

# Histopathological Study on Liver of *Mastacembelus Armatus* Infected with *Camallanus Sp.*

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## ABSTRACT

This study was conducted to analyze at histopathological level, damage caused by cestode parasites *Camallanus sp.* in the liver of freshwater fish *Mastacembelus armatus* from Paithan, dist Aurangabad. The histopathology of fish liver shows different pathological conditions. The parasites penetration into the liver causes damage of bile passages and sinusoids were ruptured and filled with blood vessels. Up to this time no losses due to *Camallanus* infection in liver tissue were recorded.

**Keywords :** *Camallanus*, *Mastacembelus armatus*, Liver, Histology,

## I. INTRODUCTION

*Mastacembelus* species generally are found at high altitude as well as in low land in both still and running waters (Woo, 1995). It is a popular indigenous aquarium fish and also an economically important food fish (Sugunan et al., 2002; Tripathi, 2004). It is esteemed as highly proteinaceous food and attributed as tasty and medicinally important fish. They are commonly known as zigzag eel, spiny eel, leopard spiny eel and white-spotted spiny eel. It is also locally called as Pedda papera or papera or freshwater Baam or Bommidai and harbours a variety of metazoan parasitic fauna which includes monogeneans, digeneans, cestodes, nematodes, acanthocephalans, copepods and isopods (Vankara, et al., 2011).

The effect of parasite on the fishes is of considerable importance because of its wide spread occurrence and an intermediate link in the food chain (Pardeshi et al., 2012). Some parasitic forms cause serious damage to the tissue and also alter the normal physiology, histology and haematology of the host (Kaur et al.,

2012). Liver is one of the most important glands concerned with several vital functions of the body. It is the chief organ for the process of detoxification and plays an important role in the metabolism of carbohydrates, proteins, lipids, storage of glycogen, denaturation of fatty acids and amino acid synthesis (Pardeshi et al., 2012). Therefore, the histological study of liver is a direct evidence of robust effect on the fish health and is helpful in knowing the possible effect of parasitism on the functions of different body systems (Kaur et al., 2012).

The present paper is an attempt to investigate the nature of nematode parasite *Camallanus sp.* infection and its impact on histopathological responses of freshwater fish *Mastacembelus armatus* (Lacepede).

## II. MATERIAL AND METHODS

After their first detection in March 2017, specimen of the nematode was found in Liver tissue on several occasions (Fig No.1), during the dissection of *Mastacembelus armatus* (Linnaeus) submitted for routine diagnostic examination from Paithan Dist.

Aurangabad (M.S) India. The helminthes parasites were identified has nematode of genus Camallanus Sp. Samples of infected liver were immediately fixed in Bouin, washed in distilled water, dehydrated in alcohol, cleared in xylene and embedded in paraffin wax. Sections were cut at 5-6  $\mu$ m, stained with haematoxylene eosin and mounted with DPX. Finally, through the microscopic examination, photographs had been picked from infested tissues with different helminthes.

### CAMALLANUS SP



Figure 1. Attached nematode parasite

### III. RESULT AND DISCUSSION

Microscopically examination of liver tissue revealed different histopathological changes caused by the Camallanus Sp. (Nematoda: Camallanidae) in *Mastacembelus armatus* (Linnaeus). Liver histology of control fish exhibited the normal structural features. The hepatocytes are arranged in branching and anastomosing cords interrupted by hepatic sinusoids (Figure 1). The infected liver tissues include severe destruction and necrosis liver tissue. Destruction of epithelial cells, inflammation and an increase in thickness of sub-mucosa, atrophy and aggregation of inflammatory cells between hepatocytes, accumulation of lipid droplets, congestion of blood sinusoids and focal haemorrhage (Figure 2).

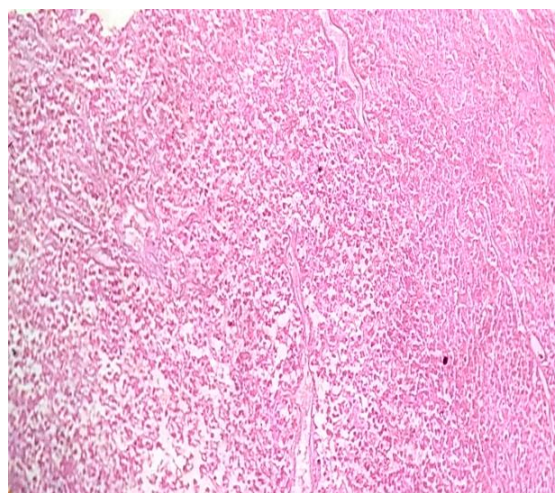


Figure 2. Normal Liver Tissue.

The distribution of parasites within the fish liver is variable and they may damage the liver at the point of their attachment. In addition to Hanchla Devi and Pinky Kaur (2014) studied the effect of helminth parasites in *Mastacembalus armatus* with special reference to hepato-somatic index. As morphologically, infected liver appeared pale yellow and very thin in size. External surface showed few encysted parasites. Histologically, infected liver showed loosening in hepatic parenchyma, irregular lobular arrangement and necrosis. Most of the hepatocytes are indistinguishable with eccentric and enucleated (Devi, et al., 2014).

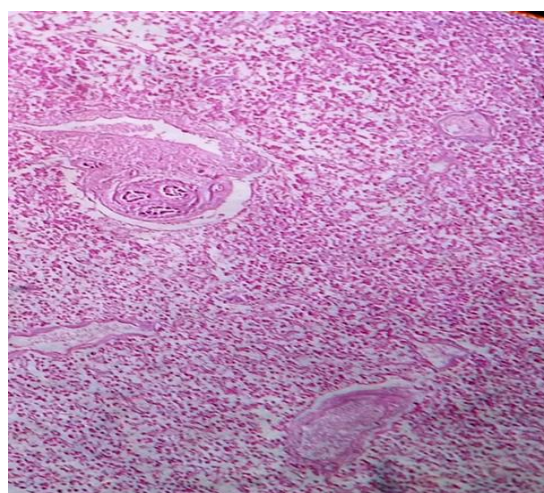


Figure 3. Infected Liver Tissue

El-Mansy (2011) mentioned that the nematode parasite *Procamallanus laevichonchus* lead to hemorrhage at attachment site in the infected fish tissue. According to Bamidele, (2007) fish in intensive culture are continuously affected by environmental fluctuations which can cause considerable stress on the homeostatic mechanism of fish, rendering them susceptible to a wide variety of pathogens.

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