

Glycogen Content of Some Fish Parasites *Phoriobothrium Gawalae* N.Sp and *Hexacanalisis Bhagwatiensis* N.Sp. from Konkan Coast, Ms, India

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Abstract

Glycogen is a most abundant organic molecule in cell it may be more than 50% of body weight. They are present each and every part of the body. The glycogen is absorbed by endoparasites of fishes, it causes ill effect on host body. The present paper deals with how cestode parasites maintain the good balance in glycogen content and also maintaining histopathological relation between *Phoriobothrium Gawalae* N.Sp (Parasite) with *Carcharius acutus* (Host) and *Hexacanalisis bhagwatiensis* N.Sp. (Parasite) with *Trygon zugei* (Host)

KEYWORDS :- Cestode, Host, Glycogen, Colorimeter, Biochemical

INTRODUCTION

Cestodes when live in the intestine of hosts, they utilize food from the gastrointestinal tract. The metabolism of these cestodes depend on the feeding habits and the rich nourishment available in the gut of the host. These worms use this nourishment for their normal development and growth. The metabolic and in vitro studies suggest that a complex nutritional relationship occurs between a cestode and its host. It has been observed in some cestodes that they are capable of fixing CO₂. Thus, it is clear that the parasites use the waste metabolic materials from the host's intestinal mucosa very efficiently, whereas there are another to be capable of taking the nutritional material by direct contact with the mucosal wall. Glycogen content is variable in different strobillae. *H. diminuta* (Good Child 1961) percentage of glycogen changes as age of worm (Metric and Cannon 1970). In posterior segments lipid is more than anterior segments. There is a variation in the lipid content of one species to other species.

The glycogen content of various helminths fluctuates considerably and there is variation in habitat, though no similarity in nutrition of worm is important. This reveals the glucose concentration in the tissues of *Taenia taeniaeformis*, which rises by as much as 100-200 mg/100 on incubating in vitro in glucose containing medium. (Von Brand et al 1964) but it increases when the worms incubated in sodium for salines, which do not permit glucose absorption. In this instance enlarged tissue glucose has been presumably derived from glycogen breakdown (Von Brand and Gibbs 1966).

The cestodes which have been already experimented by different workers for the Glycogen metabolism are *Taenia crossiceps*, *T. pisiformis*, *T. saginata*, *Moniezia expansa*, *Moniezia benedeni*, *Echinococcus granulosa*, *Diphylidium caninum*, *Bothriocephalus gowkongensis*, *Phyllobothrium*, *Hymenolepis diminuta*, *H. citelli*, *H. nana* and the genus *Oochoristica*, *Raillietina* etc.

MATERIAL AND METHODS

Glycogen estimation in cestode parasites was carried by Kemp et al. (1954) method. Twenty intestines of *Carcharius acutus* and *Trygon zugei* were brought to laboratory during January 2011 to December 2011 from District Ratnagiri M.S (Konkan coast of India) and were dissected for collection of cestodes. Out of twenty intestines four intestines were found to be heavily infected with cestode parasites. By observing the identical worms under the microscope, few of them were fixed in 4% formalin for Morphological studies. Taxonomical observations turned to the n.sp. of the genus *Phoriobothrium* and *Hexacanalisis*

Small pieces of infected intestine were also collected for estimation of glycogen. **The estimation of glycogen content in cestode and their host was done by Kemp et.al(1994) method.**

The collected worms were kept on blotting paper to remove excess of water from the body of cestodes. This material was transferred on a watch glass and weighed on a sensitive balance for 30mgs. This weighed material was ground into a homogenous paste in a mortar pestle, to this paste, 1ml of 30% KOH is added and taken in centrifuge tube and digested in hot water bath for 20 minutes, cooled and to the same 1.5ml of 95% ethanol was added by stirring with a glass rod. Brought gently to boil in hot water bath, cooled and centrifuged for 15 minutes at 2000 R.P.M. Supernatant was drained on filter and 5ml of distilled water was added and reacted with 5ml of test solution, 5ml of glucose standard solution, 5ml distilled water, separately in three tubes, in each 10ml if Anthrone reagent was added and mixed, then heated for 10minutes and immediately cooled and reading were taken with the help of Colorimeter at 620mu by setting blank 100. The amount of glycogen in the aliquot is calculated by the formula.

$$\text{Percentage of glycogen} = \frac{100 \times 0.36 (U)}{1.11 \times 2(S)} = 16.21 \text{mg}/100 \text{ml of solution}$$

U= O.D. of the unknown test solution.
S= O.D. of the 100mg of glucose standard.
1.11= conversion factor of glucose to
U=0.36 S=2.

