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ORIGINAL ARTICLE

Lipid Contents in Some Cestode Parasites of Marine Fishes

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ABSTRACT

The present study is undertaken to determine the lipids content in Cestodes of marine fishes viz. Cephalobothrium Sp., Tylocephalum Sp., Uncibilocularis Sp. and its host tissue i.e. infected and normal intestinal tissue. The present study indicates that the amount of lipid is lower in parasite than infected and normal intestinal tissue of host. The content of lipid in parasite body is variable due to the difference in its diet. The lipid content may vary considerably even in the same species, parasitic in the same host species but fed on different diets

Key words: *Cestodes, Lipid Content, Marine Fishes*

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INTRODUCTION

Fishes are important item of human food as well as the source of income of the segment of the population. At present our total annual fish production is about 5.7 million tones but the estimated potential based on the present levels of productivity is about 8.5 million tones irrespective of the advances and achievements, intensive fish forming remains a high risk investment, mainly due to the disease problem. A simplistic assumption would be then that if fish health is taken care of fish production will improve. Hence, the control of disease and increment of fish production could contribute greatly the rural development. Lipids are important to the body as constituent of membranes, source of fat soluble (A, D, E and K) vitamins and metabolic regulators (Steroid hormones and prostaglandins). Phospholipids are complex lipids contains phosphoric acid they perform wide variety of functions. Lipids are as organic substances, which relatively insoluble in water, soluble in organic solvents (alcohol, ether etc.) actually or potentially related to fatty acids and utilized by the living cells.

Lipids are of great importance to the body of cestodes as the chief concentrated storage form of energy, besides their role in cellular structure and various other biochemical functions. Lipids metabolism in cestodes has been worked out to only a limited extent. But gas chromatography and column chromatography has revolution lipid analysis. The role of lipids in cestode metabolism is not clear, there is no evidence for example that lipid act as energy reserves in cestodes as they do in nematodes. In tapeworms the synthesis of lipids is only studied in *H. diminuta*. Lipids are generally divided into simple lipids, comprising the fats (tryglycerol esters of fatty acids), waxes (esters of fatty acids) waxes (esters of fatty acids with complex monohydric alcohols) and compound lipids comprising the phospholipids and glycolipids, steroids are also included in this. Vykhrestyuk vorygin and Nikiten (1977) worked on *R. tetragona* and concluded that helminthes are capable of

manufacturing specific lipids from the host's fatty acids Nigam and Premavati (1980) worked on the effect of host diet on fatty acid composition of *C. digonopora* and *R. fuhrmani*. The other cestodes which have been worked for lipids are *R. echinobothrium, M. expansa*, *T. Saginata, Hydatigera taeniaformios D. latum* and *E. granulosus*. The other scientists who have worked are Barret korting Lipid percentage variations according to the seasons of *Stilesia luperi* from *Ovis bharal* were worked out by Jadhav *et.al* (1982). (Brand T. 1973) studied biochemistry of parasites Read C.P. and Simmons J.E.J. (1963). Harrington G.W. (1965) worked on the lipid content of *Hymenolepis diminuta* of *H. citelli* Shinde G.B. and Mitra K.B. (1979) worked on the lipid percentage variations according to the seasons of *R. (R.) tetragona* (Molin, 1858) after Southwell 1930.

MATERIALS AND METHODS

The fishes from West Coast of Maharashtra were brought for the collection of parasites. They were kept in 4% formalin for preservation. Dehydration with various alcoholic grades and stained with haematoxylin, mount in D.P.X. The identification of parasites with the help of microscope. The morphological observation turns them to a species of the genus *Cephalobothrium* Sp., *Tylocephalum* Sp., *Uncibilocularis* Sp. The lipid content in cestode parasites and host intestines was estimated by Folch *et..al*. 1957 method. The lipid concentration was expressed as mg/gm wet weight of the tissue.

