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Protein Estimation in the Body of Tetragonocephalum Pulensis From A Marine Water Fish TrygonSephen

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ABSTRACT

Cestodes are endoparasites found attached to the Wall of the intestine. They are finally attached the host intestine through their suckers and hooks of the rostellum. The remaining body is freely held in the lumen of the host intestine. The naked covering of the body of the parasite is permeable to physiological substances. Proteins are the most abundant organic molecules in the cells containing 50% or more of their dry body weight. They are found in every part of every cell, since they are fundamental in all aspect of cell structure and function. There are many different kinds of proteins each specialized for a different biological function.The Tetragonocephalum Pulensis is the scolex divided into two mature segments are longer than broad; Testis are Preovarian, ovary is bilobed and H shaped, Vitellaria are granular arranged in 2 or 3 rows.

Key Words: -TrygonSephen,Biochemical Composition of Protein

Introduction: - In a present day on a global scale, the fish and fish products are the most important source of protein in the human diet. This protein is relatively of high digestibility compared to other protein sources. Research in the field of parasitology have started knowing the physiological and biochemical aspects of the parasites right from the beginning of the nineteenth century. Importance of biochemical studies has been the right during the beginning of the 20th century (Chang 1964).

There are many different kinds of protein each specialise for different biological function moreover most of the genetic information is expressed by protein. The term protein is derived from Greek word "proteios" meaning holding the first place. Berzelia (Swedish chemist) suggest the name proteins to the group of organic compounds that almost important to life. Protein perform great variety of specialized and essential functions in the living cells. Their functions may be broadly grouped as static structure and dynamic.

Cestodes are endoparasite, found attached to the wall of the intestine. They are finally attached to the host intestine through their suckers and hooks of the rostellum. The remaining body is freely held in the lumen of the host intestine. The naked covering of the body of the parasite is permeable to physiological substances. As a matter of fact, the body covering exchanges the material in the intestine of the lumen by the active and passive transport mechanism. Hence the biochemical composition of the parasite is subjected to variation and these variations arte likely to be influenced by the variation of the host.

Materials and Method: - Protein estimation in cestode parasites was carried by Gornall et.al. (1949) method. Ten intestines of TrygonSephen were brought to laboratory and dissected for collection of cestode. Out of sixteen intestines, five of them were found to be heavily infected with cestode parasites. By observing the identical worms under the microscope, few of them were fixed in 4% formalin for morphological study.

Small pieces of infected intestine were also collected for estimation of protein. The collected worms kept on blotting paper to remove excess of water from the body of cestodes. Then worms were transformed into watch glass and wet weight of the worm was noted. Then the m aterial was kept at 70 to 80 ° c till it dries completely. Dry weight of the tissue was taken and material was ground in mortar and pestle to free fine homogenate with 5 ml of sucrose and 5 ml of 10% TCA. The homogenate was centrifuged for 10 minutes at 2000 R.P.M. Supernatant was discarded & residue was taken in a test tube, to this 1 ml of distilled water and 3 ml of Biuret solution was added. The tubes were kept for half an hour until the lavender colour developed. The optical density was measured on calorimeter at 530 nm. Similarly, the optical density of known solution was measured on calorimeter at 530 nm.

The amount of protein in the worm was calculated by the formula

(O.D. of unknown tissue/O.D. of known tissue) x (mg of protein/ wt. of tissue taken) x 1000

O.D. of unknown tissue = 0.25, O.D. of known tissue = 0.50

Mg of tissue protein = 10 weight of tissue taken = 100 mg

(0.25/0.50) x (10/100) x 1000 = 5.0 mg/gm of wet tissue

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Amount of protein content = 5.0 mg/gm of wet tissue

The protein percentage of hosts intestine TrygonSephane was estimated by the same procedure. The obtained results show that the intestine 5.0 mg/gm wet weight of the tissue.

Conclusion: - From the above result when compared shows that the worm TetragonocephalumPuleensis n. sp. could maintain a good balance in protein content with the hostTrygonSephen.

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80. EFFECTS OF CADMIUM CHLORIDE ON THE GLYCOGEN CONTENT OF DIFFERENT TISSUES ON THE CLARIAS BATRACHUS

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ABSTRACT:

The Fresh water fish Clarias batrachus was affected by the effect of cadmium chloride. The 48 hours Lc 50 of cadmium chloride was found to be 0.36 mg/lit. The Fishes were exposed to the experimental concentration of cadmium chloride for 48 hours. After the control 48 hours exposures the glycogen level were estimated in the muscles, Gill, Liver, kidney and Heart. The results showed that the decrease in glycogen level in all. Experimental organ in this study might fact be the result of cadmium stimulating the activities of enzymes that works glycolysis.

KEYWORDS- Glycolysis, cadmium chloride.

