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# *Mastacembelus armatus* freshwater fish of biochemistry changes due to infected with cestode parasites

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**Abstract**
In present study aimed determining biochemical changes that may occur from parasitic infection in fresh water fishes *Mastacembelus armatus* where fishes examined for parasites for biochemical contents (Protein, Glycogen and Lipids) in muscles (mg/gm of tissue) infected and non-infected of *Mastacembelus armatus* with cestode parasites found that 19.28, 20.18. 18.12 Protein (mg/g of dry weight of tissue in infected and in non-infected 21.78, 22.09, 20.21 in observation periods and Glycogen mg/100 ml of solution 24.70, 25.16, 22.89 in infected and in non-non-infected 28.12, 29.23, 26.45 respectively. Also, Lipids mg/gms in infected 11.23, 12.15, and 10.14 and in non-infected 12.90, 13.20 and 11.05 in examined time periods respectively.

**Keywords:** *Mastacembelus armatus*, biochemistry, cestode, infected, non-infected etc

## Introduction

The spiny eel, *Mastacenbelus armatus*, is one of the more common species of teleosts found in Asia. M ar, natus is an economically important inland water fish which is quite palatable as a table fish and is nutritious too. Demand for the fish almost always exceeds supply, particular: Y in India and its neighboring countries such as Pakistan, Sri Lanka and Bangladesh, although the fish has also been reported in Myanmar, Thailand, Malaysia and southern China. In northern and eastern India, the fish is very popular when sold alive. It occurs in a variety of freshwater habitats in the plains as well as in the hills of India. Despite its abundance, palatability and consumer appeal, no published information is available on the biology of M. annatus, except in the studies of Dutta (1989, 1990) and Serajuddin and Mustafa (1994) on feeding specialization of adult fish of this species, Sikder and Das (1980) on the skin structure of *M. ar, natus* and Saxena *et al.* (1979) on the cytological details of its oocytes. Keeping in mind the paucity of information on the biology of this species, the present study focusing on the food and feeding habits of *M. annatus*, known in India as "baam," is undertaken is an important food fish because rich source of nutrition, Bimal Prasanna Mohanty *et al*,2012 has been estimated the crude protein, crude fat and ash contents to be 20.06 ± 1.13, 1.40 ± 0.79 and 0.90 ± 0.08%, respectively. Protein content of S. seenghala is higher than that of many other catfishes, in *Mystus vittatus* protein content is15.62 ± 0.32 %, *Clarius batrachus* 14.78 ± 0.63 %, W. attu 17.00 ± 0.12 % and is similar to *bagridae catfish Sperata aor* 19.05 ± 0.28 % (Kamal D.*et al*,2007 and Memon N.N, *et al*,2010) [9, 10].

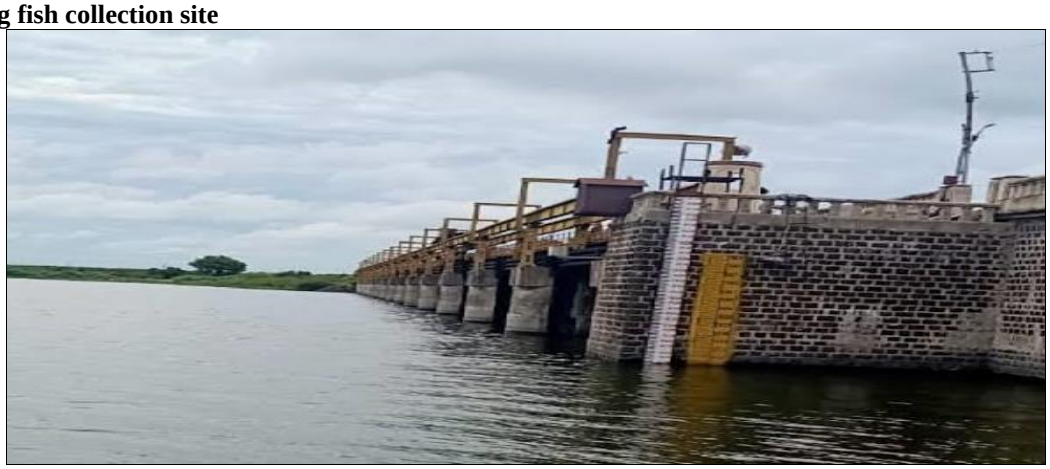
Production as well as productivity freshwater fish which are taken for investigation fishes are infected with various parasites than other fish diseases and these parasites multiply within host fish due to this ultimately fish quality and production also their demands are decreases in market even though this fish demand in market high due the nutritional properties as well as a smaller number of spines in fishes so it is easily serve in diet. Fish parasites interfere with their nutrition and also disrupt metabolism and their secretary function of alimentary canal and damage their nervous system due to damage nervous system of fishes there is protein play important role in maintaining of damaged tissue but parasites also consumed protein, glycogen and lipid from fish tissue so, fish incapable for recover damaged tissue because of nutrition consumed by parasites for growth and development (Sandeep P. 2016). In fish farming reported the decreased protein and carbohydrate in muscle of fish and their liver when they infect by cestode parasites (Hassan A.H., 2015).

