

Prevalence of Gastrointestinal Helminthes in *SAROTHERODON GALILAEUS* (LINNAEUS 1758)

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Abstract

A study was conducted on *Sarotherodon galilaeus* a tilapia fish in order to investigate the prevalence of helminthes in its gastrointestinal cavity. 60 samples of *Sarotherodon galilaeus* were collected from Ogun river Abeokuta Nigeria. It was dissected in the laboratory from the month of February- March 2015. Result showed that *Clinostomum* species has the higher prevalence of 20(52.63%) while *Diphyllbothrium* species had 18(47.38%). There was no helminthes in 22 samples. Based on the sex- ratio; female *Sarotherodon galilaeus* had higher prevalence 57.89%(22samples) compared to male 42.10%(16 samples) $p=0.021<0.05$ *Sarotherodon galilaeus* within the length categories of 16-20cm recorded, significantly higher helminthes. Prevalence infection was minimal in group 11-15cm (2.63%) and length 20-24cm had (7.89%). In conclusion *Sarotherodon galilaeus* of 16-20cm size were more susceptible to parasitic infection than larger ones.

Keyword: *Sarotherodon Galilaeus*, Gastrointestinal, Tilapia

Background to the Study

Sarotherodon galilaeus (Linnaeus, 1758) is a genus belonging to the family Cichlidae. It share the same basic characteristic features like its members viz *Oreochromis niloticus*, *Sarotherodon melanotheron*, and *Tilapia zilli*. It is endemic to Africa and the middle east, they mainly inhabit fresh and blackish waters. *Sarotherodon galilaeus* is about one of the most cultured species in tropical inland ponds. *S. galilaeus* is a phytoplanktophagous species feeding on a wide variety of algae, desmids and diatoms (Spataru 1976, Fagade 1982, Luzanne, 1983) Several authors (Motwani and Kauwai 1970) have reported from the Volta River and Rivers Benue in Nigeria as feeding mainly on Zooplankton. With increase in population, the fish resources are fast becoming depleted. The extraneous demand in fish via: the population have resulted in poor environmental condition.

This causes a resultant reduction in immunity of the fish and higher susceptibility to parasitic infestation and disease (Murray 2005). There have been several reports on parasitic infestation of fishes .mainly on Zooplankton. With increase in population, the fish resources are fast becoming depleted. There have been several reports on parasitic infestation of fishes. among which are (Ukoli, 1988, Onwuliri and, Mgbemena,1988, Awharioma and Ehigiator (2012), Edema and Okaka, 2008)Several parasites are associated with Tilapia species in the wild and cultured environment where they cause morbidity, mortality and economic losses to aquaculture in various part of the world (Subashinghe, 1995).

Materials and Methods

Study Area

Sarotherodon galilaeus used in this study was obtained from Ogun River located in the southern part of Abeokuta, Ogun State, Nigeria. It is bordered geographically by latitudes 60 26' N and 90 10' N and longitudes 20 28'E and 40 8'E. About 2% of the basin area falls outside Nigeria in the Benin Republic. The land area is about 23, 000km².

Sample Procurement

Sarotherodon galilaeus used in this study were purchased alive from fish vendor at Lafenwa Abeokuta between February to March, 2015. Samples were transported in a plastic bucket containing clean tap water with ice block to the microbiology laboratory in the department of Science Laboratory Technology, Moshood Abiola Polytechnic Abeokta for dissection.

Laboratory Methods

Sarotherodon galilaeus was identified by Teugels and Thysvan den Audenaerde(1991) and notes from a textbook Aquaculture development in Africa by Common Wealth secretariat. The standard length (from the tip of the snout to the end of the base of Candal peduncle) was measured using a meter rule mounted on a dissecting board, The fish were Sacrificed using the mechanical stunning method. The sex of Tilapia was determined only after dissection and noting the presence of testes or ovaries. (Imam and Dewu, 2010). The gastrointestinal tract of individual fish was dissected from the rectum to the Oesophagus and all helminthes seen were carefully detached, processed using standard parasitology methods as described by Olurin and Samorin (2006), and identified based on their morphological features as described by Zdensk, (1977) and Kataba, (1985).

