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BIOCHEMICAL STUDIES OF *CARYOPHYLLIDEAN* TAPEWORMS IN FRESH WATER FISH *CLARIAS BATRACHUS*

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Abstract

Parasitic biochemistry has great practical importance through chemotherapy and vaccine production and in understanding of the complex association involved in the host parasite relationship However; information in parasite biochemistry is patchy. *Caryophyllidean* cestodes are the most pathogenic parasites in fresh water fish *Clarias batrachus* in tropic and sub tropic areas. Present investigation deals with the biochemistry (Protein, glycogen, lipid) of *Caryophyllidean* parasites in fresh water fish *Clarias batrachus*.

Keywords: Biochemistry, investigation, Cestodes, *Clarias batrachus*, *Caryophyllidea*

Introduction

Fishes are said to be gold in water, they play an important role in nation's economy. As a nutritional point of view, fishes give high content of proteins to the daily growing population. Now a day they are facing the problems of malnutrition. The tapeworms present in them cause considerable damage. The parasitic infections are very common to the man.

Glucose is an important source of energy for cestodes, inhabiting the alimentary tract of vertebrates (Mishra et al 1991). Cestodes possess stored carbohydrate metabolism, with enormous amount of stored carbohydrate (Daugherty 1966, Fairbairn, Werthein, Harpuret Schiller 1961, Markov 1939 and Read et Rothman, 1957 b). Cestode parasites stores relatively large quantities of polysaccharides, which in most cases has been assumed to be glycogen (Read 1949b and Reid 1942).

Proteins have many different biological functions. They are ubiquitous 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 for producing energy. Literature reveals that the parasites able to adapt themselves to the parasitic mode of life , only due to protein usually constitutes between 20 and 40 % of the dry weight have been reported (John Barrett 1981) .The higher content of lipid is found in older proglottids (Brand and Van T. 1952) . It is revealed from the present study that there is high content of lipids in the parasites and also the parasites are taking advantage of host and absorbing most of the nourishing material.

The present investigation deals with the biochemical studies of *Caryophyllidean* parasites in fresh water fish *Clarias batrachus*.

Material and Methods

The worms were collected from the alimentary tract of *Clarias batrachus* and then washed with distilled water. Collected worms were dried on the blotting paper keeping them to remove excess water and transferred to watch glass and weighed on sensitive balance. After 50-60 C^0 for 24 hrs, the dry weight was also taken. The estimation of protein content in the cestode parasites were carried out by Lowry's method (1951), 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 *Lytocestus* sp. from *Clarias batrachus*

Name of Parameter	Host Intestine (*Clarias batrachus)*	Parasite (*Lytocestus* sp.)
Protein	21mg/gm. wt. of tissue	11.2mg/gm. wt. of tissue
Glycogen	20.27mg/ 100ml of sol	12.61mg/ 100ml of sol
Lipid	10.64mg/gm	22.5 mg/gm

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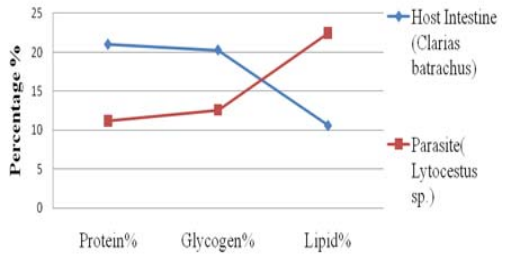
Biochemical estimation of *Lytocestus* sp. from *Clarias batrachus*



Result and Discussion

The quantitative values of biochemical estimation in *Lytocestus* sp. is shown in the (table no.1) It shows that the amount of protein present in host intestine is 21mg/gm of the wet weight of the tissue while in parasite is 11.2mg/gm of the wet weight of the tissue . Hence it can be concluded that the *Lytocestus* sp. would maintain a good balance in protein content with their host *Clarias batrachus.*

Glycogen content of *Lytocestus* sp. showed 12.61mg/ 100ml of solution of the tissue where as in host intestine 20.27 mg/ 100ml of sol^{n} observing the result it is seen that the worm *Lytocestus* is quite successful in obtaining a sufficient amount of glycogen. In few cestodes developmental history changes the growth of parasites is rapid at the first 18-24 hrs and then slows down even if the concentration is high as it was in the early stage.

The lipid content was very high in *Lytocestus* sp. 22mg/gm as compared to their host *Clarias batrachus* 10.64mg/gm. The study was also done regarding the characteristic of glycogen and fat store in the tissue of some fish helminths, regarding their localization in the body of the host. (Ginetsinhaya,1965). Fluctuation in the glycogen content from cestode, *Hymenolepis diminuta* also studied. (Read, C. P. 1949b).The study on the *Hymenolepis diminuta* was also done in relation to the glycogenesis and biochemistry.(Daugherty, J.W. 1956 and Fairbairn, D.G. et al.,1961).The study on role of carbohydrate in the biology of cestode done from *Hymenolepis diminuta* (Read, C. P.et al.,1957b).

From the above biochemical estimation it is concluded that the percentage of lipid is high in parasites as compared 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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