

Helminth Parasites of a Freshwater Fish *Mystus vittatus*

RAJA MOHAMMAD RAFIQUE, SHAHID MAHBOOB†, M. GULZARIN, ROBINA YAQUB AND MUSHTAQ AHMAD

Department of Zoology, Azad Jammu and Kashmir University, Muzaffarabad–Azad Kashmir

†Post-Graduate Department of Zoology, Government College, Faisalabad, Pakistan. Email: rsmahboob@yahoo.com

ABSTRACT

Freshwater fish *Mystus vittatus* were collected from a pond at Roy walla, Kasur and examined for the presence of intestinal helminths. Only one species of nematode *Rhabdochona magna* was recovered from intestine of the fish. Out of 48 fish only 18 (37.5%) were found infected. The mean intensity of nematode infection remained 6.5.

Key Words: Helminth; Intestine; Stomach; Nematodes

INTRODUCTION

Fish is an excellent source of food. Its flesh is nutritionally equivalent to meat (mutton) in protein contents, low in saturated fats and high in essential minerals and vitamins. To obtain healthy and quality meat fish, it is necessary that the fish should be free from all types of infections like viral, bacterial and parasitic. The helminths are found in almost all the animals including fish throughout the world (Bychowsky, 1962). Trematodes live in all vertebrates inhabiting the digestive tract, accessory tubes and cavities (Roberts & Janovy, 1996) and have been reported from different species of fish (Needham & Wootten, 1978; Dhar & Kharoo, 1984; Nazir, 1996). Helminths damage health of fish by inducing variable intensity of infection depending upon the quality of environmental conditions (Read, 1992).

Mystus vittatus is a carnivorous fish commonly found in small ponds and pools in Pakistan where the water quality is not good. Its food mainly consists of small fish and larvae of crustaceans. It mostly lives in turbid and shallow water accumulated after rain in ponds. This paper reports the occurrence of a nematode parasite in *Mystus vittatus* collected from a local pond in District Kasur, Pakistan.

MATERIALS AND METHODS

Freshwater fish *Mystus vittatus* was sampled from Roy Wala pond near Kasur (Punjab). Fish sampling site was a small pond near the town. It was a natural water body and the source of water supply was rain. Some amount of waste water from the neighboring town also enters into the pond which pollutes and contaminates the water. Fish were collected by using throw nets. A sample of 48 fishes were

brought in the laboratory and kept in glass aquarium. All the fishes were dissected for the diagnosis of different helminth parasites. The stomach and intestine were removed carefully and kept separately in petri dish. The intestine was cut and opened to expose the inner lumen. The lumen was washed carefully and studied under dissecting microscope for the presence of different helminth parasites.

All the parasites from the intestine were collected. The nematodes were killed by dropping them into warm 0.5% acetic acid in cavity slide and then fixed in mixture of 4% formalin and 1% acetic acid for 24 h. Specimens were stored in glass vials and labeled separately for each fish.

Parasites identification. Drawings of the parasites were made with the help of camera lucida. External and internal morphology of the parasites were sketched. Anterior and posterior regions of the parasite were drawn at high magnification.

RESULTS AND DISCUSSION

Only 18 (37.5%) fish were found to be infected with nematodes (Table I). Out of these 18 fish, 117 nematodes were isolated. The intensity of nematodes remained as 6.5/fish. All these nematodes were found in the intestine of the fish *Mystus vittatus*. Camera lucida drawings of these nematodes showing external and internal morphology of both male and female (Fig 1 & 2) worms were identified as *Rhabdochona magna* following Zaidi and Khan (1976).

The low infection rate (37.5%) in the present study indicates that the parasite prevails but its life cycle not seems to be continuous, which means that the factors for the spread of this nematode were not appropriate. Leningrad (1999) pointed out that an increase in temperature to certain limits accelerates the fission and larval development of

Table I. Abundance of Nematode infection in freshwater fish, *Mystus vittatus*

Species	No. infected / examined	Total No. of parasites	Parasite location	Prevalence	Abundance	Mean intensity
<i>Rhabdochona magna</i>	18/48	39	Intestine	37.5	2.43±0.82	6.5 ± 0.67

