

Biochemical contents of *Cotylophoron cotylophorum* (Fischoeder, 1901) stiles et Goldberger, 1910 and its host intestinal tissue

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ABSTRACT

Present investigation deals with biochemical contents viz. glycogen, proteins and lipids were estimated in normal, infected intestine and their relevant trematode species *Cotylophoron cotylophorum* (Fischoeder, 1901) Stiles et Goldberger, 1910, parasitic in *Capra hircus* L. The normal intestinal tissue contains more glycogen, protein and lipids as compared to infected intestinal tissue, whereas low biochemical content in *Cotylophoron cotylophorum* (Fischoeder, 1901) Stiles et Goldberger, 1910. Intestinal parasites were capable of extracting nutritious materials from their host and thus represented a high level in glycogen, protein and lipid.

Keywords: Biochemical Content, *Capra hircus* L., *Cotylophoron cotylophorum* (Fischoeder, 1901) Stiles et Goldberger, 1910

INTRODUCTION

The Helminth parasites utilize the food from the intestinal gut of host. The metabolism depends on the feeding habits and the rich nourishment available in the gut of the host. The parasites use this nourishment for their normal development and growth. A major part of energy source utilized by the parasite is from Carbohydrates. Carbohydrates are chiefly energy source in all parasites. Proteins are the most abundant organic molecules in cells constituting 50 percent or more of their dry body weight. The main significance of the proteins is their role in structural make up of the body rather than in the yield of the energy. Lipids are of great importance to the body of Helminth parasites as the chief concentrated storage form of energy, besides their role in cellular structure and various other biochemical functions. Investigations into the biochemical profiles are revealing new facts, which would be very useful

in developing a rational approach to design the antihelminthic therapeutics. Keeping the view in mind the nutritional and economical value of goat *Capra hircus* L. the present work is done.

MATERIAL AND METHODS

Intestines of *Capra hircus* L. were examined for helminthic infection. The trematodes were collected, identical parasites were sorted out with the help of microscope, preserved in 4 % formalin, stained with Haematoxylin and Borax carmine and morphological observations turned out to be the trematode species *Cotylophoron cotylophorum* (Fischoeder, 1901) Stiles et Goldberger, 1910. The collected normal, infected intestinal tissue (small pieces) and trematode parasites were kept on blotting paper to remove excess amount of water. The material transferred in previously weighed watch glass and weight on sensitive balance. The biochemical content were estimated by following standard methods.

- 1) Glycogen was estimated by Kemp et. al., method (1954)
- 2) Protein was estimated by Gornall et. al., method (1949)
- 3) Lipid content was estimated by Folch et.al., method (1957).

RESULTS AND DISCUSSION

Glycogen, protein and lipid contents in the infected, non-infected intestinal tissue of *Capra hircus L.* and intestinal fluke *Cotylophoron cotylophorum* (Fischoeder, 1901) Stiles et Goldberger,1910 are shown in Table 1 & Figure 1.

Biochemical contents (glycogen, Protein and lipid) in normal intestinal tissue of *Capra hircus L.* is (32.45mg/100 mg , 31.27 mg/100 mg and 27.60 mg / 100 mg); in infected intestinal tissue is (29.20 mg / 100 mg, 28.36 mg/100mg and

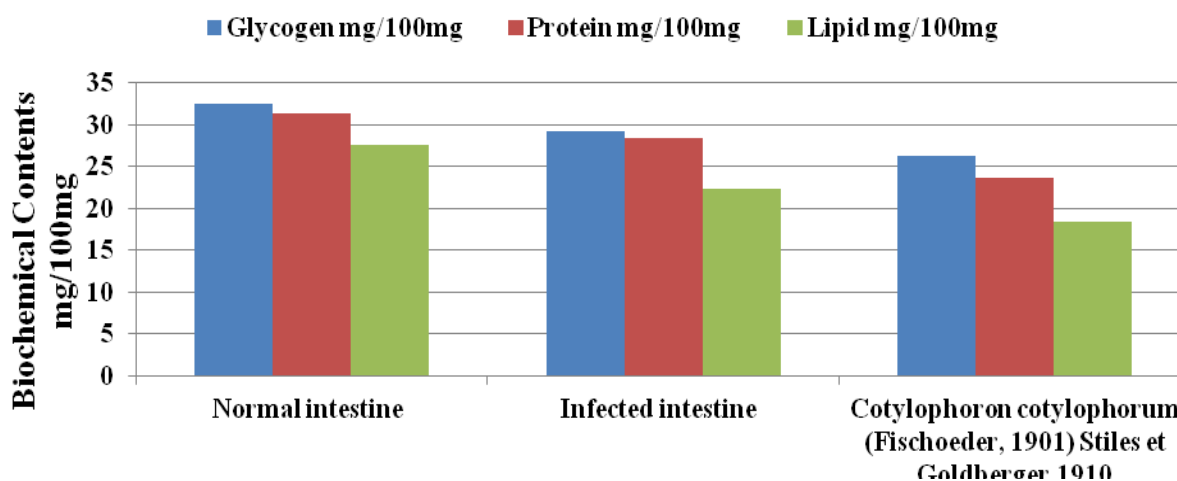
22.36 mg / 100 mg) where as in *Cotylophoron cotylophorum* (Fischoeder, 1901) Stiles et Goldberger,1910 is (26.32mg/100gm, 23.60 mg/100gm and 18.42mg/100 gm).

