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# Biochemical & histological study of glycogen profile in *Moniezia* (*b*.) *Bombayensis* sp. nov. Infecting *Capra hircus*.

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**Abstract**
The present communication deals with the study of glycogen content of the cestode *Moniezia* (B.) *bombayensis* sp.nov.infecting *Capra hircus* from Kaij, Dist. Beed, MS, and India. The glycogen content of the worm is estimated from whole body and mature segment of taxonomically identified worm *Moniezia* (B.) *bombayensis* sp.nov.by Kemp *et al.*, (1954) method.

**Keywords:** Biology, brinjal, leucinodes orbonalis, morphometry

## Introduction
Cestodes are the endoparasites of alimentary canal of vertebrates which utilize the readymade nourishment available in the gastrointestinal tract for their growth and development. The literature study reveals the quantitative distribution of carbohydrates into the body of parasite. Winland (1901); Schulte, 1971, Von Brand, 1934; Salisbury and Anderson, 1939; Dougherty and Taylor, 1956; Goodchild and Vilar Alrarex, 1962 and others they have been obtained rather by unspecific chemical methods, which gives higher values than those obtained by an enzymatic procedure. Widely differing glucose values reported by Fairbrain (1958) and L'Opez-Gorge and Monteolive (1965) for *Moniezia expansa* by means of paper chromatography. The glucose contents of various helminth fluctuate considerably. The carbohydrate content of host also has an effect on growth of worms. The worms grow better in a host, feed on protein free diet containing carbohydrates.
Carbohydrate metabolism of cestode have been estimated by some workers in *Oochoristica*, *Moniezia expansa, M.benedini, Taenia saginata,T. pisiformis, T. crossiceps, Hymenolepis nana, H.utelii,H.diminuta, Phyllobothrium folliatum, Echinococcus, Dipylidium caninum* and *Bothriocephalus gowkongensis.* Cheng and Dyckman (1964) [1] described glycogen dposition in Hymenolepis diminuta, Chopra (1981) [2] studied glycogen contents and its distribution in cyclophyllidean cestode of sheep. Singh *et al*., (1987) [15] described total carbohydrates and glycogen in cestode, Hiware and Jadhav (1994) [8] studied quantitative studies of glycogen in some cestodes. Pappas Barly and Werdropsm (1999) [10] studied glucose and glycogen gradient in H.diminuta and Ramlingam *et al*., (2004) studied carbohydrate profile in relation to growth and differentiation of proglottids in *Avitellina lahora*, Nanware and Bhure, (2011) [8] have studied glycogen profile of cestodes of *Capra hircus.*

## Material and Methods
Ten intestines of *Capra hircus* were brought to the laboratory and dissected. Five of them were formed to be infected with cestode parasites. Identical worms were stored out with the help of microscope and few of them fixed in 4% formalin for identification. Later these were identified as *Moniezia* (*B.*) *bombayensis* sp. nov.
The collected worms were dried on blotting paper to remove excess of water. The material transferred in previously weighed watch glass and weighed on a electronic balance. The wet weight of tissue taken and kept in oven at $60^0$c for twenty four hours to make the material dry. The dry weight of material was taken and powder is prepared. The 100 mg powder is taken and homogenized in mortar and pestle; 5 ml of 5 % T.C.A. solution is added into it and transferred in centrifuge tube. Then this material is digested in boiling water bath for 5 minutes, then cooled and centrifuged for 15 minutes at 2000 RPM. One ml of supernatant liquid taken in a test tube added 3 ml of sulphuric acid and cooled for 5 minutes.

The mixture shaked well, then immediately cooled and readings were taken in a Ermas colorimeter at 530 mu filter. The glycogen content of these worms was determined by Kemp *et al*., (1954) [11] method.

For the histochemical study of *Moniezia* (*B.*) *bombayensis* sp.nov. The worms washed with the tap water, few of them were fixed in Carnoy's fluid for determination of glycogen content of the worm. The worm were removed from the fixative, washed with water, dehydrated through alcoholic grades and embedded in Paraffin wax (60 % C.M.P.) and blocks were prepared. The blocks were cut at 7 micron thickness with the help of microtome machine, stained with haematoxyline and Best's caramine high concentration of the glycogen integument, up to muscle layer. The traces of glycogen are observed.

## Discussion

1. Estimation of Glycogen by Kemp *et al*., (1954) [11] method

The amount of glycogen in the worm is calculated by-

$$\text{Percentage of Glycogen} = \frac{100 \times U}{1.11 \times S}$$

Where

U = O.D. of the unknown test solution.

S = O.D. of 100 mg of glucose to glycogen.

1.11 = Conservation factor of glucose to glycogen.

U = 0.52, S = 2

$$\text{Percentage of Glycogen} = \frac{100 \times 0.54}{1.11 \times 2}$$

= 23.42 mgs/100 ml test solution.

The amount of glycogen calculated in the host intestine of Capra hircus is 23.42 mgs/glycogen/gm of intestine homogenate.

2. **Histological study of Glycogen in *Moniezia* (*B.*) *bombayensis* sp. nov.**

Observations: The traces of glycogen are observed at the centers of segment and peripheral region and ovary. In the testes moderate quantity of glycogen is seen. The glycogen concentration is also seen in the lateral parenchyma. The mature segment shows relatively moderate amount of glycogen in the longitudinal muscles and peripheral region and more concentrated in the reproductive organs. The glycogen stained pink red to red in color. The prepared slide when observed under microscope shows high concentration of glycogen in its body.

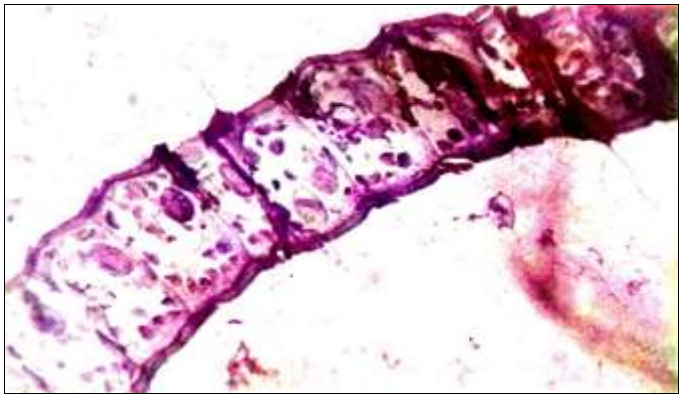

**Fig 1:** Glycogen content in *Moniezia* (*B.*) *bombayensis* sp.nov. Longitudinal section of mature segment showing distribution of glycogen.

## Result

The glycogen content of the host and the worm *Moniezia* (*B.*) *bombayensis* sp.nov. Shows that, the worm is quite successful in obtaining the sufficient amount of glycogen from environment. Thus the worm could maintain good balance of glycogen content.

## Conclusion

Histologically worm *Moniezia* (*B.*) *bombayensis* sp.nov. Shows high concentration of glycogen in the body which is absorbed from the host tissue.

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