

STUDY ON INFECTION WITH SOME PROTOZOAN PARASITES OF THREE ENDEMIC FISHES IN THE ZAYANDEHROOD RIVER, IRAN

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STUDIJA INFEKCIJE PARAZITSKIM PROTOZOAMA KOD TRI ENDEMIČNE VRSTE RIBA U RECI ZAYANDEHROOD U IRANU

Abstract

Various parasites (protozoan and metazoan) can reside either inside or on the surface of the host. Pathogens or parasites do not always cause disease in fish, but may be present in a subclinical or carrier state. Some of parasites can infect all or most species of freshwater fishes. For example *Ichthyophthirius multifiliis* can infect almost all freshwater fish. External parasites may cause secondary fungal, bacterial and viral infections or act as carriers of bacteria, virus and other pathogens. In this study samples were collected from five stations in summer of 2010. Overall 71 native fish from 3 species had been caught from Zayandehrood River, including 18 *Capoeta damascina* (62.4 ± 27.5 g), 20 *Chondrostoma regium* (34.8 ± 10.4 g) and 33 *Leuciscus Lepidus* (43.7 ± 11.9 g). Wet mount from skin and gills were prepared and studied under a light microscope, after that gills were studied with a stereo microscope. Results of our study showed that 7 out of 18 *Capoeta damascina* (38.88%), 4 out of 20 *Chondrostoma regium* (20%) and 5 out of 33 *Leuciscus Lepidus* (15.15%) were infected with *Ichthyophthirius multifiliis*. 3 out of 18 *Capoeta damascina* (16.66%), 5 out of 20 *Chondrostoma regium* (25%) and 5 out of 33 *Leuciscus Lepidus* (15.15%) were infected with *Trichodina spp.* None of 18 *Capoeta damascina* and 20 *Chondrostoma regium* (0%) was infected with *Chilodonella sp.* However, 2 out of 33 *Leuciscus Lepidus* (6.06%) were infected with *Chilodonella sp.* In our study 3 protozoan parasites were collected from 3 species and in total *Ichthyophthirius multifiliis* (22.53%) was most common parasite. Environmental factors such as temperature can effects on prevalence rate of external protozoan parasites.

Key words: Zayandehrood River, *Ichthyophthirius multifiliis*, *Chilodonella*, *Trichodina*

INTRODUCTION

Fish can serve in the life cycle of parasites as definitive, intermediate or paratonic hosts. Both adult and larval parasites can be found in almost every tissue of the host fish. Various parasites (protozoan and metazoan) can reside either inside or on the surface of the host. Pathogens or parasites do not always cause disease in fish, but may be present in a subclinical or carrier state (Barber, 2007). Parasites sometimes can cause serious diseases in result of mass epidemics. Some of parasites can infect all or most species of freshwater fishes. For example *Ichthyophthirius multifiliis* can infect almost all freshwater fish (Ventura and Paperna, 1985). Itch or white spot disease (*Ichthyophthiriasis*) due to *I. multifiliis* is widespread and has been reported from different countries (El-Dien et al., 1998). Sometimes, external parasites like *Ichthyophthirius multifiliis* or *Trichodina sp.* can cause high mortalities in freshwater fish. Naturally occurring outbreaks of *Ichthyophthiriasis* in wild fish populations can cause devastating effects. For example, natural outbreak of the Ich caused the deaths of 18 million *Orestias agassi* in Lake Titicaca, Peru (Wurtsbaugh and Tapia, 1988). External parasites may cause secondary fungal, bacterial and viral infections or act as carriers of bacteria, virus and other pathogens (Azari Takami, 1997). Identification of fish parasites and an understanding of parasite life cycles are prerequisites to prevention or management of parasitic disease outbreak. Zayandehrood River is the second constant river and also the main resource of agriculture and drinking water of central regions of Iran. Considering the importance of the Zayandehrood river fishery, research and continuous monitoring of fauna and flora are necessary. This study was conducted to determine the prevalence rate of protozoan parasites of three endemic fishes (*Capoeta damascina*, *Chonrostoma regium* and *Leuciscus Lepidus*) of Zayandehrood River (Chaharmahal and Bakhtyari Province), Iran.

