



Research Article

Study on Seasonal Prevalence of Helminths in *Cyprinus carpio* from Chilya Fish Hatchery, Thatta, Sindh, Pakistan

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Abstract | This study was conducted to assess the prevalence of helminth parasites in *Cyprinus carpio* at Chilya, Fish Hatchery, Thatta, Sindh from February 2019 to January 2020. A total of 107 samples of *Cyprinus carpio* were tested during the research and helminths were found in 17 out of 107. Various helminths groups were identified including trematode and acanthocephalan. Other helminths groups, such as cestodes and nematodes were not noted. These helminths infected the gut of *Cyprinus carpio* including trematode and acanthocephalan. No additional organs were found to be infected with helminths parasites. Helminths prevalence were documented as 41% in September, 40% in August, 36% in October, 33% in June, September (30.76%) and April (25%). During September and October, the helminths were most abundant, with no infections documented in January, February, March, July, November, or December. Helminths were found in this study throughout specific months of the year.

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Introduction

Cyprinus carpio locally known as Gulfam and universally called as (Common carp) characterized by large, shiny scales. This species is strongly recommended for domestic culture due to omnivorous habit and because of the fact that its entire varieties breed freely all the year round in confined waters (Mirza, 1982). The presence of ectoparasites, is too large extends detrimental for a fish population and consequently, imposes high losses (Fatima and Bilquees, 1989). Parasitic invasion on fish may cause high mortality, weight losses and reduced fecundity. Crustacean parasites caused serious disease on both cultured and wild fish species. These parasitic groups hampered fish growth, prevent feeding activity, especially in water contaminated with industrial and urban pollutants, poor water quality caused parasitic disease outbreak.

Losses resulting from these parasites under crowded and uncultured conditions can reach catastrophic proportions. The fishes have been reported to be infected by various types of parasites. Bilquees (1971, 1974, 1976) have studied the larval nematode in some carp fishes and trematodes infections. As mentioned above in Pakistan sufficient literature is available on the various parasites infecting the fish.

A considerable portion of Pakistan's population is malnourished, owing to insufficient supplies and rising prices for high-quality foods, particularly animal protein. White and red meat are in high demand. Fish meat is nutritionally better in both quality and quantity. Helminthic infections in fish reduce the nutritional content of the fish and result in death (Ahmed, 1994). Fish can be infected by a variety of helminths, comprising trematodes, cestodes, nematodes, and

acanthocephalans, and their hosts might serve as transitional hosts for certain helminthes (Schmidt, Khan, 1976). The environment for fish requisite bepreserved. To avert mass fish death and protect fisheries sectors, a healthy and parasitic evaluation was carriedout (Ahmed *et al.*, 2007). Helminthic infestation has been shown to cause death, weight loss, and fecundity in fish hosts. Huge losses have been observed as a result of overcrowding and lack of culture. There are infrequent occurrences of helminthic infestation in Sindh's freshwater fish species. A research findings indicate the effort of Abro *et al.* (2020), Khan (1985), Naqvi *et al.* (2009) and Rizvi (1974). These experiments were carried out on wild fish. As a result, a study on endoparasites of *Cyprinus carpio* from the fish hatchery Chilya Thatta was planned.

Materials and Methods

A total of 107 samples of fresh water fish, *Cyprinus carpio* were collected from Chilya, Hatchery, and Thatta. The host was taken to the University of Sindh's Zoology Department for an endoparasite examination. The parasite was found in all organs of the host fish when it was dissected. In petri dishes containing ordinary saline solution, organs are isolated and teased. The content was inspected using an Amscope Led Trinocular Zoom Steromicroscope. The parasite was examined for identification and processed according to the procedure described in Schmidt (1988).

Results and Discussion

During the assessment of 107 samples of *Cyprinus carpio*, it was discovered that 17 of them were infested with helminths. Helminths with zero infections reported in January, February, March, July, November, or Decemberwhile infections were most common in September and October, (Table 1). Parasite frequency is revealed41% in September, 40% in August, 36% in October, 33.3% in June, 30.76% in September, and 41% in April 25%. *Cyprinus carpio* was examined for endoparasites occurrence from February 2019 to November 2020 in this study. Late summer had the highest incidence, whereas early summer had the lowest. Fatima and Bilquees (1989) evaluated the seasonal fluctuation and degree of parasite infection on various edible fish hatcheries in Thatta. In September, they discovered that 41% of the fish were infested with endoparasites. Linton (1914) observed Seasonal fluctuation in parasite intensity was detect-

ed in a variety of freshwater fishes. He also revealed that the occurrence of fish helminths had a regular pattern. Several researchers, counting (Akhter *et al.*,1997; Banu *et al.*, 1993; Hussain *et al.*, 1994). In Bangladesh, a parasitic illness was discovered during the winter season. Milbrink (1975) reported a significant parasite infestation in the spring, From February through November, according to Reimchain (1982) there is the largest prevalence of parasite infection. In a study conducted by Koc *et al.* (2018), 4.88 percent of C. Carpio as well as other fishes were found to be infested with helminths.

Table 1: Fish samples examined for the presence of helminth parasites.

Month	Number of fish samples examined	Number of fish samples found positive	Number of helminths recovered	Percentage
February, 2019	12	Nil	Nil	Nil
March	05	Nil	Nil	Nil
April	08	02	06	25%
June	06	02	10	33.3%
July	10	Nil	Nil	Nil
August	10	04	11	40%
September	12	05	17	41%
October	11	04	15	36%
November	10	Nil	Nil	Nil
December	12	Nil	Nil	Nil
January, 2020	11	Nil	Nil	Nil

Conclusions and Recommendations

Helminths were found in this study throughout specific months of the year. During September and October, the helminthes were most abundant, with no infections documented in January, February, March, July, November, or December. The current research adds to the body of knowledge about parasite incidence in freshwater fish species in Sindh province, with a focus on the *Cyprinus carpio* and the carp fish hatchery in Thatta, Sindh, Pakistan.

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Novelty Statement

Outcomes of present work will be advantageous to fisheries sector through basic knowledge of seasonal prevalence of helminths in *Cyprinus Carpio* from Chilya Fish Hatchery, Thatta, Sindh, Pakistan so as no previous literature was found on this work in Pakistan.

Author's Contribution

Raheela Noor Memon: Designed and conducted this research as part of the PhD thesis.

Nadir Ali Birmani: Supervised the research helped in manuscript preparation.

Naeem Tariq Narejo: Provided technical guidelines

Shahnaz Rashid: Helped in composing, formatting and updating bibliography.

Conflict of interest

The authors have declared no conflict of interest.

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