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Seasonal changes in the protein content of *Corbicula Regularis* from Girna Dam, Chalisgaon dist - Jalgaon (M.S.) India

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Abstract

The present study, changes in the protein content in soft body tissues of *Corbicula Regularis* of were collected from girna dam, at chalisgaon near Dhule district was observed during different seasons. It was variations of the climatic change in environment. Fluctuation of the protein content on its impact on various types of tissues, like, mantle, hepatopancreas, gonad and foot. The Protein content maximum found in gonads tissues throughout all the three seasons, whereas mantle shows minimum values of protein. There are great variations in the values of protein during different seasons in ecological conditions.

Keywords: *Corbicula Regularis*, Protein, different seasons, Girna dam

Introduction

The aquatic ecosystem of freshwater bivalve molluscs are hermaphrodite filter feeder animals on primary stage of food chains, hence they notably influences the organization and fluctuating of ecosystems. It is the efficient role in transformation of energy in food chains coupled with their sessile mode of life. Seasonal variation in biochemical composition have been reported many workers. Gabbott and Bayne (1973) [5] determined seasonal changes in biochemical composition of adductor muscle, mantle, siphon and foot in *Mytilus edulis* from India, Proteins in an important organic constituent which play important role in metabolism in organism and metabolic activity. Modulation is a special type of combination chemotherapy which aims to selectively improve the therapeutic index by increasing the antitumor effect and protecting against toxic side effects. The main conclusion is that properly applied biochemical modulation schedules may lead to successful use in the clinic (Peter, 1991) [91]. Proteins are involved in an important role in almost all physiological and metabolic activity. They extremely versatile in their action and interaction during metabolism of protein, amino acids, enzymes and co enzymes proteins are the tissue repair and action of drugs or heavy metals in aquatic medium. (Harper 1977) [2].

Materials and Methods

The aquatic fauna of freshwater bivalve mollusk, *Corbicula Regularis* were collected from Girna dam which is about at the distance of 50 K.M. away from Chalisgaon City of Maharashtra state., during monsoon (August to September), winter (December to January) and summer (April to May) over a period one year were selected for laboratory experiments. Immediately after bringing to laboratory, the shells of these bivalves were brushed and washed with fresh and clean water to remove algal biomass, mud and other waste material. The cleaned animals were then kept for depuration for 12hrs in laboratory conditions under constant aeration. For biochemical analysis, animals were dissected and soft body tissues like mantle, hepatopancreas, gonad and foot were removed. 100mg of each wet tissues were taken for biochemical analysis. Protein was determined by the method proposed by Lowry's *et al.* (1951) [7]. Using Bovine serum Albumin (BSA) as standard. The results are expressed as milligram content per 100 mg wet tissue. Triplicate values of each biochemical constituents were subjected for statistical confirmation using student 't' test (Downeswell, 1957). Standard deviations were calculated during variations of seasons.

Results

The protein contents observed during the experimental work has been given in table-1. The protein content maximum found in gonad throughout all the three seasons. During monsoon seasons, the values of protein from gonad (9.155±0.222) and foot (9.656±0.869)

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were nearly equal. The values of protein from mantle show were a constant increase. It is found to be (6.558±0.555) on April and (6.579±0.177) on May, in year 2007-08 which decreases to (6.098±0.172) on September. During winter season, the maximum values of protein from mantle (4.585±0.182) on December. The similar pattern observed for protein contents from hepatopancreas. It shows maximum

values (7.555±0.527) on April and minimum (4.887±0.154) on December. During summer season, the protein shows maximum values from gonad (12.647±0.474) on May, whereas the protein contents shows minimum (12.652±0.525) on April. While the protein is also observed maximum from foot during summer as compared to monsoon and winter seasons.

Table-1: Fluctuation in the protein contents of *Corbicula Regularis* from Girna dam, during different seasons in year 2007-08 Tissues.

Tissues	Monsoon		Winter		Summer	
	August	September	December	January	April	May
Mantle	6.295±0.187	6.098±0.172	4.585±0.182	4.757±0.758	6.558±0.555	6.579±0.177
Hepatopancreas	6.355±0.156	6.243±0.161	4.887±0.154	4.287±0.685	7.555±0.527	7.774±0.172
Gonad	9.155±0.222	9.162±0.262	7.587±0.273	7.754±0.985	12.652±0.525	12.647±0.474
Foot	9.656±0.869	9.921±0.212	6.782±0.265	6.587±0.254	9.526±0.528	9.765±0.859

Discussion

The present study stated as the freshwater bivalve *Corbicula striatella* there is significant changes in the protein content in different body tissues according to seasonal variations. Organic constituents like protein act as key substances for different metabolic activities. Proteins are the most complex and most abundant organic molecules in the living cell, making up more than half the dry mass of the cell. Although the basic structure of all proteins is similar, a vast array of different proteins with diverse function is found in the biological system. Proteins are composed of linear chain of amino acids, which are amphoteric molecules containing at least one carboxyl group and one amino groups. It is observed that protein contents during monsoon season, which is correlated with highest body activities of animal during this season. All the body organs show minimum protein values during winter season, which may be due to sedentary life without much activities. The amount of protein present in different tissues which is closely linked with food availability and gonadal development this is due to increase in flow and turbidity of water environmental factors are responsible for growth of animals. Similar results are observed by Pandit (2005) [3] by *Lamellidens marginalis* of Godavari river at Kaigaon due to exposure of mantle and foot to high temperature.

The study revealed that in term of energy conservation. The organic would be exported to make compensatory adjustments to both the components of energy gain and energy loss fate of changes in the environmental conditions (Vedpathak, 1989) [4]. Thus, in the present study of *Lamellidens marginalis* it is observed that organic constituents present in different soft body tissues shows seasonal fluctuations. And climate change on impact on reproductive cycle. Proteins are the most important and abundant macro molecules in living beings, which play vital role in architecture and physiology of the cell and in cellular metabolism. After the carbohydrates, the next alternative source of energy is protein to meet the increased energy demand. (Mommensen and Walsh, 1992) [7].

Conclusion

Proteins are the tissue repair and construction of the cell component in mollusca high protein demand of gonadal tissue are found in all over tissues in whole seasons because gonads are highly valuable tissues of growth, reproduction and development of bivalves.

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