The Cestode parasite, **Phoreiobothrium gawaliae n.sp** acquired 16.21mg/100ml of solution of Glycogen .By using same techniques the glycogen content of host intestines were calculated. The infected intestines of the host **Carcharius acutus** have 18.21 mg glycogen/100ml of solution.

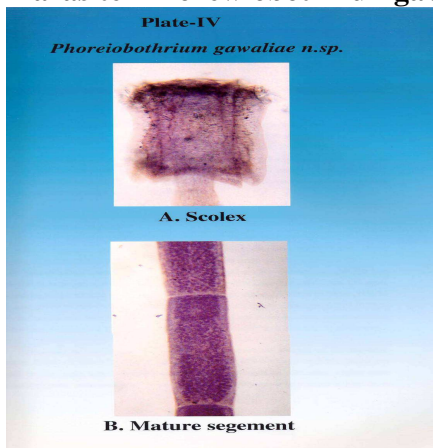
By similar method the glycogen contents of worm **Hexacanalisis bhagatiensis** and Host **Trygon zugei** calculated ,It shows 19.52 mg of glycogen /100 ml of solution in host body where as its parasite **Hexacanalisis bhagatiensis** has acquired 14.41 mg/100ml solution of Glycogen.

RESULT 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

Images- Hosts and their parasites

Parasite- Phoreiobothriumgawaliae n.sp

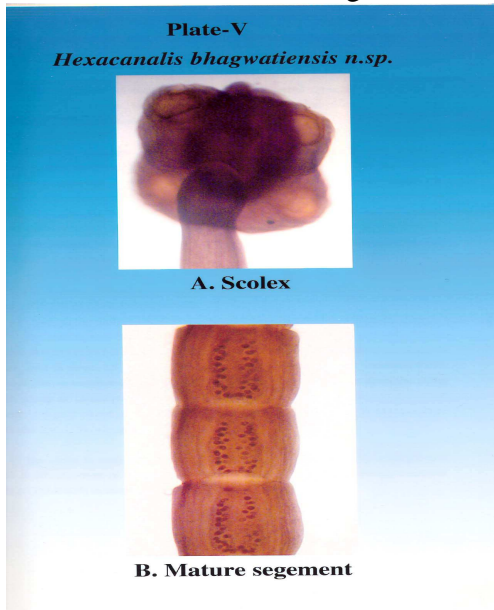


Host - Carcharius acutus



Parasite- Hexacanalisis bhagwantiensis

Host –Trygon zugei



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 summarised in table

Table No. 1

Glycogen content of cestode parasites Phoreiobothrium gawalae n.sp, Hexacanalisis bhagwantiensis n.sp, and their hosts such as Carcharius acutus, Trygon zugei respectively

Sr.No	Name of Cestode parasites	% of glycogen in parasite	% of Glycogen in Host body	Name of Host
1	Phoreiobothrium gawalae n.sp	16.21	18.21	Carcharius acutus
2	Hexacanalisis bhagwantiensis n.sp.	14.41	19.52	Trygon zugei

From the above result it can be concluded that the worm Phoreiobothrium gawalae n.s. could maintain a good balance in glycogen content and also maintaining histopathological relation with the host Carcharius acutus.

Hexacanalisis bhagwantiensis n.sp. could also maintain a good balance in glycogen contents and also maintaining Histopathological relation with the Trygon zugei n.sp.

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REFERENCES

1.Arme C.(1966) Histopathological and Biochemical studies on some enzymes of Lingula intestinalis (Cestoda: Pseudophyllidea) J.Parasit(52) 62-68

2. Bogayavleski Y.K. and Nikitina R.V.(1979) Comparative histochemical study of the amount distribution of Glycogen and Lipid in the tegument of some Acanthocephalus J.parasit (80) 34-36
3. Bhure D.B. and Mali R.P.(2011) Effect of CuSO₄ on protein and Glycogen content of Channa punctatus, J. Expt.Sci,2(7);36-37
4. Jadhav B.V. and S.P.Singh(2008) Biosystematics studies of Davinea shindei n.sp. (Cestoda-Davinidae) Fuhmann 1907 from Gallus gallus domesticus National Academy of Science letters,31(7&8),245-250
5. Kemp R.S.(1954) Book Principles of Chemistry,234
6. Premavati G. and Tayal S.(1978) Glycogen content and vitro glycogen consumption in Stilesia globipinctata, I.J.Parasite,(02), 73-75
7. Read C.P. and pilfer k(1956) The role of carbohydrates in the biology of Cestode VIII interation between individual tape worm of some some different species ,J,Parasite(08) 46-50
8. Sonawane M.B.(2014) GGlycogen content of some fish parasites (Cestodes) from West coast of India ,Biosci.Disc,5(1) 32-34