



**ORIGINAL RESEARCH PAPER**

**Zoology**

**PROTEIN ESTIMATION OF CESTODE PARASITE AND THEIR HOST *GALLUS GALLUS DOMESTICUS* FROM PAITHAN DIST. AURANGABAD**

**KEY WORDS:** Cestode parasites, *Gallus gallus domesticus*, Paithan, *Raillietina*.

**Dr. Satish Saraf**

Department of Zoology, Pratishan Maavidyalaya Paitan, Dist. Aurangabad.

**ABSTRACT**

*Gallus gallus domesticus* is highly infected by Cestode parasites which lowering their economical value. In the present investigation biochemical work has been done. Bio-molecules such as protein are determined in parasites and also infected and non-infected intestine of host. Results, after comparison between cestode parasites and host intestine, the protein is higher in *Raillietina*, Sp. as compare to infected host intestine and lower as compare to non-infected intestine.

**INTRODUCTION**

India recorded the fastest growth rate in poultry meat production during 1985-95 with growth rate about 18% per annum which perhaps, no other country or agro industry in the world has recorded, during that period.

Main sources of energy reserves in fish are protein and lipid, in contrast to mammals in which carbohydrate and lipid are more important. This is perhaps due to the following factors: (I) the diet of fish generally consists of high protein, and the fish metabolism is well adapted to deal with such a diet; (II) unlike mammals, fish have the ability to eliminate nitrogenous waste rapidly and continuously; (III) specific activities of lysosomal enzymes which are involved in protein breakdown are greater in fish than in mammals (Chellappa, 1988).

Proteins are a diverse and abundant class of biomolecules, constituting more than 50% of the dry weight of cells. This diversity and abundance reflects the central role of proteins in virtually all aspects of cell structure and function. An extraordinary diversity of cellular diversity is possible only because of the versatility inherent in proteins each of which is specifically tailored to its biological role. Chemically proteins are unbranched polymers of amino acids linked head to tail, from carboxyl group through formation of covalent peptide bonds, a type of amide linkage (Molecular Component of cells Richard P. Feywan, 1963).

Proteins are large biological molecules, or macromolecules, consisting of one or more chains of amino acid residue proteins are involved in a variety of cellular functions, including structural support, the formation of contractile systems and molecular transport. In addition proteins can act as hormones, some are toxins many are antigenic and the largest group, the enzymes, catalysis fundamental synthetic and degradation reactions in cells (Symth and Mc Manus, 2007) Proteins have many different biological functions. They are ubiquitous in their distribution and there is really no satisfactory scheme of classifying them. The largest gram of proteins is the enzyme proteins provide rich environment for the nourishment of cestodes.

The Proteins are absorbed by the parasites by diffusion and transfusion. Proteins have many different biological functions. They are everywhere 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 that producing energy. Literature reveals that the parasites able to adopt themselves to the parasitic mode of life, the protein usually constitutes between 20 to 40 % of the dry weight (John Barrett, 1981).

The present investigation deals with the biochemical studies of protein content Cestode parasites i.e. *Raillietina* Sp. in *Gallus gallus domesticus*.

**MATERIALS AND METHODS**

**Sample Collection:-** The worms were collected from the

intestine of birds i.e. *Gallus gallus domesticus* and then washed with distilled water. Collected worms, small pieces infected intestine and non infected intestine of host were then dried on the blotting paper to remove excess water and transferred to watch glass and weight on sensitive balance. After 50-60 °C for 24 hrs. the dry weight was also taken.

**Biochemical estimation:-** The estimation of protein content in the Cestode parasites i.e. *Raillietina* and infected and non infected host intestine were carried out by Lowry's method (1951).

**RESULT AND DISCUSSIONS**

In the present investigation, Cestode parasites i.e. *Raillietina* sp. was carried out for biochemical estimation of primary metabolites such as protein. In present study indicate that amount of protein content in Cestode Parasite i.e. *Raillietina* Sp (0.148 mg dry wt. of tissue per ml solution) was lower than non-infected (0.172 mg dry wt. of tissue per ml solution) and higher than infected (0.102 mg dry wt. of tissue per ml solution) intestinal tissue. There was significant variation among the Parasites and Host.

Similar results were observed by Ackert and case, (1938), Von brand, (1966), Pappas, (1978) and they reported that cestodes are known to cause various kinds of disturbance in the host's metabolism). Similarly, Vijay kumar, (1980) showed, that the protein content of host liver was not altered, but it was reduced in the intestinal tissue due to the *Raillietina tetragona* infection. Dama L.B., (1999) observed that the intestinal parasite *Raillietina spp* was capable of extracting the nutritious material from their host *Columba livia*. Hence, Percentage of protein based on dry weight of some cestodes is 60% in *Diphyllobothrium latum* observed by Von Brand, (1952), 21-8% in *Moneizia expansa* (Von Brand, 1952, 1966; Campbell, 1960).

