

PREVALENCE OF COPEPOD ECTOPARASITES OF *LABEO ROHITA* FROM MIAN CHANNU HATCHERY (PUNJAB)

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ABSTRACT

One hundred and twenty rohu (*Labeo rohita*) from Fish Hatchery Mian Channu (Khanewal-Punjab) were examined for ectoparasites. The copepod ectoparasites found were *Lernaea* (*L.*) *polymorpha*, *L. cyprinacea*, *L. oryzophila*, *L. lophiara* and *L. arcuata*. Out of 120 fish 46 were infested (38.34%). The predominant parasite was *L. polymorpha*. An overall prevalence of ectoparasites was *L. polymorpha* (26.66%), *L. cyprinacea* (25.83%), *L. oryzophila* (20%), *L. arcuata* (5%) and *L. lophiara* (5%). *L. polymorpha* was the most abundant ectoparasite in mixed infestation as well.

INTRODUCTION

External parasites are the most common parasites encountered in aquatic animals raised in both ponds and aquaria. The major groups of parasites include protozoans, monogeneans and crustaceans (Kabata, 1985). Among crustaceans the copepods which parasitize fish, are the most commonly known pathogenic parasites of cultured freshwater fish in many Asian countries including Pakistan. Their injurious effects on the host are believed to be direct or indirect as their infestation causes formation of lesions and inflammation at the site of attachment, which often leads to secondary infections by bacteria.

Considerable work has been done on lernaeid parasites of *Labeo rohita* all over the world except in Pakistan. The present study attempts to fill this gap in our knowledge. The study was designed to record the prevalence and mixed infestation of *Lernaea* spp. in *L. rohita*.

MATERIALS AND METHODS

One hundred and twenty fish were collected monthly between March 1998 and February 1999 from Fish Hatchery Mian Channu (District Khanewal). They were kept alive in a water container, identified with the description given by Mirza and Sharif (1996). The ectoparasites were picked up from the gills, scales and fins with the help of fine forceps and transferred to 5% formalin.

Permanent mounts of ectoparasites were prepared (Cable, 1985) examined and identified under the microscope.

RESULTS AND DISCUSSION

A total of 120 *Labeo rohita* were examined in order to study the prevalence and mixed infestation of copepod ectoparasites. Five *Lernaea* species viz., *L. cyprinacea*, *L. polymorpha*, *L. oryzophila*, *L. arcuata* and *L. lophiara* were found.

The different species of the genus *Lernaea* have also been reported from different parts of the world. For example, Gnanamuthu (1951) reported *Lernaea chackoensis* n. sp. from *Osphronemus goramy* and *Catla catla* in Madras. Fryer (1956) reported the following copepod parasites from different fishes from Lake Nyasa, *Lernaea bagri* Harding, *L. lophiara*, Harding, *L. hardingi* nom. n., *L. tilapiae* Harding, *L. palati* Harding, *L. barnimiana* (Hartman) and *Lernaea* sp. Lewis and Doucet (1981) recorded *Lernaea cruciata* from the rock bass (*Ambloplites rupestris*) in the lower Ottawa River. Camburn and Warren (1983) recovered *Lernaea* sp. from fishes belonging to the family Cyprinidae collected from the Mud River, Butler County, and Kentucky. Uehara *et al.* (1984) reported *L. cyprinacea* L., from Goldfish (*Carassius auratus* L.) from Medical Lake, Spokane County, Washington. Ho and Kim (1997) reported five species of the genus *Lernaea* from freshwater fishes of Thailand. They were *L. arcuata*, Soejanto, *L. cyprinacea* L., *L. oryzophila* Monod, *L. polymorpha* Yu, *L. taipila* sp. nov. (Peter).

The difference in the copepod ectoparasites of the present study with Gnanamuthu (1951), Fryer (1956), Lewis and Doucet (1981), Camburn and Warren (1983), Uehara *et al.* (1984) and Ho and Kim (1997) may be due to climatic variations between the different localities and also due to different hosts examined.

The percentage of infestation of ectoparasites of *L. rohita* was calculated (Table 1) and it was observed that all five species of ectoparasites showed considerable variations with maximum values for *L. polymorpha* being (26.66%) for *L. cyprinacea* (25.83%) for *L. oryzophila* (20%) and for both *L. arcuata* and *L. lophiara* (5%).

