STUDY OF HELMINTH ZOONOTIC PARASITES OF CARPS IN FRESH WATER CULTURE SYSTEMS OF WEST BENGAL

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ABSTRACT
Although helminthic infection was quite common in Indian Major Carps, only a very few parasites among them are having Zoonotic potentiality. Only three Zoonotic strains Heterophy sp, Chlonorchis sp and Capillaria sp were identified from Indian Major Carps during the research work. These Zoonotic strains in particular regions were quite low as compared to other helminth sps. Catla catla were found to be more susceptible than Labeo rohita and Cirrhinus mrigala. Nematode infection was observed more in small size groups of fishes mainly in rainy season where as the prevalence of trematodes was more during summer in small size fishes also.

INTRODUCTION
Fish functions as hosts to wide spectrum of parasites and as intermediate hosts to a number of parasites of man and animals. Although there are several helminthes in fish with Zoonotic importance, the occurrence of Zoonotic diseases in freshwater fishes as well as in carps in Asian countries is rare. Few researches have been done on Zoonotic potentiality of helminthes in Indian Major Carps. The varied susceptibility of Indian Major Carps to helminthic infection among different length groups, in different seasons and in different organs have been observed in the present study. The present observation on Zoonotic helminth parasites showed a definite seasonal cycle of prevalence. Most enteric helminthes occurred with low abundance and a small portion of gut helminth communities were numerically dominated by one species.

MATERIAL AND METHODS
The present study was carried out for a period of two years (April-2004 to March –2006) in Parasitology Laboratory of Department of Fishery Pathology and Microbiology, Faculty of Fishery Sciences, Kolkata. The fish samples were collected from several ponds, freshwater bheries, and hatcheries, fish markets situated at Mohanpur, Kampa, Jagulia and Howrah. The live, moribund and diseased Indian Major carps were collected and brought to the laboratory by random sampling. The length and weight of the fishes were taken cautiously. The intestine and gills were examined for the presence of different helminthes parasites. The methods of collection and preservation of samples for examination of parasitic helminthes were followed as described by Soota (1980).

The smears were prepared on grease free clean slides after taking the scrapings from gills, intestine, and skin with the help of scalpel and forceps. These smears were then semidried and were fixed in Alcohol Formalin Acetic acid (AFA) fixative (Soota, 1980). To avoid the specimens from becoming hard and brittle, the slides were washed and kept in the preservative after 15-20 minutes of fixation. The slides were preserved in fresh 70% alcohol in couplin jars for further preservation. For staining Borax Carmine used and finally the permanent slides were prepared using DPX mountant. The slides were observed carefully under microscope with 10 X and 20 X magnifications. Camera Lucida drawings were also made. The micrometry was done using ocular and stage micrometer.

The parasitic frequency Index (PFI) was calculated taking the percentage of number of hosts examined in a particular area under investigation. The Parasitic Frequency Index was further classified into rare (0.1 – 0.9%), occasional (10 – 69%) and abundant (70 – 100%) (Srivastava, 1980).

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RESULTS AND DISCUSSION

Seasonal Variations: The highest prevalence of Monogeneans were observed in the month of March for *Catla catla* (42.14%), *Labeo rohita* (13.72%), and in *Cirrhiphus mrigala* (24.49%). Higher temperature was ambient for the proliferation of Monogeneans. Our observations were quite similar with the findings of Paperna (1963).

In *Catla catla*, the digeneans were observed only in the month of December (12.19%). No trace of this parasite was found in *L. rohita* and *Cirrhiphus mrigala*. The abundance was perceived only in March (5%) and May (6.12%). The abundance of digeneans were rare in Indian Major Carps.

Cestodes were found only in the month of April for both *Catla catla* (1.72%) and *Cirrhiphus mrigala* (2.13%) and in *Labeo rohita* its presence was observed only in March (3.92%). The cestodes attain their sexual maturity in summer. So their presence was observed in summer season only. This observation was coincided with that of Oguz (1996) and Sutherland (1989).

The month of August was observed as most suitable for proliferation of nematode parasites in *Catla catla* and *Cirrhiphus mrigala*. The calculated PFI values were 41.51% and 29.63% respectively. On the contrary, in *Labeo rohita* highest prevalence was observed in the month of September. The abundance of intermediate hosts, sudden fluctuation of water quality parameters was responsible for this incidence. These findings were quite similar with that of Pennycuick (1971) and Kim et al., (2001). *Catla catla* and *Labeo rohita* showed maximum Acanthocephala infestation in March. The PFI values as observed in the present work were 5.88% and 7.84% respectively. No Acanthocephala could be identified from *Cirrhiphus mrigala*. Egg production usually occurs in summer season (Woo, 1994). The present results corroborated with the works of earlier scientists.

Zoonotic Strains: The helminthes with Zoonotic potentiality, which were identified from Indian Major Carps, were *Capillaria sp*, *Clonorchis sp*. and *Heterophyes heterophyes* (fig. 1,2 & 3). Fishes have been shown to act as intermediate hosts to at least 4 trematodes (*Clonorchis, Opisthorchis, Heterophyes and Metagonimus*) and 2 nematodes (*Ganthostoma sp* and *Capillaria sp.*) in South East Asia which can be transmitted to man via eating raw or insufficiently cooked fish (Ramalingam, 1987 and Sonamani, 1987). Among the nematodes *Capillaria sp.*
(Chitwood et al. 1968) are reported in Indian Major Carps in West Bengal, which is having Zoonotic potential. These sps are dominant in rainy season, seasonality is related with host feeding habits, immunological alterations, availability of intermediate hosts, hormonal changes and temperature etc. which are the most frequent causes for seasonal fluctuation in prevalence and abundance of parasitic infection (Walkey, 1967; Pennycuick, 1971 and Eure, 1976).

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REFERENCES