

INTESTINAL HISTOPATHOLOGY OF TREMATODE INFECTED FISH, *CHANNA STRIATUS*

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ABSTRACT

Genarchopsis goppo, a trematode infests the intestine of fresh water fish, *Channa striatus*. Histopathological changes have been noticed in the intestine of fish due to infection with *Genarchopsis goppo*. The main objective of this study is to observe histopathological changes that occur in the intestine of fresh water fish, *Channa striatus* infected with the trematode, *Genarchopsis goppo*. Histopathological changes include shortening and destruction of villi, vacuolation of sub mucous cells, dilation of blood vessels thickening of muscles and necrosis. In the infected fish the carbohydrates, glycogen, protein and lipid contents are increased significantly. The present work deals with the histopathological changes in the intestine of infected fish.

Key words : *Channa striatus*, *Genarchopsis goppo*, Histopathology

INTRODUCTION

Adult flukes occur in the intestine and other organs of fish, whereas the larval forms are found embedded in the skin, gills, mesentery, muscles, liver and other organs. Although many studies have been made on trematodes found in fish, relatively few works have been concerned with the histopathological changes in the host tissues (Bose & Sinha, 1979; Babara, 1980; Chung Yui-tan 1981; Gupta & Agarwal, 1983). The present study, therefore deals with histopathological changes that occur in the intestine of fresh water fish, *Channa striatus* infected with the trematode, *Genarchopsis goppo*.

MATERIALS AND METHODS

For the present study, *C. striatus* was procured from fresh water bodies such as rivers, tanks, lakes and ponds located in Warangal district of A.P. Most of the parasites infect various organs

of the alimentary canal; the entire alimentary tract was isolated from the fish and kept in petri dish containing normal saline. Intestine was thoroughly screened for the presence of the parasites. The parasites were then collected on a slide and tied for fixation. The parasites were stained with Alum carmine. The intestine of the infected and uninfected fish were isolated and preserved in Bouins, Susa, Carnoy and Zenkers fluids (Gurr, 1962) for the histopathological and histochemical studies (Pearse, 1968; Bancroft, 1975). A battery of histochemical tests were applied on the microtome cut sections of intestine both infected and uninfected to demonstrate and also to assess the histochemical changes that occur in the tissues of the infected organ if any due to infection with *Genarchopsis goppo*.

RESULT AND DISCUSSION

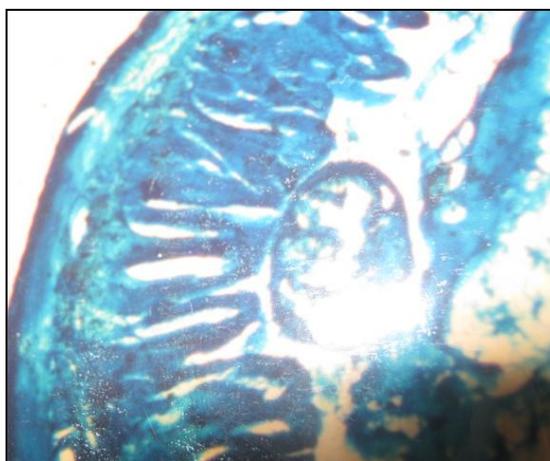
The pathological consequences of parasitic effects on fishes are well documented and serve

as an evident to support the view that parasites are one of the main causes of mortality in population of fish. The pathological state of the host alters the level of the various energy molecules, resulting the change in the metabolism and physiological activities of the host itself. The association of parasite with the host results the development of pathological state in the host intestine which is very much conspicuous. In the present study various histochemical tests have been conducted to understand the pathological effects on the fish physiology.

The histopathology caused by this parasite in the host body especially in the intestine revealed that it has caused extensive damage to various layers of the intestine right from mucous membrane to the muscularis layer. The mucous membrane of the intestine where extensive damage caused to the villi. The villi are erupted at certain regions of the intestine. The result of this function causes

the intrusion of muscularis layer towards the lumen, where the sub mucous membrane is totally shrunked. The surface epithelium has got flattened which lead to a complete damage to lamina propria and oedema of sub mucous membrane. The histopathological changes observed in the intestine are fibrosis associated with hyperplasia and metaplasia. The dilation of blood vessels, degeneration of intestinal folds, epithelial necrosis, vacuolation of submucous cells and proliferative changes which lead to the degeneration of various layers of the intestine are evident. Inflammation and fibrosis associated with hyperplasia and metaplasia was observed. Mucous layer the parasite also caused the dilation of blood vessels in the submucosa results degeneration of intestinal folds, shrinkage of villi and necrosis of epithelial cells. Vacuolation and proliferation of submucous cells lead to the degeneration of various layers of the intestine (Figure 1 & 2).

Fig:1-A. Infected intestine shows destruction of villi and parasite
B. Infected intestine shows hypertrophy of villi



The pathological effects include an increase in the thickness and the damage to the mucosa. The decrease in the thickness of the muscular layer is a common feature that occurs in trematode infections. Similar observations were made (Bose & Sinha, 1979; Barbara, 1980; Zarina, 1990; Benarjee *et al.*, 2006). The pathological effects include an increase in the thickness and the damage to the mucosa. The parasites not only bring change in the morphology of the organ but also interfere with the physiology, metabolism and secretory efficiency of associated glands of the intestine which adversely influence the host. The present histopathological state of the tissue indicates that the worm might have impaired the routine physiological process of the host.

CONCLUSION

There is a necessity to study the pathological effects of infections in the naturally occurring hosts. Anthelmintics control the helminth infections which are not only of medical but also of economic importance, in order to increase the health standards and biological productivity.

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