Fig. 1. Camera lucida drawing, internal characters of *Rahabdochna magna*

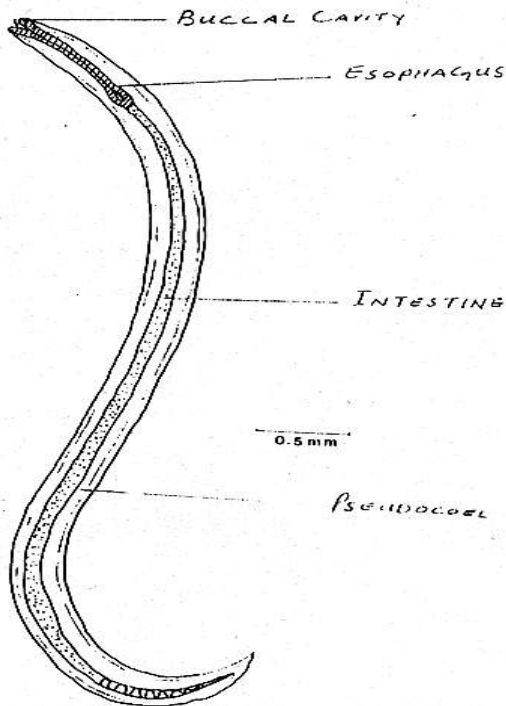
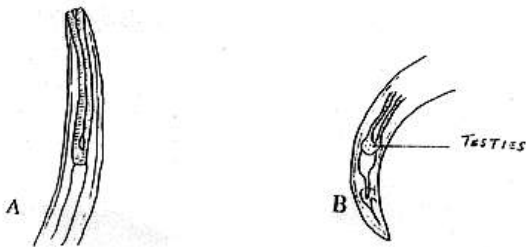


Fig. 2. *Rhabdochna*, A. anterior region, B. posterior region



parasites while beyond that limit these processes slow down. In the present study, the water temperature during summer increases in the pond and it becomes very high (>40°C), which was probably not suitable for the

development of intermediate stages of helminth parasites. The increase in temperature probably caused the eggs degeneration, destroyed many parasites before becoming adults.

Intensity of infection varied might be due to variable physical conditions of the water, particularly dissolved oxygen. Schmidt (1998) pointed out that embryonic development in the eggs of parasites stops at the dissolved oxygen content. The factors like muddy bottom water and feeding habits of *Mystus vittatus* might also contribute for the low incidence of helminth parasites in the fish. Whereas, other helminth parasites such as trematodes, cestodes and acanthocephalans were not found in this fish species. The intermediate hosts for these parasites were probably not being used as food for this fish. Moreover, water birds (Piscivorous birds), which are very important factor for the spread of the trematodes, cestodes and acanthocephalans were not seen visiting this pond. It indicates that the dispersal of parasites and completion of their life cycle is not adequate, resulting disappearance from this fish.

REFERENCES

- Bychowsky, B.E., 1962. *Monogenic Trematodes: Their Systematic and Phylogeny*, p. 242. Graphic Arts Press.
- Dhar, R.L. and V.K. Kharoo, 1984. On a new trematode *Alloцерadium fotedari* sp. Of the family Allocatedidae from the intestine of *Schizothirax nigar*, a freshwater fish of Kashmir, India. *Indian J. Helminthol.*, 36: 32-5.
- Leningrad, E., 1999. Parasites of freshwater fish and the biological control, pp: 137-77. Israel Program for Scientific Translation Ltd. S. Monson Israel.
- Nazir, T., 1996. Studies on the helminth parasites of a freshwater fish, *Channa punctatus*. M.Sc. Thesis Deptt. Zoology, Govt. College, Lahore.
- Needham, T. and R. Wootten, 1978. The Parasitology of Teleosts. In: Ronald, J.R. and B. Tindall (eds.), *Fish Pathology*, pp: 151-201. London.
- Read, C.P., 1992. *Animal Parasitism*, p. 265. Inc., Englewood Cliffs, New Jersey.
- Roberts, L.S. and J. Janovy, 1996. *Foundation of Parasitology*, 5th ed., p. 482. WMC, Brown, London.
- Schmidt, D.G., 1998. *Essentials of Parasitology*, 4th ed., p. 394. WMC Brown, London.
- Zaidi, D.A. and D. Khan, 1976. Cestodes of fishes from Pakistan. *Biologia*, 157-79.

(Received 10 October 2001; Accepted 26 December 2001)