MATERIAL AND METHODS

Samples were collected from five stations in summer of 2010. Overall 71 native fish from 3 specimens had been caught from Zayandehrood River including 18 *Capoeta damascina* (62.4 ± 27.5 g), 20 *Chondrostoma regium* (34.8 ± 10.4 g) and 33 *Leuciscus Lepidus* (43.7 ± 11.9 g). Fish were caught using net and were placed in plastic tanks with local water and immediately were transferred to the research laboratory. After that they were kept in an aquarium with local waters of Zayandehrood River until parasitic evaluations were done. After biometry, species were examined for parasitic infection. Wet mount from skin and gills were prepared. During the dissection, the gill filaments, the fins and the skin were thoroughly examined under a light microscope and a stereo microscope and parasite specimens were identified by using of identification keys.

RESULTS

Results our study showed that 7 out of 18 *Capoeta damascina* (38.88%), 4 out of 20 *Chondrostoma regium* (20%) and 5 out of 33 *Leuciscus Lepidus* (15.15%) were infected with *Ichthyophthirius multifiliis*. 3 out of 18 *Capoeta damascina* (16.66%), 5 out

of 20 *Chondrostoma regium* (25%) and 5 out of 33 *Leuciscus Lepidus* (15.15%) were infected with *Trichodina spp.* None of 18 *Capoeta damascina* and 20 *Chondrostoma regium* (0%) were infected with *Chilodonella sp.* However, 2 out of 33 *Leuciscus Lepidus* (6.06%) was infected with *Chilodonella sp.* (Fig 1, 2 and 3). All of these parasites were found from skin and Ich was found in both skin and gills of these 3 species. Generally, results showed that 16 fish were infected to *Ichthyophthirius multifiliis* (22.53%) and 13 fish were infected to *Trichodina sp.* (18.3%) and 2 fish were also infected with *Chilodonella sp.* (2.81%).

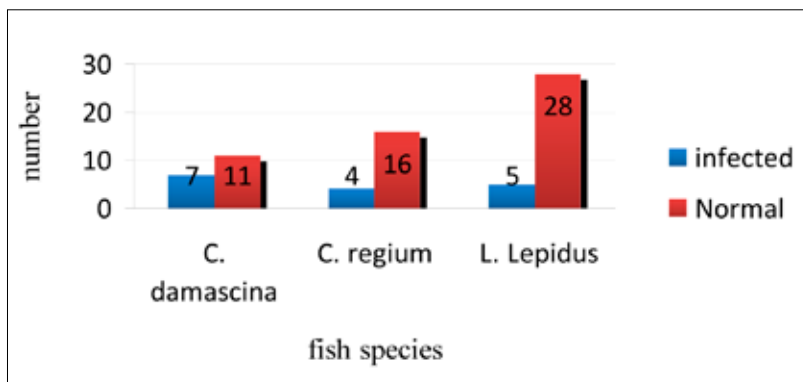


Figure 1. Number of normal and infected fishes with *Ichthyophthirius multifiliis*

