through the activities of helminth parasites and their cysts as well as lowering the quality of the fish meat due to a fall in absorbed amino acids which is essential in protein synthesis. Infection with helminth parasites can lead to several changes in protein content may be result in host mortalities in commercial fish farming production and also recorded the significant data on decreased total protein and Carbohydrates in fish muscle and liver when cestode infect to fish (Hassan A.H., 2015).

Cestodes are an important class of endo parasitic organism commonly called as tapeworm are flat, segmented worm in phylum Platyhelminthes, Class cestoda, they infect to host through oral ingestion of egg or larvae. Generally, body divided into Scolex, Neck and Proglottids.

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.

The prevalence of cestode parasite in fish increase rapidly and results in fish mortality (Nidhi Arora *et.al.*, 2010). Also, Asawari Fartade *et.al.*, investigated in 2018, 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 collected from local market of wardha district Maharashtra, India.

Material and Method

Fishes sample were collected from local market of wardha district". during the year 2019 and 2020. In present investigate cestode parasite prevalence from freshwater fishes viz *Mastacembelus armatus*, *Mystus seenghala* and *Wallago attu* they collected and examined for cestode infection. Then cestode parasite were preserved in 4% formaline, 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 (Gerald D. Schmidt, 1934; Yamaguti, S., 1959; Hiware, Jadhav and Mohekar, 2003; and Bhure, 2008) [9, 10, 8, 2].

Prevalence (Incidence) of infection were recorded and calculated according to Margolis *et.al.*, (1982). and D. B. Bhure *et.al.*, (2016) [6].

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



Fig 1

Results and Conclusion

The present investigation was carried out in freshwater fishes collected from local market of wardha district which *Mastacembalus armatus*, *Mystus seenghala* and *Wallago attu* (Bleaker, 1857). Among freshwater fishes were contaminated with cestode parasite during dissection of freshwater fish’s intestine. In selected freshwater fish’s intestine, three species were detected viz. *Circumonchobothria sp.* *Gangesia sp.* and *Senga sp.* mentioned in following Table No.1.

D. B. Bhure *et.al.*, (20016) Reported the Diversity of *Piscean* Cestodes includes 26 species of five genera. Ten species of *Senga*, Seven of *Gangesia*, Four of *Silurotaenia*, Three of *Polygonobothrium* and Two of *Proteocephalus* were reported from *Channa sp.* from different localities of Marathwada Region of Maharashtra.

In the Present study, freshwater fishes collected from local market of wardha district Maharashtra infected with cestode parasite were recorded high incidence of cestode infection in all these host were recorded high prevalence of cestode infection in May month and it was 38.46%, in April month 30.43% and followed by march 20.83% and also least in month of January and Feb 2020 respectively. These results

clearly showed that infection of cestode mostly lowest in winter month and highest in summer month as shown in table and graph.

Bhure *et al.*, 2010 [3], Reported that high prevalence of cestode parasite found in carp fish in summer followed by winter and rainy season. Also, Borde and Jawale, 2012 [4] reported high cestode infection to *Clariasbatrachus* in summer season. Bhure and Nanware, 2014 [5] reported high cestodes infection from *Channa puntatus* in summer season and Deshmukh Shaziya Sultana, 2019 [7] also reported high incidence of infections of all the cestode species were recorded in summer followed by winter whereas low in monsoon season.

Table 1: Cestode parasite found in freshwater fishes from Wardha

Cestode Parasite Sp	Host	Habitat	Locality
1. <i>Circumonchobothria</i>	1. <i>Mastacembelus armatus</i>	Intestine	Local fish market wardha
2. <i>Gangesia sp.</i>	2. <i>Mystus seenghala</i>		
3. <i>Senga sp.</i>	3. <i>Wallago attu</i>		

Table 2: Monthly variation of cestode parasite in freshwater fishes from wardha

Sr. no	Month & year	No. of dissected hosts	No. of infected hosts	Prevalence %	Density %	No. of cestode parasites collected
1	06Oct. 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

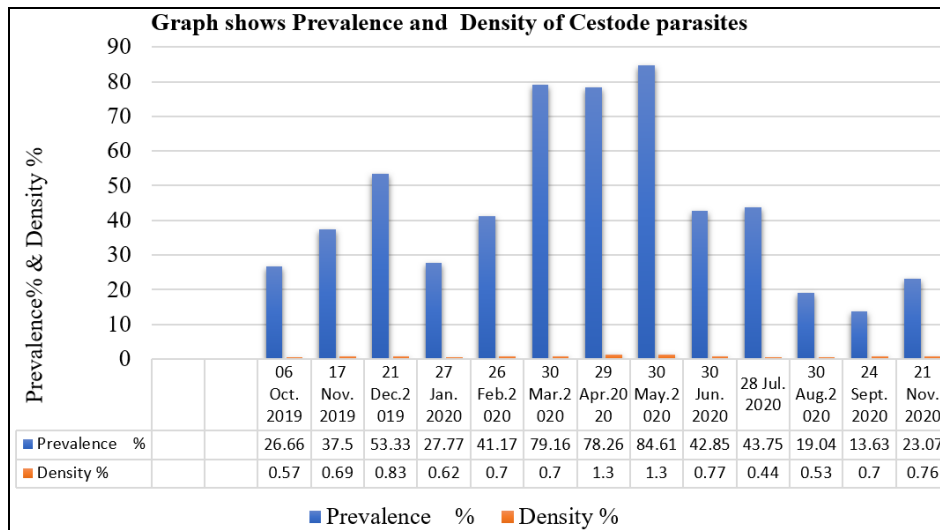


Fig 2

Conclusion

Freshwater fishes infected by cestode parasite are positively correlation with season that are summer, winter and rainy. Out of that high infection of cestode found in summer season. It menaces that environmental factor both that are biotic and abiotic, positively effect on fishes Also, these results help for further studies about effect of cestode parasite on fish health and their biochemistry and also it helps to awareness within consumer.

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