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PROTEIN CONTENT IN *NEOMETADIDYMOZOON POLYMORPHIS* (TREMATODA : DIDYMOZOIDAE) AND IN INFECTED, UNINFECTED GILL TISSUE OF THE HOST *PRIACANTHUS HAMRUR*

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Marine fish *Priacanthus hamrur* collected from the Waltair coast, examined for the didymozoid parasites. Biochemical studies show total protein content in parasite *(Neometadidymozoon polymorphis)* 5.5 mg/100 mg dry tissue, uninfected gill tissue 22.5mg/100 dry tissue, infected 6.5 mg/100 mg dry tissue.

INTRODUCTION

Proteins are made up of one or more polypeptide chains, each consisting of many α - amino acid residues convolently linked by peptide bonds, All proteins, regardless of function or species of origin are constructed from a basic set of amino acids, arranged in various specific sequences.

Some of the important workers who focussed their attention on the protein metabolism in various trematode parasites are Shishova - Kasatochkina (1973 & 1976), Srivastava & Gupta (1976), Gupta & Pandya (1977), Mehta *et al.* (1980), Chattar Hora & Sharma (1980), Gupta & Gupta (1981), Shishova - Kasatochkina & Leutskaya (1981), Cornford *et al.* (1982), Haque & Siddiqi (1982), Zdarska & Soboleva (1987), Paulauskas (1988), Abidi & Nizami (1991). Swarup & Pachauri (1987), El - Sheleith & Nagi (1991) and Rao *et al.* (1991) also worked on the host biochemistry.

MATERIALS AND METHODS

Fishes were collected and observed for didymozoid *(Neometadidymozoon polymorphis)* parasites for protein analysis regularly for a period of about two years *i. e.* May, 1991 to June, 1993 at places of Gangavaram and Visakhapatnam offshore. Most of the fish were infected with didymozoid habitating gills. The infected, uninfected gill tissue and parasite samples taken. The samples were transferred to hot air oven adjusted to 65°C for about 24 to 48 hrs to dry the sample to constant weight. The dry tissue was then ground into a fine powder with the help of a pestle and mortor made of resistant glass. The estimation of proteins in the dried tissue was carried out by folin - ciocalteu method of Lowry *et al.* (1951).

RESULTS AND DISCUSSION

Proteins from one of the most important and complex group of biological materials, as they form the chief nitrogenous constituents of the tissues of the body. A group of substances called enzymes which are agents responsible for all the chemical transformation taking place in the body are also protein in nature. Proteins serve as structural components, as biocatalysts, as hormones and as depositors for the genetic information characteristic of a species. These are colloidal in nature, not diffusible and contain high molecular weights. Once the protein denatures it looses all its biological charactristics. Unlike carbohydrates and fats, the proteins are stored in the body in only limited amount and are quickly available for use when needed.

The results of the present study are repesented by histogram (Fig. I). Didymozoid possesses 5.5 mg/100 mg dry tissue, infected gill tissue of the host 6.5 mg/100 mg dry tissue and uninfected gill tissue of the host 22.5 mg/100 mg dry tissue. The amount of protein in the uninfected host is about three and half times more compared to the infected host.

Proteins occur in different forms in parasites. The presence and utilization of proteins are reported in trematodes by various authors. Shishova - Kasatochkina (1973) studied metabolism in helminths. Alcaini (1976) observed protein and enzyme polymorphism in adult *Fasciola hepatica.*

Shishova - Kasatochkina (1976) studies biochemical study of helminths and its significance, role of specificity in protein metabolism and host nutrition in the adaptation of helminth to parasitism. Srivastava & Gupta (1976) have observed protein content in *Isopararchis hypselobagri.*

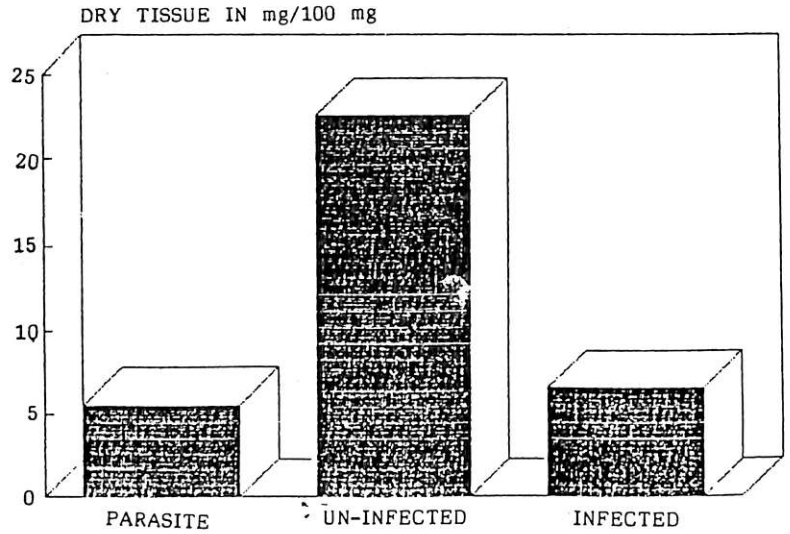

Fig. 1. Protein content in *N. polymorphis*, uninfected and infected gill tissue of *P. hamrur* (mg/100 mg dry tissue).

Gupta & Pandya (1977) have studied distribution of proteins in digenic trematode *Ganeo tigrinum*. Bankow *et al.* (1978) reported biochemical study of *F. hepatica* and its pathogenicity, amino acid composition of water soluble proteins.

Mehta *et al.* (1980) reported proteins and acetylcholinesterase patterns in suckers of *Paramphistomum cervi.* Gupta & Gupta (1981) made an observation on free amino acid composition of *Opisthorchis pedicellata.* Protein content 43.5% of the dry weight. Cornford *et al.* (1982) have studied protein, glycogen and water content of schistosomes. Gupta & Agarwal (1986) studied biochemical parameters on *I. hypselobagri* from swim bladder of *Wallagonia attu* and body cavity of *W. attu* and *Channa punctatus.* Paulauskas (1988) made electrophoretic study of proteins and enzymes in trematodes in *Notocotylus attenuatus.*

Abidi & Nizami (1991) made comparative study of the protein content in some helminth parasites. El-Sheikh & Nagi (1991) studied effects on schistosomes infection on protein, glycogen and glucose contents in *Biomphalaria arabica* and *Bulinus tructatus.* It is shown that schistosomes infection caused a marked decrease in the tissue protein. Akai *et al.* (1992) have made separations and characterization of adult worm proteins and glycoproteins from the liver flukes *Opisthorchis viverrini.* Turcekova *et al.* (1992) have made incorporation of glucose and leuchine into protein and glycoprotein of *Syngamus trachea in vitro.* Insoluble proteins, the scleroproteins, have essentially a supporting or protective function and hence are widely distributed among parasites.

In the present investigation significant difference in protein content has been observed between infected and uninfected gill tissue of the host, *Priacanthus hamrur.* Protein content in uninfected gill tissue is higher when compared to the infected. But Swarup & Pachauri (1987) noticed that the liver of the buffalo infected with *Fasciola gigantica* had higher protein content. Rao *et al.* (1991) worked on post-helminth infection of liver protein in *Bufo viridis* observed except albuminis all the other molecules showed an increase.

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