



THE OCCURENCE OF HELMINTH PARASITES INFECTION OF SOME FRESH WATER FISHES IN JAMSHEDPUR, EAST SINGHBHUM DISTRICTS, JHARKHAND.

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ABSTRACT:

Fishes,like all the other organism are prone to several diseases.These are infected mostly by many diseases causing organism, helminths parasites are one of them.The present study depicts that the study on helminths parasites of freshwater fishes from river Swarnrekha and Kharkhai, Jamshedpur, District East Singhbhum, Jharkhand. The study is conducted between April 2022 to September 2022. This report gives details of the data of infection of helminth parasite in some freshwater fishes in relation to environmental factors. The fish sample are collected mainly from two sites from Jamshedpur, i.e. Adityapur and Mango, examined for helminth parasites.This study is helpful to know the diversity of helminths parasites in the two main rivers of Jamshedpur City.

Keywords : Helminth, Parasites, Freshwater Fishes,Environmental Factors,Jamshedpur, East Singhbhum.

INTRODUCTION

Fishes constitute a well defined and highly successful taxonomic group of vertebrates. Fisheries resources played a very important role in nutrition culture, employment ,tradition and food habit of the people of Jamshedpur. Fishes excel, as a source of commerce and recreation too. They form a rich source of food and are cultured both intensively and extensively to give the best value of their raising. Additionally they yield a number of by-products of high economic value. Jamshedpur is well known as industrial city but very few people have done work in Parasitology especially on Helminth Parasites on fishes. Here the most important freshwater river i.e. Sawarnrekha and Kharkhai

play a important role in fish production and marketing at Jamshedpur city and it has great fisheries potentials within its boundaries. Hosts a number of Helminth Parasites, which cause deterioration in their health hence their market, know fishes and nutritive value is affected. The survey of Helminth Parasites in freshwater fishes especially river Sawarnrekha and Kharkhai was undertaken to find out the parasitic fauna and environment of the hosts. As we know that fishes are host to many other parasite and its larval forms and serves us definitive and intermediate host in the life cycle of many Helminth Parasite (Schmidt, 2003.). Fishes diseases due to Helminth Parasite is one of the important problem in fish farming, the freshwater edible are known to harbor of many Helminth Parasites. Number and varieties of Helminth Parasites affect the health, nutritive value and marketing of freshwater fishes. There is a wide range of impact on the ecology of host in term of health due to presence of parasites (Atme and Oeen, 1967), sexual selection (Howard and Michella, 1990 Watve and Sukumar, 1977) and regulation of the host population (Freeland 1984). Parasitic infection tends to decrease the growth rate of cultivable fishes. Parasitic infection in fishes cause decreased production and economic losses through direct fish mortality reduction in growth and fecundity (Cowx,1992). The damage caused by Helminth Parasites to their hosts is generally related to intensity of infection and depth of parasitic in penetration into shoes of host. Specific parasitic community and burden directly depend upon the seasonal fluctuation, age , size , sex and quality of water of that locality. Polyanski, 1957 suggested that the diet , lifespan , population , density and size of the host are the main factors winch determine the variety of parasitic species as well as intensity and prevalence of infection. Chubb (1979, 1982) illustrated the studies of seasonal occurrence of Helminthes in freshwater fishes in different climatic Zone of the world. Gupta (1961 described new cestode from freshwater fishes). Jha 1989 studied the characterization of parasitic fauna of fishes of Muzaffarpur, Bihar. Shomorendra and Jha (2009 studied the acanthocephalan parasite of some fishes of Manipur). Several investigations have studied Helminth Parasite of freshwater fishes. Through the work of these investigation concerning the survey, population dynamics , host specificity , organ specificity. An objective of this study was to detect the variation of parasitic fauna and its infection with the habitat type between the two main freshwater rivers of Jamshedpur city.

II METHOD AND MATERIALS

The study was done in river Sawarnrekha and Kharkhai , Jamshedpur , West Singhbhum district of Jharkhand. Fishes were caught by local fisherman from Adityapur locality of river Kharkhai whereas Mango locality of river Sawarnrekha, the fishes of these regions were collected in live condition and carried in plastic containers with water of some localities. In laboratory the fishes were examined thoroughly internally and externally for collection of Helminth Parasites.

Platyhelminthes and acanthocephalan were fixed in hot neutral formal saline (4% while nematodes were fixed in hot seventy percent alcohol and stored in th same medium). Platyhelminth Parasites were stand using Haematoxyline then stand parasites were washed in distilled water , dehydrated in ascending grades of alcohol

cleared in Methyl Selicylate and Benzoate then mounted in DPX. Nematodes parasites were fixed in 10% glycerol and cleared in Lactophenol. All processed slides were identified under compound microscope while drawing were made using a Camera Lucida (Francia Weesner, 1964). The collected parasites were identified according to the Identification Key of Yamaguti (1961).