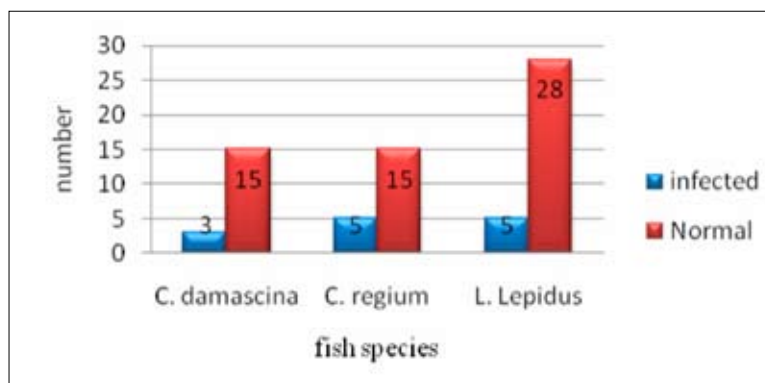


Figure 2. Number of normal and infected fishes with *Trichodina sp.*

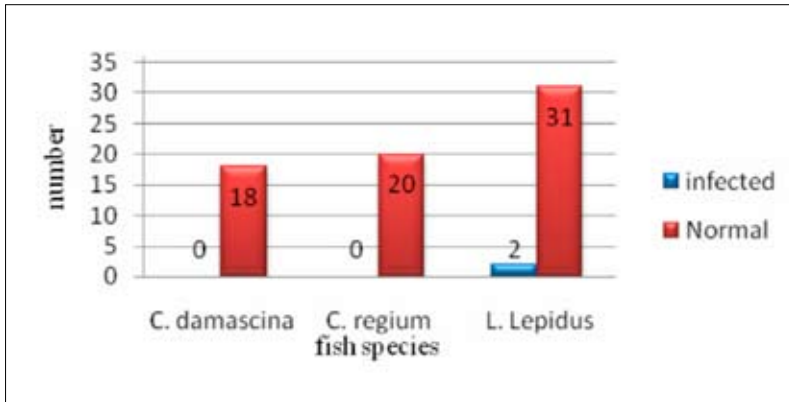


Figure 3. Number of normal and infected fishes with *Chilodonella sp.*

DISCUSSION

Different records of external protozoan parasites were reported from cultivated and non cultivated fishes of Iran. Bazari Moghaddam et al (2010) reported *Trichodina reticulate* from fingerlings of the Persian sturgeon (*Acipenser persicus*). *Ichthyophthirius multifiliis* from Spiny eel (*Mastacembelus mastacembelus*) and *Trichodina pediculus* from Spiny eel (*M. mastacembelus*) and common carp (*Cyprinus carpio* Linnaeus) were reported in Zarivar Lake that is situated in North of Kurdistan Province, Iran (Jalali and Barzegar, 2006). In our study 3 protozoan parasites were collected from 3 species and in total *Ichthyophthirius multifiliis* (22.53%) was most common parasite. In a study that was performed about parasites of some fish species in Gandoman Lagoon (Chaharmahal and Bakhtyari Province, Iran) 14 *Chondrostoma regium* were evaluated. In that study 85.7% of *C. regium* were infected with *Trichodina sp.* (Raissy et al, 2010). In our study 25% of *C. regium* were infected with *Trichodina sp.* However, none of 18 *Capoeta damascina* was not infected with *Trichodina sp.* (Raissy et al, 2010). But in our study prevalence of *Trichodina sp.* in *C. damascina* was 16.66%. And in our study both of *C. regium* and *C. damascina* were infected with *I. multifiliis*, but on that study no *I. multifiliis* was reported from these two fishes.

Reason of these deference between prevalence of these parasites, maybe was in result of different natural resources (Lagoon and river) or because of different temperature. In another study that was performed in October of 2010 about epizootic of *Ichthyophthiriasis* among 6 fish species in Armand River, Chaharmahal and Bakhtyari Province, Iran, prevalence of *I. multifiliis* in *C. damascina* was 33% (Raissy et al, 2010). Prevalence rate of *I. multifiliis* in that study was near to our study. In both studies *C. damascina* had more prevalence rate than other fish species. Environmental factors of Armand River and Zayandehrood are similar, relatively. It could be the reason of these similarities of prevalence rates.

CONCLUSION

Prevalence of some external protozoan parasites can depend on some of environmental factors such as temperature. Kind of environment that fish live there like river, lake or lagoon can affect on prevalence rate of parasitic infections.

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