Similar finding were reported by Bhure and Nanware, 2013 from *Channa stratus* naturally infected by *Gangesia*. Jadhav et.al, (2008) reported low content of glycogen in *Davainea shindei* (15.17 mg/100mg), high in host intestine (17.56 mg/100 mg). Bhure et.al., 2010 and Nanware et.al., 2010 reported amount of glycogen were lower in parasites than infected and normal intestinal tissue of host. Bhure et.al, 2011 estimated glycogen contents in normal intestinal tissue is 93.25 mg/100 mg, infected intestinal tissue contents 91.02 mg / 100 mg where as *Tylocephalum sp.* contents 88.28 mg / 100 mg. The glycogn level in normal and post helminth infected tissue a *Catla catla* & *Labeo rohita* was determined by P. Anilkumar and

Table 1: Biochemical contents in the intestine of *Capra hircusL.* and their relevant fluke *Cotylophoron cotylophorum* (Fischoeder, 1901) Stiles et Goldberger,1910.

Sr. No.	Tissue	Glycogen mg/100mg	Protein mg/100mg	Lipid mg/100mg
1.	Normal intestine	32.45	31.27	27.60
2.	Infected intestine	29.20	28.36	22.36
3.	<i>Cotylophoron cotylophorum</i> (Fischoeder, 1901) Stiles et Goldberger,1910	26.32	23.60	18.42

Figure-1. Biochemical contents in the intestine of *Capra hircusL.* and their relevant fluke *Cotylophoron cotylophorum* (Fischoeder, 1901) Stiles et Goldberger,1910.



Rajlingam (2009); they summarized the content of glycogen is high in infected intestine and liver of *Catla catla* and *Labeo rohita* as compared to normal tissue of both fishes. Graff and Allen (1963) determined glycogen content of *Moniliformis dubis* from male rat. He noticed, when expressed as mg glycogen/gm wet weight of tissue, was over twice them the amount found worms i.e.16.81 (14.3) in male while 7.87 (11.76) in female.

Similar result for protein contents also reported by Jadhav et.al. 2008 from *Davainea shindei* i.e. amount of protein present in *Davainea shindei* is 13.20 mg/gm wt. of tissue where as in host intestine is 15.42 mg/gm wt. of tissue. Bhure et.al., 2011 reported Protein contents in non-infected intestinal tissue was 30.12 mg/mg, infected intestinal tissue contents 27.72 mg/mg where as tapeworm *Tylocephalum sp.* contents 25.01 mg/mg wet tissue. Dhondge et.al., (2010) and Laxma Reddy B and Benarjee G, (2014) reported amount of Protein was lower in the body of parasites than infected and normal intestinal tissue of host. The distribution of protein content shown in present study is an agreement with the previous study. The difference in lipid content of the parasite due to the difference in diet. Hence there is a relationship between the lipid content of parasite and nutrient content in environment.

Similar finding was recorded by Dhondge et.al., 2010 reported amount of Lipid was lower in the body of parasites than infected and normal intestinal tissue of host. Higher content of lipid in older proglottids has led to the view that much of this lipid largely represents waste products of metabolism (Brand T. Von, 1952). M.R. Siva Sai Kumari (1994) and Himansu Bhusan Mahananda (2014) reported total lipids content of cestode *Ncokrimia singhia* in immature mature and gravid region was 4.675 ± 1.215 , 29.200 ± 0.608 and 31.902 ± 2.804 mg/gm fresh weight. Bhure et. al., 2011 reported Lipids contents in non-infected intestinal tissue was 19.60 mg/100 mg, in infected intestinal tissue contents 17.37 mg / 100 mg where as in tapeworm *Tylocephalum sp.* contents 16.74 mg / 100 mg. Jadhav et.al 2008 from *D. shindei* is 17.85 mg/gm and its host

intestine is 19.85 mg/gm. Nanware et al., 2011 described regional distribution of glycogen in *Stilesia sp.* i.e. immature region contain low glycogen as compared to mature and gravid region.

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