

Histopathological Analysis of *Senga Kaigaonensis* (Wankhede & Reddy, 2009) Contaminating Fresh Water Fish *Channa Gachua* from Ujani Reservoir, Maharashtra State, India

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Abstract: In the present analysis contigency and anatomical changes caused by cestode parasites *Senga kaigaonensis* (Wankhede & Reddy, 2009) in the guts of fresh water fishes, *Channa gachua* from Ujani Reservoir, Maharashtra State, India are studied. Parasites were found attached to the epithelial membrane of gut characterized by mucus secretion which resulted in severe deterioration and disaster in mucosa, submucosa, serosa and muscularis layers. Hisyopathological analysis of contaminated gut of *Channa gachua* disclose epithelial refuse and destructed connective tissue cells at the site of pierce.

Keywords: Histopathology, contaminating, Ujani reservoir

1. Introduction

Adult tapeworms are found in the intestine of fishes which shows some direct effects by invasion and destruction of host cells and tissue; by production of toxic substances and metabolites; as well as by producing mechanical obstructions. The indirect effects of cestode infection to fishes includes reduction in host productivity (weight loss, reproduction etc.); increased utilization of food and reduction in breeding efficiency, ultimately causing a disease.

Histopathology and diseases of fish, are being used as measures of environmental stress, since they provide a specific biological end-point. It is considered an important tool and mechanism which can give the fish health by determining early lesions to cells and to determine the effect of parasites on fish tissues. Contagious results of cestodes, are due to attachment of the parasite in the gastro-intestinal tract and also in the tissues. Cestodes live in a very speculative environment in the intestine of the host, as there is continuous movement of the gut lining, food, gut surface and its related glands. They have an organ called scolex for holding, which may be acetabulate with suckers, both ridiate with bothria (muscles hold fast organs), or both riate (holdfast grooves). Some cestode's scolex may also be armed with hooks and spines or have a retractable rostellum or proboscis covered with fine hooks. (Jawale, 2011).

It is known that cestode ingest nutrition by digesting the intestinal content and partially by damaging the intestinal wall with the help of their proteolytic enzymes while they protect themselves from the effect of proteolytic enzymes produced by the host with their protease inhibitors (Matskasi 1978, 1984). Mackiewicz *et al.* (1972) found that, the lytic secretions and other proteolytic enzymes plays an important role in tissue reaction.

Therefore, an attempt has been made to evaluate the histopathological changes caused by *Senga kaigaonensis*

(Wankhede & Reddy, 2009) contaminated in the gut tissue of fresh water fish *Channa gachua*.

2. Material and Method

The Ujani dam is constructed on the Bhima River near the village Ujani, Madha Tahasil of Solapur district in Maharashtra state. The river Bhima is a major tributary of the Krishna River. The study sites of the present investigation viz. Indapur, Palasdev and Bhigwan are located in the backwater of Ujani Reservoir about 50 kms upstream of the dam. The spread of the Ujani reservoir occupies the North of the dam site to the South lie hill slope and agricultural lands of two villages, Kumbhargao and Dalaj No. 2. Both these villages have been resettled on the new sites due to the construction of Ujani reservoir.

Freshwater fish *Channa gachua* (Bloch) were brought to the laboratory for examination. We have collected discarded intestines from fish market. During the pathological examination, the intestines were separately cut open and observed under light microscope to see the extremity of infection. During the collection of cestode parasites, Nematode and Trematode parasites infection were also found. The cestodes were gathered, placed in saline water and separated from the attached mucus by slowly trembling, they were compressed, organised and stained for taxonomical studies and were recognized as *Senga kaigaonensis*. Immediately 02 to 03 cm long pieces of intestinal portion containing cestode parasites were fixed in Bouin's solution for 24 hrs, as the tissue undergoes autolysis fastly after the death, therefore fast fixation is necessary.

The fixed material was processed and transferred through various grades of alcohol, cleared in xylene and mounted in DPX (M.P 58° to 60°C). Sectioning was carried out on a rotary microtome at 06µm. Sections were floated on warm water at 48°C and mounted on chemically cleaned slides coated with egg albumin. The mounted, unstained sections were dewaxed in three stages of xylene at 1 minute each and

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stained with most widely used standard haematoxylin and eosin stain. The staining was carried out using haematoxylin and eosin staining technique (Bullock, 1978). This staining is often sufficient for identification of larger parasites such as helminthes, in this method the nuclei of cells are stained by the haematoxylin and the cytoplasm is stained by the eosin. Stained mounted sections were examined under the light microscope for good ones that were selected for microphotography.

3. Results and Discussion



Figure 1: Cestode parasite attached to intestinal wall

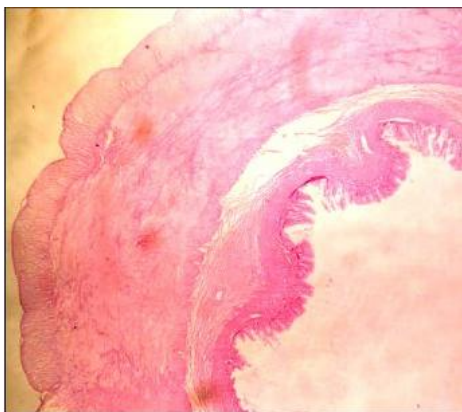


Figure 2: T.S. of Intestine of non-infected host

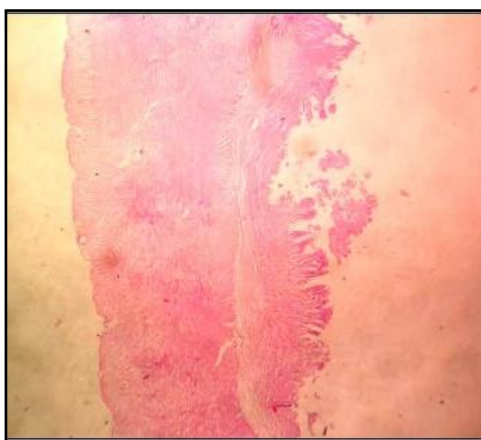


Figure 3: T.S. of Intestine of infected host

Intestine of *Channa gachua* infected by cestode parasite *Senga kaigaonensis* include both morphological and histopathological changes and exhibited excessive mucus secretion, the worms were found located in the lumen of

intestine. Pathological consequences revealed the ruptured serosa layer, strong inflammatory edema and vacuolization in tunica muscularis and lamina propria, shortened and irregular shaped villous processes with blunt tips, breakage and separation of villous processes with large space. Thus it can be concluded that the worm contact with host tissue and utilize the nutritive material to the favourable for its nourishment and growth from the host tissue and create host weak, affecting the growth of host causing damage to intestinal tissue of host.

The present findings are more or less similar to the observations made by Kaur (2014) who reported pathological changes mainly the enhanced mucus secretion in *Channa straitus* infected with *Senga sp.* Reddy and Benarjee, (2014) observed that the stomach is majorly influence due to helminth infection, which was evidenced by total eruption of villi from the mucous membrane which resulted to a major disruption of the structural organization of the organ which might have profound influence on the nutrition and digestion process of the fish.

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