Statistical Analysis

The student's t-test was used to compare prevalence rates based on parasite species, sex and length of groups of Tilapia with “p” values equal to or less than 0.05 considered significant (Steel and Torrie, (1980).

Results

A total of (60) sixty samples of *Sarotherodon galilaeus* were investigated. The overall prevalence of intestinal helminths infection was (38) 63.33%. 22 Males (57.89%), 16 female (42.10%). $P < 0.05$. (TABLE 1) The *Sarotherodon galilaeus* length categories between 16-20cm, and 20-24cm recorded significantly higher helminthes prevalence of 89.47% (34) and 7.89 (03) respectively.

Table 1

Prevalence of helminthes based on the sex and length of *Sarotherodon galilaeus* (n=60). (February-March,2015)

Overall	No infected	Prevalence %
Sex	38	63.33
Male	22	57.89
Female	16	42.10
Length(cm)		
11-15	01	2.63
16-20	34	89.47
20-24	03	7.89

Total number of *Sarotherodon galilaeus* examined was 60.

Table 1 showed the prevalence of *Sarotherodon galilaeus* in Ogun River with *Clinostomum* sp (20) 52.63% and *Diphyllobothrium* sp 18 (47.37%) respectively ($P = 0.05$).

Table 2

Shows the prevalence of helminthes in *Sarotherodon galilaeus* in Ogun River (February-March,2015).

Helminthes	No of Tilapia	Infected %
<i>Clinostomum</i> sp	20	52.63
<i>Diphyllobothrium</i> sp	18	47.37

Table 2 showed the percentage infestation *Clinostomum* sp and *Diphyllobothrium* sp respectively.

Discussion/Conclusion

This work is on the prevalence of helminthes in the gastrointestinal cavity of *Sarotherodon galilaeus* in Ogun River in Abeokuta Nigeria. It revealed an overall prevalence of *Clinostomum* sp 52.63% (20) and *Diphyllobothrium* sp 47.37% (18). Similar studies have been reported in helminthes infection in *Tilapia* fishes. Awachie (1965) reported in Kanji Lake. In *Tilapia* in Jos plateau; Onwulini and Mgbemena (1987) in Osun and Owa stream both in South west Nigeria. Olurin and Samorin (2006), Olurin et al., (2012). Bin and Nkechi (2013). Previous reports have showed that helminthes are usually found in all

fresh water fishes. Their prevalence and intensity is dependent on factors of parasites species, their biology, host it's feeding habits, physical factors, hygiene of the water body and presence of intermediate hosts where necessary,(Doreen et al, 2009. Hussien et al, 2012).

In this study, more males were infected than female *Sarotherodon galilaeus* ($P = 0.05$) several other authors had different reports on sex and relationship of infection Emere(2000) reported differences in the incidence infection between male and female fish. Emere and Egbe (2006) reported that physiological state of the female (being the most gravid could cause resistance to infection by parasites) Kabata(1995) reported that *Clinostomum tilapiae* when ingested with poorly cooked fish is capable of producing laryngopharyngitis which is an unpleasant inflammatory condition in man. The *Sarotherodon sp* in length categories between 16-20cm and 20-24cm recorded significantly higher helminthes prevalence compared with groups 11-15cm. This agrees with Akinsanya et al (2007). They reported that the less immunity in the smaller sized fish and explained high prevalence of helminthes compared with Olurin and Somorin(2006). Who observed that the longer the fish, the greater the susceptibility to parasite infection .This work is similar in length to report of Biu and Nkechi(2013); where middle level length had higher tendency for infection in parasitic helminthes. Conclusively the preserve of trematode in the intestine of *Sarotherodon galilaeus* is associated with the digestive activity that normally results in the release of parasite/ ova and cysts in food particles.

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