MATERIALS AND METHODS:

The freshwater fish Clarias batrachus were collected from their habitat. The fishes were selected for the experiment on the basis of their size, the length and weight and brought up to the laboratory. The fishes were acclimatized in glass aquaria in the laboratory for 7 days as per the APHA. The acclimatized fishes were used in the present experiment. Static bioassay test were conducted in order to evaluate the acute toxicity of cadmium chloride for 48 hours Lc 50 value for 0.36 mg/lit. was found. The fishes were exposed to the experimental concentration of cadmium chloride for 48 hours the scarified samples the glycogen by Anthrone method of (hedge and Hofreciter,1962).

RESULTS AND DISCUSSION

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The glycogen levels in muscle, gill, liver, kidney, &heart is significantly decrease in experimental fishes over the control groups of fishes (Table:1&2). The levels of decrease in different organs is in the following manner kidney >Liver>Gills>Heart>Muscle.

Table: 1 Levels of glycogen content in different organs of Clarias batrachus exposed to median lethal (LC50) at 48 hrs. conc. Of cadmium chloride ((CdCl2)

	Exposure		
Sr.No.	Organ	Control mg/gm wet.	Expt. (LC50) at 48 h r s .mg/gm wet. Wet
1	Muscle	11.28±1.13	9.38 ±0.18
2	Gill	8.19 ± 0.69	7.80 ± 1.17
3	Liver	43.10 ± 2.17	28.14 ± 1.27
4	Kidney	18.01 ± 0.65	9.50 ± 1.04
5	Heart	10.50 ± 0.61	8.80 ± 0.56

Values are mean ± SD of six replicates .*P<0.05,**P<0.01,***P>0.011,significant when student 't' test was applied between control &experimental groups.

Table: 2 Variation in the levels of glycogen content in different organs in terms of % decrease (↓) over control in *Clarias batrachus* exposed to median lethal (LC50) at 48 hrs concentration of cadmium chloride (CdCl2).

	Muscle	Gill	Liver	Kidney	Heart
Parameter	%	%	%	%	%
Glycogen	10.02	17.16	22.47	19.12	17.29

The decrease in glycogen level in all the experimental organs in this study might in fact be the result of cadmium stimulating the activities of enzymes that works in glycolysis. Similar result has been maintained Bedi click& Kenan Engine (2003), Almeida (2001). Almeida (2001) Mentioned the decrease of specific activity of some enzymes like phosphofructo-kinase, lactate detryogenase & citrate kinase that decreases the capacity of glycolysis. In present study glycogen

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level is highest decrease in liver & kidney. Liver is the chief organ of carbohydrate metabolism. Liver glycogen is concerned with storage & export of hexose units for maintenance of blood glycose & that of muscle glycogen is to act as readily available sources of hexose units for glycolysis within the muscle itself. A fall in glycogen level clearly indicates its rapid utilisation to meet the enhanced energy demands in the toxicant exposed fish through glycolysis or hexose monophosphate pathways. Glycogen is also highest decrease in kidney in present study it is possibly due to kidney is major cadmium accumulating organs. Syed Lal shah (2005) reported the highest accumulation of cadmium in the tests & kidneys *of Tincatinca*. Similar bioaccumulation result of cadmium is reported by Jessica & Michael Michael (1998) so it is evident that cadmium is the major toxicant on the kidney, Liver & tests of the fish.

Sobha et. Al., (2007) reported the same effect of cadmium on the muscle, gill, liver heart & kidney 6glycogen reserve. Hameed SVSA et. al., (2006) mentioned the reduce carbohydrate level in different organ of fresh water fish *Oreochromis mossambicus* exposed to calcium. They reported that with increasing toxicity time decreasing the carbohydrate level. Canli (1996) shows effect of Hg, chromium & nickel on glycogen reserve & protein levels in different tissues of Cyprinus carpio & reported that reduced glycogen and protein levels in experimental fish. Kumar Pradeep et.al.,(2005) explain the reduced liver glycogen level in *Cirrhinus mrigala* exposed to sub lethal concentration of lead. Vutukuru (2005) reported gill & muscle glycogen reduced in fresh water fish exposed in sub lethal concentration of copper toxicity. Satyaparmeshwar et.al., (2006) reported decrease glycogen & pyruvic acid level in different tissues of freshwater muscle *Lamellidensmarginals* under the copper sulphate toxicity. Tilak et.al., (2005) explain the decreased glycogen content in different tissues of *Catlacatla, Labeo rohita, &Cirrhinusmrigala* exposed to sub lethal organophosphate chorpyrifos. He reported that highest reduction of glycogen in liver & kidney of all fishes.

CONCLUSION:

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Glycogen level is decreased in all the organs of experimental fishes glycogen decreased 10.02% in muscle 17.16% in gill , 22.47% in liver ,19.12% in kindly ,17.29%in heart. Depletion of glycogen clearly indicate that cadmium increases the rate of glycogenolysis which is clearly indicate that rapid utilization of glycogen of synthesis of glycose to meet the enhanced energy demanded under the stressful condition. Highest reduction of glycogen observed in kidneys and liver both are the target organs of cadmium chloride.

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