Result shows parity with findings of Jadhav et al., (2008) who reported amount of protein in *Davainea shindei* is 13.20 mg/mg wt. of tissue where as in host intestine is 15.42 mg/mg of tissue. Nanware et al., (2012) studied amount of proteins in *Cotugnia* sp. is lower (5.77mg/gm) as compared to protein present in infected intestine (6.66 mg/gm), in host normal intestine (16.22 mg/gm). Amol Thosar et al., (2014) reported that amount of protein in *Moneizia* Sp. is 0.2 mg/100mg dry weight of tissue and *Stilesia* Sp. is 00.11 mg/100mg dry weight of tissue and infected and non-infected host intestine i.e. *Ovis bharal* is 0.34 mg/ 100 mg dry weight of tissue and 0.36 mg/100 mg dry weight of tissue respectively. Asawari Fartade and Ravindra Chati, (2016) reported amount of protein in *Cotugnia* Sp. is 6.77 mg/gm where as in host infected and non-infected intestine is 8.6 mg/gm and 17.2 mg/gm respectively.

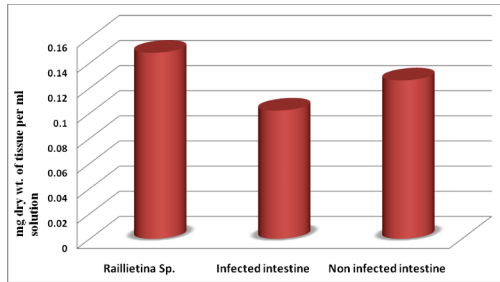
The present study reveals that, protein in *Raillietina* Sp. content is lower than the non-infected intestine and higher than the infected intestine of host i.e. *Gallus gallus domesticus*.

From above result conclude that the Cestode parasite *Raillietina* Sp. maintains good protein content balance with the host *Gallus gallus domesticus*.

**Table No. 1:** Protein estimation of *Gallus gallus domesticus* intestine and parasites i.e. *Raillietina* sp.

Protein Content (mg dry wt. of tissue per ml solution)	<i>Raillietina</i> Sp.	Intestinal tissue <i>Gallus gallus domesticus</i>	
		Infected	Non-infected
	0.148	0.102	0.126

**Graph No. 1:** Protein estimation of *Gallus gallus domesticus* intestine and parasites i.e. *Raillietina* sp.



**REFERENCES**

- Amol Thosar, Rahul Khawal, Sushil Jawale and Sunita Borde 2014. Some biochemical aspects of Anaplocephalidean Cestode Parasites in *Ovis bharal* (L.). *The Ecoscan*. Special issue, Vol. V:01-04:2014.
- Asawari Fartade and Ravindra Chati, 2016. Biochemical studies on cestode parasites in *Gallus gallus domesticus* in Solapur and Osmanabad district, M.S (India). *International Journal of Fauna and Biological Studies* 2016; 3(4): 109-110
- Barrett, J. 1969. The effect of aging on the metabolism of the infective larvae of *Strongyloides* sand ground, 1925. *Parasitology* 59:343-347.
- Chellappa S., 1988. Energy reserves in male three-spined stickleback, *Gasterosteus aculeatus* L. (Pisces, Gasterosteidae): annual variation and relation to reproductive aggression. Ph.D. thesis, University of Glasgow.
- Daugherty, J.W. 1956. The effect of host castration and fasting on the rate of glycogenesis in *Hymenolepis diminuta*. *J. Parasitol.* 42: 17-20.
- Fairbairn, D.C., Werthim, R.P. Harpur and Schiller, E.L. 1961. Biochemistry of normal and irradiated strains of *Hymenolepis diminuta*. *EXP. Parasitol* 11: 248-263.
- Jadhav, B. V. 2008. Biosystematic studies of *Davainea shindei* sp. (Cestoda: Davainiidae, Fuhrmann, 1907) from *Gallus gallus domesticus*. *Natl Acad Sci Lett*, 31:7-8.
- John Barrett 1981. *Biochemistry of parasitic helminths*.
- Keith Wilson and John Walker, 2006. *Principles and techniques of Biochemistry and Molecular Biology*. Cambridge University press, New York.
- Lowry, O.H., Rosebrough, N. J., Farr, A. L., and Randall, R. J. 1951. The method of protein estimation. *J. Biol. Chem* 193:265 (The original method).
- Nanware SS, Nazneen Uzma Bhure DB and Garad VB, 2012. Studies on protein content of cestode *Cotugnia* and its host *Gallus gallus domesticus*. *Journal of Experimental Sciences* 3(1) 40-41.
- Reid, W. M. 1942. Certain nutritional requirements of the fowl cestode, *Raillietina cestocillus* (Molin) as demonstrated by short periods of starvation of the host. *J. Parasitol.* 28: 319-340.
- Richard P. Feynman, 1963. *Basic Biochemistry*.
- Satish Saraf, 2017. Biochemical studies on protein content in cestode parasite *Cotugnia* sp. and their host *Gallus gallus domesticus* from Paithan Dist. Aurangabad. *Indian journal of Applied Research*. Volume 7(1). Pp. 758-759.
- Smyth, J. D. and McManus, D. P. 1989. *The physiology and biochemistry of Cestodes*. Cambridge University Press.
- Von Brand, T., 1966. *Biochemistry of parasites*. Academic press, New York and London.
- Von Brand, 1952. *Chemical physiology of endoparasitic animals*. Academic press. Inc. New York.