Seasonal Habitat Related Variations In Ascorbic Acid In Indonaia Caeruleus.

S. L. Pawar *

*Dada Patil Mahavidyalaya, Karjat ,Ahmednagar

ABSTRACT:

The habitat and biological circumstances has all embracing outcome on the metabolic activities in all organisms. Very few habitats influence the animals with a constant environmental condition, especially the warmth. Considering the habitat related variations in the metabolic activities of freshwater bivalve mollusk, *Indonaia caeruleus* , we report here the habitat related variations in Ascorbic acid content of freshwater bivalve collected from two different habitats. The freshwater bivalve, *Indonaia caeruleus* of 52-58 mm shell length were selected from two different habitat i.e. from upstream and downstream habitat of Godavari river at Paithan near Aurangabad for determination of changes in the ascorbic acid content during winter season. For biochemical analysis of ascorbic acid, the mantle, hepatopancreas, gonad, foot, gills, anterior adductor muscles and posterior adductor muscles were isolated and 100 mg of each tissue was used for the analysis. Ascorbic acid was determined by using standard analyatical methods of Roe etal. The results are expressed as mg. content per 100 mg wet tissue. The data analyzed shown in the form of table .

KEYWORDS: Downstream, fresh water bivalves, habitat variation, hepato-pancreas, mantle

INTRODUCTION:

The profitable bivalve mollusks, such as abalones, cockles, clams oysters, mussels, scallops are the considerably safe food mollusks[1]. These are opulently found in Indian water systems predominantly in Maharashtra State, along the coastal area, whereas other bivalve mollusk species of mussels and clams are found in both upstream and downstream freshwater habitats. The freshwater bivalve mollusk fauna are the suspension feeder feeds on the primary stages of the food chain, hence they remarkably influences the association and performance of the aquatic ecosystems. Also, they execute well-organized role in conversion of energy in food chains united with their sessile mode of life1[3,7, 12,&13].

The importance of the shelled fauna in future will be greater as a potential source of food for human beings[10]. Many of the bivalves have not yet attended government's attention that they could. The oysters and mussels particularly along the coastal regions are much relished. In our country, popularizing the shell fishes as groceries is the necessity particularly, where the provision of nutritional food is a long standing problem and only means to deal with it, should be tried and if successful; popularized. In several parts of the world, including India, apart from food, the bivalve mollusks are subjugated for diverse purposes[14].They are used as attraction for fishing and their shells for multiple use like preparation of toys, ornaments, utility articles and also in lime and paint industries.

Freshwater frequently shows great seasonal and biological variations in dissolved oxygen content. This illustration was stated by [1, 6 , 7] and [9] while researching on the freshwater bivalves from Godavari river at Paithan near Aurangabad. The freshwater bivalve mollusc, *Indonaia caeruleus* introduced by Prashad in 1918, belongs to the mollusk family Unionidae. Unionid bivalves are large, filter feeder organisms proficient of cycling considerable quantities of nutrients [3,5,12,&13,]. Fine particulate organic matter suspended in, the water column or deposited as sediments is the food of freshwater mussels.[4&6]. These assimilated nutrients are utilized by Unionids for growth as well as for metabolic activities like reproduction, and respiration while they are excreted in the form of dissolved inorganic matter.

Adaptation of bivalves to function in its particular environment reflects through its physiological fitness, energy metabolism [2&7]. Its oxygen consumption can be pretentious by chemical and biological factors in the atmosphere, as well as the physiological status of the animals[8]. The pattern of metabolic responses of the bivalve mollusk can be influenced by its body weight or body size. In bivalve mollusks, the correlation between ammonia excretion and the body size can be variable due to unequal dependence of protein catabolism for energy production. In aquatic fauna, particularly in bivalve mollusks, regulation of chemical composition of the body fluid is the significant role of the ionic and osmotic regulation and of excretion which helps in the elimination of wastes and conservation of useful metabolites like Ascorbic acid for growth, maintenance and reproduction[3&9]. To get additional information on physiological status of Ascorbic acid, the experiments were conducted to study the site specific changes in ascorbic acid of *Indonaia caeruleus*. Variations in the amount of ascorbic acid were recorded through its biochemical analysis.

MATERIAL AND METHODS:

The grown-up freshwater bivalve molluscs *Indonaia caeruleus* having 55 – 60 mm shell length were collected from two diverse predetermined sites i.e. site (A) upstream water and site (B) downstream water from Nathsagar dam at Paithan. These two specimen locations are away from one another by a distance of 9.0 Kms and each specimen location was having precise of ecological factors during winter.

The collected bivalves from two different locations were thoroughly cleaned with freshwater in order to remove algal biomass, mud and other waste materials without delay after brining to the laboratory. The cleaned specimens were then permitted for defecation or depuration for about 11-12 hrs in laboratory conditions, under steady aeration. For biochemical analysis of ascorbic acid, the mantle, hepatopancreas, gonad, foot, gills, anterior adductor muscles and posterior adductor muscles were isolated and 100 mg of each tissue was used for the analysis. Ascorbic acid was determined by using[11]. The results are expressed as mg. content per 100 mg wet tissue.