III RESULT AND DISCUSSION

During the survey for Helminth parasite infection among Jamshedpur cities 290 fishes were examined out of which 261 fishes were infected with Helminth parasite belonging to four different groups - Class Cestoda , Class Trematoda , Class Acanthocephala and Nematoda. A total 229 Helminth Parasites were found during the present investigation i.e. April 2022 - September 2022. An infected fishes exhibited weaker appearance , anemic , imbalanced swimming , sluggish movement and pale colour patches in their bodies (Hassen 2002, Nadia Ali 2007, and Sabril Et Al. 2012).present survey showed that high rate of infection if cestode and trematode Helminth parasites which was followed by Nematode and Acanthocephalan. Puinyabate Et Al. (2010) discussed that few parasites are host specific, the intensity of infection rate is high in *Channa punctatus* and low in *Heteropneustes fossils* and *Mystus seenghala*. Helminth parasite show a heavy infection in fishes which causes different diseases as well as mortality in them. The infection in intestine is very common in all fish hosts belonging to different families and orders which were showed in observation table – 02. heavy infection were found in intestine stomach and liver which causes blockage leads to mortality rate of fish hosts. Geetarani et al (2011) discussed that the infection due to Trematodes may be great problem in decreasing the fish yield by causing death in fishes. In fish farming parasite may lead to epidemics and mortalities resulting in economic losses (Khalil and Poling 1997).Snieszko 1983 , states that the control of diseases and maintenance of a healthy relationship between living creature and their environment. Age number of fishes season diet are the some important factor which directly influence the parasitic fauna of fish (Kabata, 1985). Moller and Anders 1986, concluded that fish from more polluted water tend to harbor more Helminth parasites then those from less polluted water. Srivastava 1975, also discussed that the characteristics of any water can influence and determine its parasitic fauna when environment condition become favorable for reproduction in parasites Rodhe (1993) explained the temperature control parasitization. Puinyabati et al. (2013), discussed that the species and feeding activity of the host fish and their diets and its composition play vital role in the diversity of Helminth fauna in fishes.

The present study showed that fishes collected from Mango locality of river Sawarnrekha is much infected from Helminth Parasites rather than fishes from Adityapur locality of river Kharkhai. Fishes from Mango locality is infected mainly by Cestode and Nematode parasites while fishes from Adityapur locality were infected by Trematodes ,Cestode and Acanthocephala.

CONCLUSION

After the observing and analysis of data the present study can be concluded that freshwater fishes from two main rivers of Jamshedpur city is harbor a Helminth Parasites. Six month survey (April 2022 – September 2022)

has shown that *Channa punctatus* is one of the most heavily infected fish species as compare to *Clarius batrachus*, *Labeo rohita* and *Puntius ticto*. This study highlights on the some details on the endoparasite infecting fresh water species in Jamshedpur. Further survey is very much necessary to find out more information about fish diseases caused by Helminth Parasite in Jamshedpur city. However, the above study can be complete if it covers the whole season to investigate the population dynamic of Helminth Parasite.

Observation Table 1. Show the list of fishes infected from Helminth Parasite, Jamshedpur (Mango and Adityapur).

| Sl.No. | Name of Fishes | Cestode | Acanthocephala | Nematode | Trematode |
|--------|--------------------------|---------|----------------|----------|-----------|
| 1. | <i>Clarius batrachus</i> | - | - | + | - |
| 2. | <i>Channa punctatus</i> | + | - | + | + |
| 3. | <i>Channa striata</i> | - | - | - | + |
| 4. | <i>Wallago attu</i> | + | - | - | - |
| 5. | <i>H. fossilis</i> | + | - | - | + |
| 6. | <i>Labeo rohita</i> | - | - | + | - |
| 7. | <i>Puntius ticto</i> | - | - | - | + |
| 8. | <i>Mystus seenghala</i> | - | - | + | - |

(+) Positive = Present ; (-) Negative = Absent.

Observation Table -02 show the group of Helminth Parasite and their site if infection on host's body.

| Sl.No. | Name of Fish | Helminth Parasite Group | Site of Infection |
|--------|--------------------------|-------------------------|---------------------|
| 1. | <i>Clarius batrachus</i> | Nematoda | Intestine |
| 2. | <i>Channa punctatus</i> | Nematoda and Trematoda | Intestine, Stomach. |
| 3. | <i>Channa striata</i> | Trematoda and Nematoda | Intestine. |
| 4. | <i>Wallago attu</i> | Cestoda | Intestine |
| 5. | <i>H. fossilis</i> | Acanthocephala | Intestine |
| 6. | <i>Labeo rohita</i> | Nematoda | Intestine, Stomach. |

| | | | |
|----|------------------|----------|-----------|
| 7. | Puntius ticto | Cestoda | Intestine |
| 8. | Mystus seenghala | Nematoda | Intestine |

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