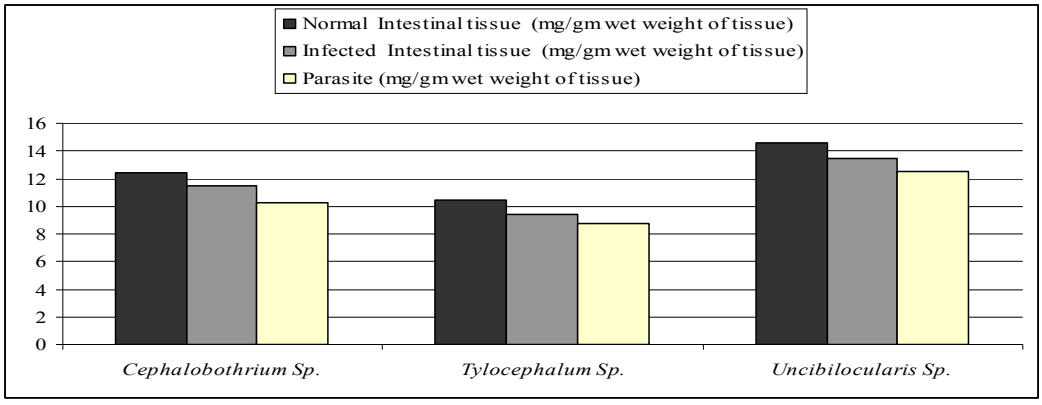
RESULTS

The present study indicates that the amount of lipid is lower in parasite tissue than infected and normal intestinal tissue of host. It is summarized in table No.1 and Graph No.1.

Table 1: Comparative chart of Lipids contents in Normal host intestinal tissue, infected intestinal tissue and their parasites

S. No.	Name of parasites	Normal Intestinal tissue (mg/gm wet weight of tissue)	Infected intestinal tissue (mg/gm wet weight tissue)	Parasites (mg/gm wet weight tissue)
1	*Cephalobothrium Sp.*	12.42	11.44	10.24
2	*Tylocephalum Sp.*	10.44	09.42	08.76
3	*Uncibilocularis Sp.*	14.62	13.44	12.54

Graph 1: Graph showing Lipid contents in Normal host intestinal tissue, infected intestinal tissue and their parasites



DISCUSSION

Similar finding were recorded by Dhondge *et. al.,* 2011 studied lipids content in avian Cestodes viz. *Cotugnia orientalis* Sp., *Railleitina microscolenia* Sp., *Davenia yamaguti* Sp., *Vampirolepis indica* Sp. are lower than its host tissue i.e. infected and normal intestinal

tissue. Jadhav et.al 2007 from *D. shindei* is 17.85 mg/gm and its host intestine is 19.85 mg/gm. According to Botero and Ried (1969) worm from low fat diet content 10.1% lipid and worms from birds on a high fat diet contained 29.6% lipid. Hence there is a relationship between the lipid content of the parasite and nutrient content in environment.

There is considerable variation in lipids from species to species and the degree of lipid content. Variation is also seen in the segments and regions of the worms being experimented thus total lipid to be somewhat meaningless, unless the degree of maturity is known. M.R. Siva Sai Kumari (1994) reported the total lipids content of cestode *Ncokrimia singhia* in immature matur and gravid region was 4.675±1.215, 29.200±0.608 and 31.902±2.804 mg/gm fresh weight Mettrick and Cannon (1970), observed that the lipid content of proglottids of different region are dependent on the age of the worms. The difference in the lipid content of the parasite can be due to the difference in diet.

The lipid content of some species grown in different hosts may vary substantially *H. diminuta* (Ginger and Fairbrain, 1966 b) from Hammessten contained 9.5% lipid (dry weight) and those from long evans rate 16.5% (dry weight) (Warren and Daugherty, 1957). In *H. diminuta* the lipids tend to be more abundant in the most posterior proglottids (Fairbrian wetheim harpur and schiller, 1961), figures for total lipids thus tend to somewhat meaningless unless the degree of maturity is known. The 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).

CONCLUSION

The content of lipid in parasite body is variable due to the difference in its diet. The lipid content may vary considerably even in the same species, parasitic in the same host species but fed on different diets. The present investigation indicates that the amount of lipid is lower in parasite than infected and normal intestinal tissue of host.

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