International Journal of Zoology Studies
ISSN: 2455-7269; Impact Factor: RJIF 5.14
www.zoologyjournals.com
Volume 2; Issue 4; July 2017; Page No. 48-50

Seasonal changes in the protein content of *Corbicula regularis* from Jayakwadi dam, Paithan dist – Aurangabad, (M.S.) India

Khaire BS

Assist. Prof., Department of Zoology, Anandrao Dhonde Alias Babaji Mahavidhyalaya Kada, Ashti, Beed, Maharashtra, India

Abstract
The current study was achieved by measure the total protein concentrations on variations of ecological conditions or impact of natural conditions on various seasons in the protein content in soft body tissues of Corbicula Regularis of were collected from Jayakwadi dam, at Aurangabad 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, such as 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, jayakwadi dam

Introduction
Mollusca are very important for many reasons. Apart from their commercial value for use as a human food stuff and in the feeding of several crustaceans. (Ekinand Bashan, 2010) The aquatic ecosystem of freshwater bivalve mollusks 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 made of life. Seasonal variation in biochemical composition have been reported many workers. Gabbott and Bayne (1973) [7] 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 antitumour 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) [2]. Proteins are involved in anchor 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 as a biological calatyst with the regulate the chemical or biochemical reaction in the body. The source of proteins all nutritious plants of vegetables, eggs and fruits. Proteins are useful and important role of tissue repair and action of drugs such drugs heavy metals lead, calcium magnesium in aquatic medium. (Harper 1977) [3].

Materials and Methods
The aquatic fauna of freshwater bivalve molluscs, *Corbicula Regularis* were collected from Jayakwadi dam which is about at the distance of 50 K.M. away from Aurangabad 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, mid 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 Matle, Hepatopancreas, Gonad and Foot tissues 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) [9]. 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 ststical confirmation using student 't' test (Dowdeswell, 1957) [1]. Standard deviatins were calculated during variations of seasons.

Method of protein Estimation
Total protein contents of the tissues were estimated by Lowry's method (Lowry *et. al.*, 1951) [9]. 10 mg of dry powder was homogenized in small amount of 10% TCA and the homogenate was diluted to 10 ml by 10% TCA. Then it was centrifuged at 3000 rpm for 15 minutes. The supernatant was removed which was used for ascorbic acid estimation. The protein precipitate at the bottom of centrifuged tubes was dissolved in 10 ml 1.0 N NaOH solution. 0.1 ml of this solution was taken test tube and 0.9 ml distilled water was added to make one ml. 4.0 ml. freshly prepared Lowry's 'C' and 0.5 ml Folin phenol Ciocaltieu's reagent were added in each test tube, the test tubes were incubated in dark at 37 ^{0}C for 30 minutes. The O. D. of blue colour developed was read at 530 nm. The blank was prepared in same way using 1ml distilled water instead of protein extract. The protein content in different tissues was calculated referring to standard graph prepared and is expressed in terms of mg protein/100 mg of dry tissue. The Bovine serum albumen was used as a standard.

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) 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* Jayakwadi 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 Regularis 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) by *Lamellidens marginalis* of Godavari river at Kaigaon due to exposure of mantle and foot to high temperature. The proteins composition of the Molluscs can be affected by external factors, such as fluctuations in the environmental conditions (temperature and food availability), or by internal factors, such as metabolic and physiological activities (Brazao, 2003) [11], and reciprocal relationship between the synthesis of proteins and vice versa, was reported in many Mollusca species (Reju, 1990) [12]. 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) [5]. Thus, in the present study of *Lamellidensmarginalis* 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. (Mommsen and Walsh, 1992) [8].

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 nutritive or valuable tissues of growth, reproduction and development of bivalves.

Acknowledgement

The author express that support my college principal, Dr. Vidhate sir, provide valuable facility my experimental work in Department of Zoology A.D. College kada. I will specially thankful my college colleagues prof. Bodhake sir, Jirekar sir and ovhl sir and all my dear friends provide enthusiastic support or direct help in my research paper.

References

1. Dowdeswell WH. Practical Animal Ecology. Methum and Co. Ltd., London, 1957.
2. Peter GJ, Van Groeningen CJ. Clinical relevance of biochemical modulation of drugs on 5- fluorouracil. European society for med.l oncology. Annals. Of oncology. 1991; 2:469-480.
3. Harper HA, Rodwell V, Mayer PA. Review of physiological chemistry, 16th Edn. Lange Los Alots, California, 1977.
4. Pandit SV. Seasonal variation in the biochemical of the freshwater bivalve mollusks, *Lamellidensmarginalis(L)* from Godavari river at Kaigaon, near Aurangabad. Ph.D Thesis, 2005.
5. Dr. Vedpathak AN. Reproductive Endocrinology of some Lamellibranch mollusk with special reference to environmental stress. Ph.D Thesis Marathwada University, Aurangabad, India. 1989; Pp. 1-280.
6. *Babasahb Ambaedkar Marathwada University, Aurangabad, India.* pp. 1-213
7. Gabbott PA, Bayne BL. Biochemical effect of temperature and nutritive stress on Mytilusedulis (L) J.Mar.Biol.Assoc. U.K. 1973; 53:269-286.

8. Mommsen TP, Walsh PJ. Biochemical and environmental prospective on nitrogen metabolism in fishes *Experientia,* 1992; 48:583-593.
9. Lowry OH, Rosenbrough HJ, Farr AL, Randall RJ. Protien measurement with the Follin Phenol reagent. J.Biol.Chem. 1951; 193:265-275.
10. Ekin I, Ba Han M, E En R. Possible seasonal variation of the fatty acid composition from *Melanopsispraemorsa* (L., 1758) (Gastropoda : Prosobranchia), from southeast Anatolia, Turkey. Turk J Biol. 2011; 35:20.
11. Brazao S, Morais S, Boaventura D. Spatial and temporal variation of the fatty acid composition of Patellaspp. (Gastropoda: Prosobranchia) softbodies and gonads. Comp Biochem Physiol. 2003; 136B:425-441.
12. Reju MK. Studies on Haemolymph constituents of *Pilavirens* (Lamarck) and the effects of pesticides on the activity. Pattern of selected enzymes. Ph.D. thesis. Schoolof environmental Studies, Cochin University of Science and Technology, 1990.