

Histopathological Changes in the Intestine of *Aetomylaeusnichoffii* (Bloch & Schnaider, 1801) with Special Reference to Helminthic Infection

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Abstract: Studies of histopathological changes on gastrointestinal tract of infected cestode parasite of *Gymnorhynchus* in the intestines of fish *Aetomylaeusnichoffii* (Bloch & Schnaider, 1801) from At Shriwardhan, Dist. Raigad (M.S.) India, Dist. This parasite caused significant histological changes in the fish intestine, such as weakened villi, villi shortening, inflammation, hyperplasia, normal structural degradation, intestinal lumen widening, and an increase in the number of mucous cells. Damage occurs to both the mucosal and submucosal layers in case of severe infection. There was also obvious compression and absence of intestinal villi. The present paper deals with the histopathological changes showed the intestine of marine water fish *Aetomylaeusnichoffii* infected with cestode Parasite *Gymnorhynchus*

Keywords: Marine Fish, *Aetomylaeusnichoffii*, Infected Intestine, Cestode Parasite

I. INTRODUCTION

Intestinal helminthes of vertebrates can includes inflammation of the host digestive tract, resulting in altered gastrointestinal function, namely enhanced secretion and propulsive motility of the gut (Palmer & Greenwood-Van Meerveld, 2001). Furthermore, helminthes seriously disrupt structures of the gut wall and interrupt communications between the nervous and endocrine system (Fair-weather, 1997). One of the most important factors in the pathogenesis of gastrointestinal parasite infections is a reduction in the host feed intake (Houtert & Van Sykes, 1996; Mercer et al., 2000). Moreover, gut parasites also increase endogenous protein 136 and fat losses thus affecting growth rate of the host (Hiscox & Brocksen, 1973).

The host-parasite relationship results in the gain of one organism and the loss of another and leads to various diseases and disorders. Naturally, it is important to study this relationship, not because of their parasitological value but for the relative existence of humankind. These studies may have considerable intrinsic interest and raise fundamental question, common to other areas of biology, at a molecular, cellular, tissue and whole organism level. Several studies on the effect of intestinal parasites have shown that the main detrimental consequences for the host species are localised at the site of infection (Hoste, 2001)

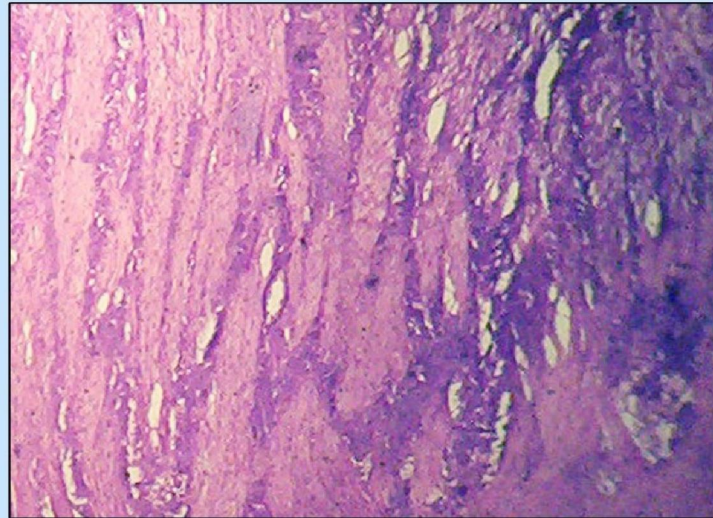
II. MATERIAL AND METHODS

Marine fish *Aetomylaeusnichoffii* (Bloch & Schnaider, 1801) were brought to the local laboratory alive and sacrificed just before examination. During the parasitological examination, the intestines were cut open and examined under stereomicroscope to see the degree of infection. The tapeworms were collected, placed in saline solution, freed from the adhering mucus by gentle shaking, they were flattened, processed and stained for morphological studies and were identified as *Gymnorhynchusshindei* n. sp. within short time 2 to 3 cm long pieces of proximal intestinal segments containing tapeworms were fix in Bouin's solution for 24 hrs, as the tissue undergoes autolysis rapidly after death and rapid fixation is essential.

The fixed material was transferred and processed through ascending grades of alcohol, dried in a wax miscible agent and impregnated in wax (M. P. 58°-60°C). Sectioning was carried out on a rotary microtome at 6µm. 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 stained with most widely used standard

haematoxylin and eosin stain, staining was carried out using haematoxylin and eosin staining technique (Bullock, 1978). This stained is often sufficient for identification of larger parasites such as helminthes, in this method the nuclei of cells are stained by the haematoxylin; the cytoplasm is coloured by the eosin. 139 Stained mounted section were examined under light microscope for good ones that were selected for photomicrography.

**Histopathological sections of intestine from
Aetomylaeus nichoffii (Bloch & Schnaider, 1801)
infected with *Gymnorhynchus shindei* n.sp.**



T.S. of non-Infected intestine



T.S. of Infected intestine with attached Parasite

III. RESULTS AND DISCUSSION

Histopathology of *Gymnorhynchusshindei n. sp* infection of the intestine *Ateomylaeusnichoffii* (Bloch & Schneider, 180), specimen of cestode *Gymnorhynchusshindei n. sp* were found on several occasions during the dissection of *Ateomylaeusnichoffii*. Submitted for routine diagnostic examination from At. Shriwardhan, Dist. Raigad (M.S.) India in the period of October 2022 to December 2023.

Histopathological examination reveals a variety of pathological changes, depending upon the number of parasites and extent of damage of intestinal wall. Moderate infection of *Gymnorhynchusshindei n. sp* causes to the submucosa. However, severe infection damage shape, size and colour of the villi, thickening and necrosis of mucosal layers. Besides this, hemorrhagic lesions have been observed in submucosa. Mucosa was infiltrated with eosinophil, lymphocytes and plasma cells. The worm *Gymnorhynchusshindei n. sp* is having penetrative type of scolex, hence; they have only close intimate contact with intestinal tissue of its host *Ateomylaeusnichoffii*. In transverse section of intestine of *Ateomylaeusnichoffii*, it has been observed that the worm attached to the mucosa layer of intestine and slowly invades the host tissue, causing less damage but destroys the intestinal epithelium showing that moderately pathogenic. Thus, it can be concluded that the rich environment of host intestine, is favorable for the development and growth of the worm. Hence, the parasites maintaining good host pathological relationship with its host

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