Fish infection intensity caused change in total protein content in muscle of *Channa punctatus.* So, in present studies on effect of cestode parasites on biochemical parameters like Protein, Carbohydrate (Glycogen) and Lipid.

## Materials and Methods

Fishes sample were collected from vishnupuri dam fresh water fishes at the located on The Siddheshwar Dam is an earth-fill storage project built across the Purna River (a Godavari tributary) in the Aundha Nagnath tehsil of Hingoli district, Maharashtra. during the year 2024 and 2025. and brought to laboratory and kept wax tray for dissection to identify whether infected or not infected with cestode parasite brought for biochemical investigation. Biochemical contents like (Protein, Gycogen and Lipids) of fishes. The fishes are dissected with help of dissection box instrument and whenever necessary dry muscle tissue infected as well as non-infected then biochemical were estimated from fresh muscles of host fish. The Protein are estimated by one pioneer scientist Lowry method Lowry *et al.* (1951) [13], Carbohydrates (glycogen) are estimated (Glycogen content) by using anthrone method Hedge *et al.* (1962) [12] and also Lipids percentage in muscle are estimated by Cox and Pearson (1962) [11] method and also, Ananthi. S. *et al*, (2015) and Deshmukh D. R. (2016) [14, 15] all biochemical parameters of fishes were estimated by this method.

**Maps showing fish collection site**



Fish muscle infected with cestode parasites

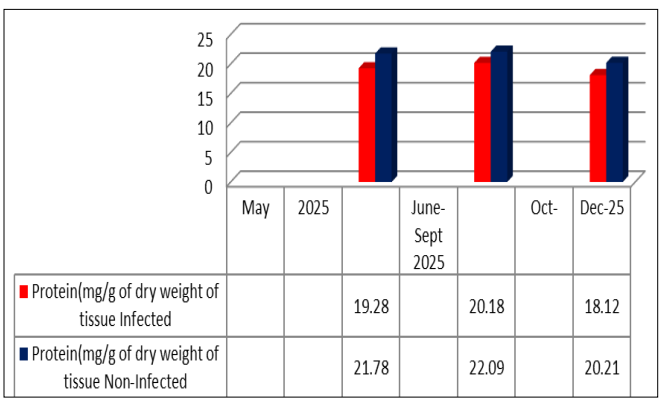
**Results**

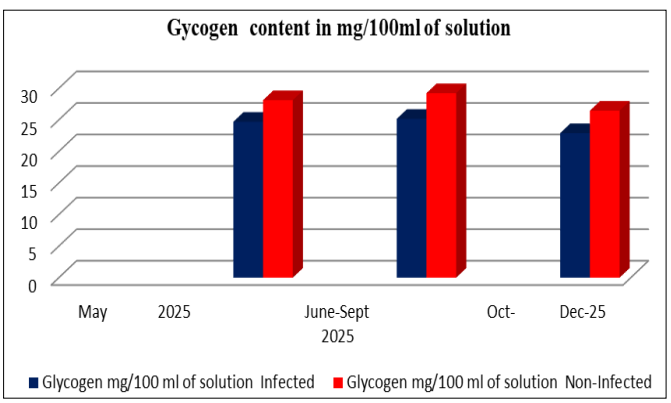
Biochemical contents (Protein, Glycogen and Lipids) in muscles (mg/gm of tissue) infected and non-infected of *Mastacembelus armatus* with cestode parasites found that 19.28, 20.18. 18.12 Protein (mg/g of dry weight of tissue in infected and in non-infected 21.78, 22.09, 20.21 in observation periods and Glycogen mg/100 ml of solution 24.70, 25.16, 22.89 in infected and in non-non-infected 28.12, 29.23, 26.45 respectively. Also, Lipids mg/gms in infected 11.23, 12.15, and 10.14 and in non-infected 12.90, 13.20 and 11.05 in examined time periods respectively metioned in table no.1.