Table 1: The overall prevalence of copepod ectoparasites of *Labeo rohita* from Mian Channu hatchery (Punjab)

Parasite	No. of fish examined	No. of fish infested	Prevalence (%)
<i>L. polymorpha</i>	120	32	26.6
<i>L. cyprinacea</i>	120	31	25.83
<i>L. oryzophila</i>	120	24	20
<i>L. arcuata</i>	120	6	5
<i>L. lophiara</i>	120	6	5

Tasawar *et al.* (1999) reported five species of *Lernaea*, *L. cyprinacea* (43.33%), *L. polymorpha* (34.16%), *Lernaea* sp. (14.16%), *L. oryzophila* (7.5%) and *L. lophiara* (4.16%) from *Cirrhinus mrigala*. While, Tasawar *et al.* (1999) reported four species of *Lernaea* namely, *L. cyprinacea* (91.66%) *L. polymorpha* (38.33%) *L. lophiara* (3.33%) and *L. ctenopharyngodonis* (4.16%) from *Ctenopharyngodon idella*. Above comparison shows that prevalence of parasites is minimum in *C. idella* as compared to *L. rohita* and *C. mrigala*. It could be explained on the basis that *C. idella* is the most resistant fish and the presence of *L. ctenopharyngodonis* only in *C. idella* may be due to parasite host specificity.

The mixed infestation of ectoparasite of *L. rohita* was studied and it was found that only one fish out of 120 was infested with *L. cyprinacea* and *L. oryzophila*. *L. arcuata* and *L. oryzophila* were found on one host. *L. cyprinacea* and *L. polymorpha* infested nine hosts. While *L. polymorpha* and *L. oryzophila* were recovered from two hosts. Six fish were infested with *L. cyprinacea*. *L. polymorpha* was present on seven hosts. Only two fish were infested with *L. cyprinacea*, *L. polymorpha*, *L. oryzophila* *L.*

arcuata, *L. lophiara*, *L. oryzophila* were found on four hosts (Table 2). The overall results of multiple infestation showed that *L. polymorpha* was most abundant species than other ectoparasites.

Table 2: Mixed infestation of copepod ectoparasites of *Labeo rohita* from Mian Channu (Punjab)

Species combination	No. of fish examined	No. of fish infested
<i>L. cyprinacea</i> + <i>L. oryzophila</i>	120	1
<i>L. arcuata</i> + <i>L. oryzophila</i>	120	1
<i>L. cyprinacea</i> + <i>L. polymorpha</i>	120	9
<i>L. polymorpha</i> + <i>L. oryzophila</i>	120	2
<i>L. cyprinacea</i>	120	6
<i>L. polymorpha</i>	120	7
<i>L. cyprinacea</i> + <i>L. polymorpha</i>	120	2
+ <i>L. oryzophila</i> + <i>L. arcuata</i>		
<i>L. lophiara</i> + <i>L. oryzophila</i>	120	4

The mixed infestation of copepod ectoparasites of *C. mrigala* showed that one host out of 120 samples was infested with *L. cyprinacea*, *L. polymorpha* and *L. lophiara*. *L. cyprinacea*, *L. oryzophila* and *Lernaea* sp. were present in one host. *L. polymorpha*, *L. lophiara* and *Lernaea* sp. was found on one host. *L. cyprinacea*, *L. polymorpha*, *L. oryzophila* and *Lernaea* sp. infested two hosts and *L. cyprinacea* and *L. oryzophila* were found in two hosts. *L. cyprinacea* and *Lernaea* sp. infested two hosts while *L. cyprinacea*, *L. polymorpha* and *Lernaea* sp. were recovered from seven hosts, 19 hosts were infested with *L. cyprinacea* and *L. polymorpha*. *L. oryzophila* and *L. polymorpha* were found in four hosts. Three were infested with *L. cyprinacea*, *L. polymorpha*, *L. oryzophila* and *L. lophiara* and *L. polymorpha* were found in four hosts. *L. polymorpha* and *Lernaea* sp. were found on three hosts. *L. cyprinacea* infested only one host. The overall result of multiple infestation showed that *L. cyprinacea* and *L. polymorpha* were the most abundant species than other parasites. The overall result of multiple infestation showed that *L. cyprinacea* and *L. polymorpha* were the most abundant species than other ectoparasites. (Tasawar *et al.* 1999).

The mixed infestation of copepod ectoparasites of *C. idella* showed that only one host out of 120 was infested with *L. polymorpha*, *L. cyprinacea* and *L. lophiara*. *L. polymorpha*, *L. lophiara* and *L. ctenopharyngodonis* were found in one host. *L. polymorpha* and *L. ctenopharyngodonis* were recovered from four hosts. Eleven were infested

with *L. polymorpha* and *L. cyprinacea* and *L. polymorpha* were present on 27 hosts. The overall results of multiple infestation showed that *L. polymorpha* was most abundant species than other ectoparasites. (Tasawar *et al.* 1999).

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