

# Biochemical studies of gastrointestinal cestode parasites in *Capra hircus* (L.) and *Ovis bharal* (L.) from Marathwada region

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## Abstract

Parasitic biochemistry has great practical importances 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. It is a field growing in parallel with the new surge of interest in tropical diseases. Where as previously parasitologists have been required to adopt biochemical methodology in order to stay abreast of development. Gastrointestinal cestodes are the most pathogenic parasites in *Capra hircus* and *Ovis bharal* in tropic and subtropic areas. Present investigation deals with the biochemistry (Protein, glycogen and lipid) of Cestode parasites in *Capra hircus* and *Ovis bharal*.

**Keywords:** Biochemistry, Cestode parasites, *Capra hircus* and *Ovis bharal*

## INTRODUCTION

The Cestode parasites when live in the intestine of hosts, they utilize food from the gastrointestinal tract. The metabolism of these cestodes depends 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 CO<sub>2</sub>. Thus, it is clear that the parasites use the waste metabolic materials from the hosts intestinal mucosa very efficiently, where as there are another to be capable of taking the nutritional material by direct contact with the mucosal wall.

Proteins has 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 adopt 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) [7]. The higher content of lipid is found in older proglottids (Brand and Van T 1952) [1,2]. It is revealed from the present study that there is high content of lipids in the parasites and it also reveals that the parasites is taking advantage of host and absorbing most of the nourishing material.

The present investigation deals with the biochemical studies of gastrointestinal cestodes parasites in *Capra hircus* and *Ovis bharal*.

## MATERIAL AND METHODS

The collected worms were kept on blotting paper to remove excess of water. The material transferred to a previously weighed watch glass and weighed on a sensitive balance. The wet weight of the tissue is taken and kept in a oven at 60°c. for twenty four hours to make the material dry. The dry weight of the material was taken and prepared a powder. 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) [8,9] method and lipid estimation by Folch et al (1957) [5] method.

## RESULT AND DISCUSSION

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

Table no. 1 shows the worm *Moniezia* obtained 13.10 mg/gm of the wet weight of the tissue where as in normal intestine of host contained 19.85 mg/gm of the wet weight of the tissue and infected intestine of host contained 17.12 mg/gm hence it can be concluded that the *Moniezia* would maintain a good balance in protein content with their host *Capra hircus*.

The glycogen content of *Moniezia* showed 14.12 mg/100 ml of solution where as in host normal intestine 18.22 mg/100 ml of solution and infected intestine of host contained 17.47 mg/100 ml of solution. Observing the results it is seen that the worm *Moniezia* is quite successful in the obtaining a sufficient amount of glycogen.

While the lipid content was very high in *Moniezia* 12.58 mg/gm as compared to their host normal intestine 11.64 mg/gm and infected intestine of host contained 11.05 mg/gm.

Table no. 2 shows the worm *Stilesia* obtained 13.90 mg/gm of the wet weight of the tissue where as in normal intestine of host contained 23.08 mg/gm of the wet weight of the tissue and infected intestine of host contained 16.85 mg/gm hence it can be concluded that the *Stilesia* would maintain a good balance in protein content with their host *Ovis bharal*

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The glycogen content of *Stilesia* showed 16.60 mg/100 ml of solution where as in host intestine 20.80 mg/100 ml of solution and infected intestine of host contained 19.18 mg/100 ml of solution. Observing the results it is seen that the worm *Stilesia* is quite

successful in the obtaining a sufficient amount of glycogen.

While the lipid content was very high in *Stilesia* 12.64 mg/gm as compared to their host normal intestine 12.05 mg/gm and infected intestine of host contained 11.30 mg/gm.

Table 1. Biochemical estimation of *Moniezia* sp. from *Capra hircus* (L.).

Name of Parameter	Host Intestine (Normal) ( <i>Capra hircus</i> )	Host Intestine (Infected) ( <i>Capra hircus</i> )	Parasite ( <i>Moniezia</i> sp.)
Protein	19.85 mg/gm. wt. of tissue	17.12 mg/gm. wt. of tissue	13.10 mg/gm. wt. of tissue
Glycogen	18.22 mg/ 100ml of solution	17.47mg/100ml of solution	14.12 mg/ 100ml of sol
Lipid	11.64 mg/gm	11.05 mg/gm	12.58 mg/gm

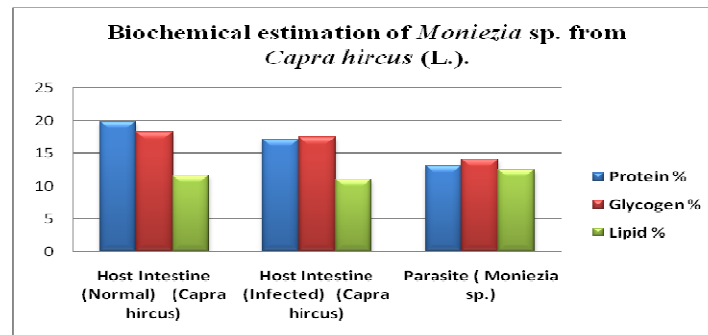
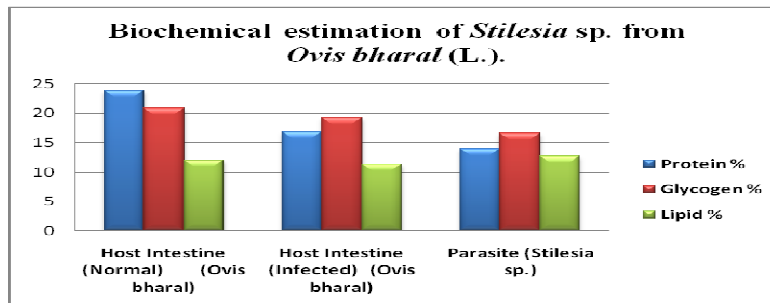


Table 2. Biochemical estimation of *Stilesia* sp. from *Ovis bharal* (L.).

Name of Parameter	Host Intestine (Normal) ( <i>Ovis bharal</i> )	Host Intestine (Infected) ( <i>Ovis bharal</i> )	Parasite ( <i>Stilesia</i> sp.)
Protein	23.8 mg/gm. wt. of tissue	16.85 mg/gm. wt. of tissue	13.90 mg/gm. wt. of tissue
Glycogen	20.80 mg/ 100ml of solution	19.18mg/100ml of solution	16.60 mg/ 100ml of sol
Lipid	12.05 mg/gm	11.30 mg/gm	12.64 mg/gm



## CONCLUSION

From the above biochemical estimation it is concluded that the percentage of lipid is high 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. Protein content in *Moniezia* is 13.10 mg/gm wt of tissue and in *Stilesia* 13.90 mg/gm wt Glycogen content *Moniezia* is 14.12 mg/100ml of solution in *Stilesia* 16.60 mg/100 ml of solution while Lipid content in *Moniezia* is 12.58 mg/gm and in *Stilesia* 12.64 mg/gm.

From the above biochemical estimation it is concluded that the percentage of lipid is high 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[3]).

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