PSM Microbiology

ISSN(Online): 2518-3834

Editorial Article 2019 | Volume 4 | Issue 2 | 53-55

Article Info

Open Access

Received: June 18, 2019

Published: June 30, 2019

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Parasites of Fish: a Potential Public Health Concern

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Citation: Iqbal, M.N, Ashraf, A., Iqbal, I., 2019. Parasites of Fish: a Potential Public Health Concern. PSM Microbiol., 4(2): 53-55.

EDITORIAL

Fish are a good source of quality protein, but various diseases including parasitic infections pose a threat to fish cultivation, which is a valuable source of food and employment in developing countries (Yooyen *et al.,* 2006; Hadyait *et al.,* 2018). Fish may suffer from diseases and parasites which constitute great problems either in cultured or wild fishes. Fish defences against disease are specific and non-specific. Non-specific defences include skin and scales, as well as the mucus layer secreted by the epidermis that traps microorganisms and inhibits their growth. Fish can develop inflammatory responses upon entry of the pathogens that increase the flow of blood to infected areas and deliver white blood cells that attempt to destroy the pathogens. Specific defences are specialised responses to particular pathogens recognised by the fish's body, which are adaptive immune responses.

Some fish parasites are on the rise, bringing with them risks to human health and fisheries-based economies. It's not clear what exactly has caused the changes in parasite loads in fish, but it's likely that humans have played a role. The physiological status of fish may play an important role in the degree of infection in different fish and organs (Shalaby *et al.,* 1989). Different parasites might react to changes in their environment in different ways. In areas with heavy fishing pressure, parasites with complex, multi-host life cycles tend to decline, while ones with simpler life cycles tend to increase. With expanding freshwater and marine/brackish water fisheries in Asia, the economic impact on commercial aquaculture of fish-borne zoonotic trematode food quality and safety issues will become more burdensome (Duarte *et al.,* 2007). It's important to understand how environmental changes affect parasites to predict how they might react to changes in the future, and how those changes could cascade through the ecosystem.

There are three types of fish parasites of public health importance; roundworms (nematodes), flatworms or flukes (trematodes) and tapeworms (cestodes). Various diseases including parasitic infections pose a threat to fish cultivation (Ali *et al.,* 2016). In addition to the economic loss to farmers, many of the parasites, particularly trematodes, are also of zoonotic importance (Iqbal and Ashraf, 2017). Both fresh water and salt water fish are a potential source of human infection with parasites. Fish get infected with parasites when they feed on intermediate hosts. Although nematodes may be important pathogens of fish, of greater concern is usually their roles in transmitting parasites to humans, who become accidental hosts. Poor sanitation and traditional methods of food preparation have accelerated the spread of food-borne trematode infection (Phan *et al.,* 2010).

In this issue, Hefnawy et al. (2019) report that the overall incidence of metacercariae infestation (60%) was significantly higher in *C. lazera* 70.0%, than *T. nilotica* 50.0%, while the incidence of infestation with 3rd larvae of *Contracaecum sp*. was found significantly higher in *C. lazera* than in *T. nilotica* at *(P*≤ 0.05). Three types of encysted metacercariae were detected in *T. nilotica* namely metacercaria of *Prohemistomum vivax, Clinostomum phalacrocoracis* and *Haplorchis species,* while *P. vivax* was found only in *C. lazera*. Seasonally; the highest incidence with metacercariae in *T. nilotica* was found in summer and spring which was 65% and 60% respectively, but in *C. lazera*, the highest incidence was found in summer (87%) and spring (66%) respectively. The higher incidence of parasites in fish represents the potential public health risk, therefore public awareness creation activities should be conducted on the zoonotic nature of fish parasites and danger of consumption of raw or undercooked fish.

The fish-borne zoonotic parasites occur in cultivated fish and this poses a potential risk to human health. Several species of bacteria are capable of infecting humans. Eating raw or

improperly cooked or processed fish is the main source of these infections for humans, and this has been reported from various geographical regions (Shamsan and Al-Jobory, 2018). Therefore, these parasites may pose a greater threat to the people who used fish in their diet, thus emphasizing the need to control these parasites in food for human use. A doctor should be consulted as soon as possible. The condition may persist for some time and must be treated with antibiotics for an extended period. Furthermore, any efforts to control transmission will require control over infections in reservoir hosts and thorough control over snails in ponds. Further studies are needed in order to assess the epidemiological and biological status of fish zoonotic parasites.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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