Biochemical analysis of cestodes *Acanthobothrium abhayii* and *Acanthobothrium keshavravii*

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ABSTRACT

The present study deal with the biochemical analysis of cestode parasite A*canthobothrium abhayii* and *Acanthobothrium keshavravii* its host *M. armatus*. The result obtained an amount of glycogen content in the present study indicates that the amount of glycogen present in cestode parasites is lower as compared to glycogen present in infected intestine as well as in normal intestine.

Key words: Biochemistry, Glycogen, Cestodes, *Acanthobothrium abhayii , Acanthobothrium keshavravii, M. armatus*.

INTRODUCTION

Among the large number of organism, parasitism is a natural way of life, and parasitic diseases are the major public health problem, which results into morbidity and mortality in tropical countries, particularly in the socio economically under developed societies in the world. A fundamental unit for all metabolic activities is Glycogen; they are most important agents for expression of the genetic material. Glycogen is the most abundant organic molecules in cells constituting 50 percent or more of their dry body weight. They are found in every part cell; since they are fundamental in all aspects of cell structure and function. The glycogen is absorbed by the parasites by diffusion and transfusion. Cestodes completely lack alimentation in all stages of life history. The cestode parasites utilize the food from the intestine of host. The metabolism depends on the feeding habits and the rich nourishment available in the intestine of the host. The parasites use this nourishment for their normal development and growth. The present paper deals with the estimation of glycogen from cestode parasite genus *Acanthobothrium abhayii, Acanthobothrium keshavravii* from the host *Mastacembelus armatus*.

MATERIALS AND METHODS

Intestines of *Mastacembelus armatus* were brought to the laboratory and these intestines were dissected to find out the infection of cestode parasites. The tapeworms were collected washed thoroughly in distilled water, few of them fixed in 4% formalin for identification. The glycogen content was determined by method of kemp et. al. 1954 as follows.

Intestine of cestodes as well as host were found to be heavily infected with the cestode parasites, identical worms are separated and kept at one place by observing under microscope and few out of them were fixed in 4% formalin for taxonomical studies. Small pieces of infected intestine were also collected for estimation of glycogen. The collected worms were kept on blotting paper to remove excess of water from the body of cestodes. Then the material weighed on sensitive balance. The weighed material was grounded in to homogenous paste and in this paste 1 ml 30% KOH was added.

This mixture was taken in centrifuge tube and digested in a hot water bath for 20 minutes, followed by 15 ml of ethanol and stirring with glass rod. This mixture kept in hot water bath and after cooling again centrifuged for 15 minutes at 2000 R.P.M. Supernatant was drained on filter paper and 5 ml of test solution, 5 ml standard glucose solution was taken and control was separately in 3 test tubes. Freshly prepared 10 ml Anthrone reagent was added in each test tube mixed well and heated for 10 minutes and immediately cooled. Reading was taken with the help of Erma's calorimeter, by setting blank at 100 mu.

The amount of the glycogen in worms and host, calculated by the formula

$$\text{Percentage of glycogen} = \frac{100 \times u}{1.11 \times S}$$

Where ,
U= OD of the unknown test solution; S= OD of 100 mg of glucose to glycogen; 1.11= conversion factor of glucose to glycogen

RESULTS AND DISCUSSION

The result obtained an amount of glycogen content in the present study indicates that the amount of glycogen present in cestode parasites is lower as compared to glycogen present in infected intestine as well as in host normal and infected intestine. This is summarized in table.

DISCUSSION

The glycogen content from paracites *Acanthobothrium abhayii, Acanthobothrium keshavravii* and host *Mastacembelus armatus* in the present study indicates that the amount of glycogens present in cestode parasites is lower as compared to glycogen present in infected intestine as well as in host normal and infected intestine. This is summarized in table. In parasitic helminthes, the glycogen usually constitute between 20 – 40 mg/kg in host which is 23 mg whereas the glycogen content in both the parasites is 19.81 and 21.07. The amount of glycogen is less in parasites as compare with the host. This indicates that parasites are having affinity of glycogen from the host acts as parasites. The similar result also reported by Jadhav et.al. From *Davainea shindei* amount of glycogen present in Davainea shindei 13.20 mg/kg wt. of tissue whereas in host intestine is 15.42 mg/kg of tissue. The distribution of glycogen content shown in the present study is an agreement with the result of Jadhav *et al.,* 2011; Premavati G and Tayal S (1978) and Read C P and phifer K (1956).

CONCLUSION

From above data shows, it can be concluded that the cestode parasites could maintain good balance in glycogen content and also maintain histopathological relation with host.

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Table 1: Glycogen content of cestode parasite *Acanthobothrium abhayii , Acanthobothrium keshavravii* and Host *Mastacembelus armatus.*

Name of cestode parasite	% of Glycogen in parasite	% of Glycogen in host body	Name of host
Acanthobothrium abhayii ,	19.81 Mg	23.03 mg	*Mastacembelus armatus*
Acanthobothrium keshavravii	21.07 Mg	23.12 Mg`	*Mastacembelus armatus*

LITERATURE CITED

Bhure Dhanraj Balbhim, Nanware Sanjay Shamrao and Mali Rajendra Prabhakar, 2011. Effect of CuSO4 on protein content of Channa punctatus. *Journal of Experimental Sciences.* **2**(7):36-37.

Jadhav BV, Shivesh P Singh, Bhure DB and Padwal ND, 2008. Biosystematic studies of Davainea shindei n.sp. (Cestoda- Davainidae) Fuhrmann, 1907 from Gallus gallus domesticus. *National Acdemy of Science Letter*, **31** (7 &8):245-250.

Kemp RS 1954. *Principles of bio chemistry*. Lehninger. Pp. 234.

Premavati G and Tayal S, 1978 Glycogen content and in vitro glycogen consumption in *stilesia globipunctata, Indian jonrnal of parasite*, **02**:73-75.

Read CP and phifer K, 1956. The role of carbohyates in the biology of cestodes. VIII- Interaction between individual tape worm of same defferent species expl, *Parasite*, **08**:46-50.