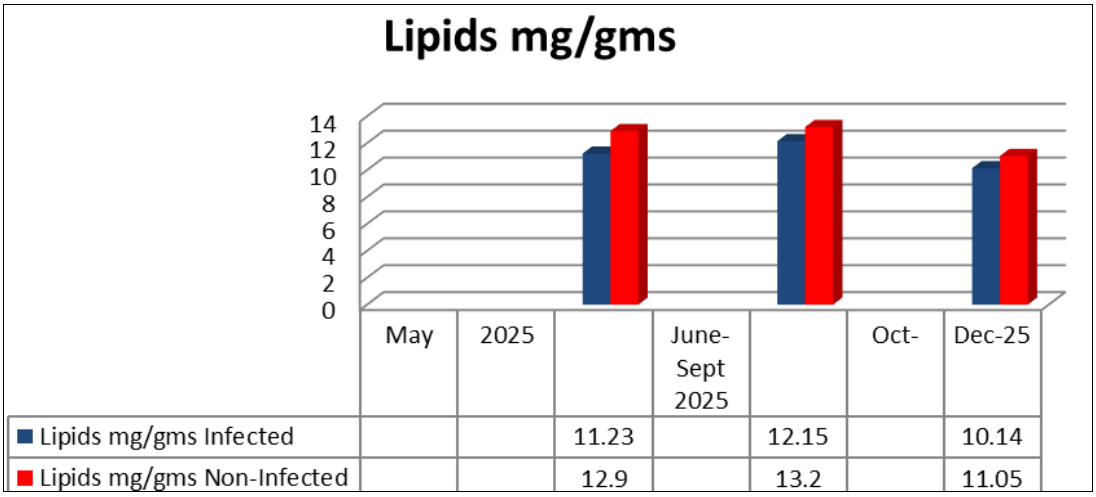
**Table 1:** Biochemical contents (Protein, Glycogen and Lipids) in muscles (mg/gm of tissue) infected and non-infected of *Mastacembelus armatus* with cestode parasites collected from Sidheswar Dam, kalamnuri District, Hingoli (MS). India

| Month | Protein (mg/g of dry weight of tissue | | Glycogen mg/100 ml of solution | | Lipids mg/gms | |
|---|---|---|---|---|---|---|
| March- May 2025 | Infected | Non-Infected | Infected | Non-Infected | Infected | Non-Infected |
| | 19.28 | 21.78 | 24.70 | 28.12 | 11.23 | 12.90 |
| June-Sept 2025 | 20.18 | 22.09 | 25.16 | 29.23 | 12.15 | 13.20 |
| Oct- Dec 2019 | 18.12 | 20.21 | 22. 89 | 26.45 | 10.14 | 11.05 |

**Protein content in mg/g of dry weight of tissue**






**Discussion and Conclusion**

Protein, Glycogen and Lipids Biochemical parameter analysed results showed in infected and non-infected of Mystus seenghala with cestode parasites decreases in between the month of March to May Whereas muscle glycogen content of fishes shows significant increase during June to May are shown in Table 1. Present findings suggest that apparently healthy indigenous fish sold in selected markets in pulgaon market are carriers of various ecto- and endoparasites and infections are mostly sub-clinical. These parasitic infections may alter haemato-biochemical parameters, which would be of diagnostic value in naturally infected fish. Integrated control strategies are indicated to improve the health and productivity of indigenous fish. It would therefore, be recommended that fish purchased at markets for rearing or restocking be isolated and treated appropriately to avoid introduction of infection and infestation to already existing stock in the dam and market. So, S. *seenghala* is an important food fish and enjoys great consumer preference owing to its perceived superior nutritive value. However, there is a paucity of information on the nutritional composition of this economically important species.

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