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ZOOLOGY

BIOCHEMISTRY OF PTYCHOBOTHRIDEAN PARASITES IN FRESH WATER FISH *MASTACEMBELUS ARMATUS*

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Abstract

Parasitic biochemistry is a field growing in parallel with the new surge of interest in tropical diseases. Whereas previously parasitologists have been required to adopt biochemical methodology in order to stay abreast of development.
Present investigations include the biochemistry (Protein, glycogen, lipid) of *Ptychobothridean* parasites in fresh water fish in *Mastacembalus armatus*. *Ptychobothridean* parasites are the most pathogenic cestode parasites.

Keywords: Parasites, Biochemistry, *Mastacembalus armatus*, *Ptychobothridea*, Cestodes

Introduction

Fish is economically beneficial to human population but the tapeworms present in them cause considerable damage such parasitic infections are very common to the man. Glucose is an important source of energy for cestode inhabiting the alimentary tract of vertebrates (Deep S. Misra, et. al. 1991). Cestodes store glycogen primarily in the parenchyma .Glycogen performs three main functions in tissues 1) they are major energy reserve 2) they form important structural components and 3) As phosphorylated intermediated. They are crucial to energy metabolism. The main reserve polysaccharide in cestode in glycogen (John barrett., 1981).

Proteins have many different biological functions. They are ubiguitous in their distribution and there is really no satisfactory scheme of classifying them. The largest groups of proteins are the enzyme proteins provide rich environment for the nourishment of cestodes. The cestodes utilize different degrees of protein that producing energy.

Literature reveals that the parasites able to adopt themselves to the parasitic mode of life, the protein usually constitutes between 20 and 40 % of the dry weight (John barrett 1981) .The higher content of lipid is found in older proglottids (Brand and Van T.,1952) .

The present investigation deals with the biochemical studies of *Ptychobothridean* parasites in fresh water fish *Mastacembalus armatus*.

Material and Methods

The worms were collected from the alimentary tract of *Mastacembalus armatus* and then washed with distilled water.Collected worms were then dried on the blotting paper to remove excess water and transferred to watch glass and weighed on sensitive balance. After 50-60^{0}c for 24 hrs. The dry weight wt. was also taken. The estimation of protein content in the cestode parasites were carried out by Lowry's method, the glycogen estimation were carried out by Kemp et al. (1954) method and lipid estimation by Folch et al (1957) method.

Table No.1: Biochemical estimation of *Senga* sp. (Dollfus, 1934) from *M. armatus*

Parameter	Host Intestine (*M. armatus*)	Parasite (*Senga*) sp.
Protein	23.84 mg/gm. wt. of tissue	14 mg/gm. wt. of tissue
Glycogen	24.7 mg/100 ml of solution	14.4 mg/100 ml of solution
Lipid	13.44 mg/gm.	25.07 mg/gm.

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Fig.: Biochemical estimation of *Senga* sp. (Dollfus, 1934) from *M. armatus*

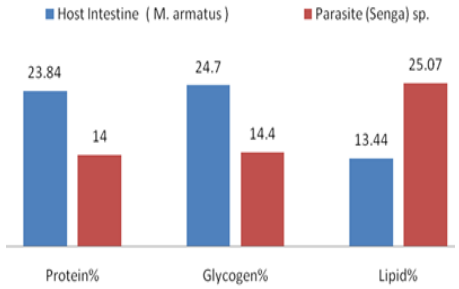
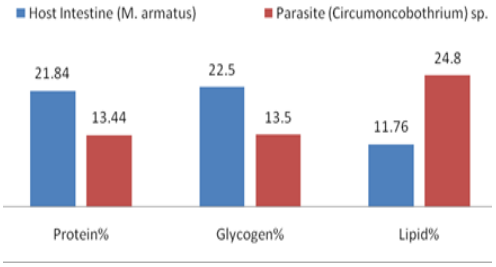


Table No.2: Biochemical estimation of *Circumoncobothrium* sp. (Shinde, 1968) from *M. armatus*

Name of Parameter	Host Intestine (*M. armatus*)	Parasite (*Circumoncobothrium*) sp.
Protein	21.84 mg/gm. wt. of tissue	13.44 mg/gm. wt. of tissue
Glycogen	22.5 mg/100 ml of solution	13.5 mg/100 ml of solution
Lipid	11.76 mg/gm.	24.8 mg/gm.

Fig.: Biochemical estimation of *Circumoncobothrium* sp. (Shinde, 1968) from *M. armatus*



Result and Discussion

Biochemical estimation in cestode parasites i.e. *Senga* sp. and *Circumoncobothrium* sp. are expressed in terms of unites and that are shown in table no. 1 and 2.

From table no.1 it shows that the worm *senga* sp. obtained 14mg/gm of protein from the wet weight of the tissue where as in intestine of host contained 23.814mg/gm of the wet weight of the tissue, hence it can be concluded that the *senga* sp. would maintain a good balance in protein content with their host *M. armatus*

The glycogen content of *senga* sp. showed 14.4mg/100 ml of solution where as in host intestine 24.7 mg/100 ml of solution. Observing the results it is seen that the worm *senga* sp. is quite successful in the obtaining a sufficient amount of glycogen.

While the lipid content was very high in *senga* sp.25.07mg/gm as compared to their host *M. armatus* 13.44mg/gm.

Table no. 2 shows that the worm *circumoncobothrium* sp. obtained 13.44mg/gm of protein from the wet weight of the tissue where as in host intestine 21.85 mg/gm of the wet weight of the tissue hence it can be concluded that the *circumoncobothrium* sp. would maintain a good balance in protein content with their host *M. armatus.*

The glycogen content of *circumoncobothrium* sp. showed 13.5mg/100 ml of solution where as in host intestine 22.5 mg/100 ml of solution. Observing the results it is seen that the worm *circumoncobothrium* sp. is quite successful in the obtaining a sufficient amount of glycogen. Whereas the the lipid content was very high in *circumoncobothrium* sp. 24.8mg/gm as compaired to their host *M. armatus* 11.76mg/gm. The

study of glycogen and fat store in the tissue of fish helminthes was carried out (Ginetsinhaya, T. A., 1965). The nutritional requirements of the fowl cestode, *Raillietina cesticillus* (Molin) demonstrated by short periods of starvation of the host (Reid, W.M., 1942)

From the above biochemical estimation it is concluded that the percentage of lipid is high parasites as compaired to protein and glycogen. These parasites absorbing most of nourishing from host and fulfilling its need and causing hindrance in the proper development of tissue (B. V. Jadhav et.al. 2008).

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