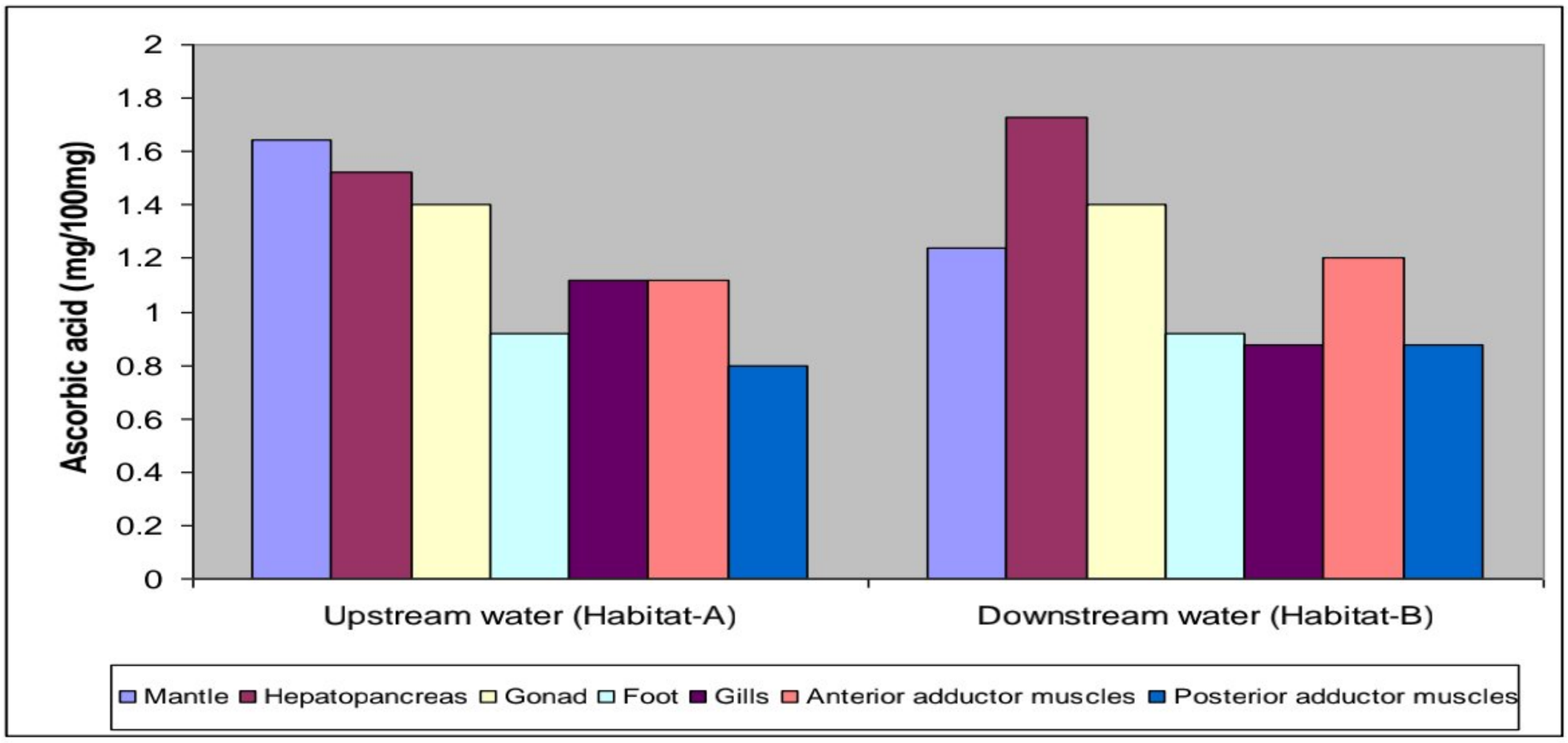
RESULTS: **TABLE -1:**

Variations in *ascorbic acid* contents from tissues of *Indonaia caeruleus* during winter season

Sr. No.	Tissues	Upstream water location (mg/100mg)	Downstream water location (mg/100mg)
1.	Mantle	1.6446 ± 0.1846	1.2413 ± 0.0698
2.	Hepatopancreas	1.5236 ± 0.1397	1.7253 ± 0.0698
3.	Gonad	1.4026 ± 0.0698	1.4026 ± 0.0698
4.	Foot	0.9166 ± 0.0896	0.9166 ± 0.0896
5.	Gills	1.1203 ± 0.0698	0.8783 ± 0.1397
6.	Anterior adductor muscles	1.1203 ± 0.121	1.201 ± 0.121
7.	Posterior adductor muscles	0.7976 ± 0.0896	0.8783 ± 0.0896

Fig.1-

Variations in *ascorbic acid* contents from tissues of *Indonaia caeruleus* during winter season



DISCUSSION:

During winter season, the specimen collected from upstream water has shown more Ascorbic acid in mantle (1.6446± 0.1846), hepatopancreas (1.5236 ± 0.1397), gonad (1.4026 ± 0.0698), gills (1.1203 ± 0.0698) and anterior adductor muscles (1.1203± 0.121) while it was less in foot (0.9166 ± 0.0896)and posterior adductor muscles (0.7976 ± 0.0896).

The specimens collected from downstream water has shown more Ascorbic acid in hepatopancreas (1.7253 ± 0.0698), gonad (1.4026 ± 0.0698), mantle (1.2413 ± 0.0698)and anterior adductor muscles while it was less in foot (0.9166 ± 0.0896), gills (0.8783 ± 0.1397) and posterior adductor muscles (0.7976 ± 0.0896).

The ascorbic acid content increased from hepatopancreas and gonad due to endowing the organism with increased power of resistance. Increased level of ascorbic acid in hepatopancreas possibly induced mixed function oxidize system and this plays a role of biotransformation of toxic substances to non-toxic one [2&3].

CONCLUSION:

The data analyzed shows that the bivalves from upstream location has more ascorbic acid in mantle, hepatopancreas, gonad, gills and anterior adductor muscles as these body organs remains active during winter due to adequate O_2 content in the water as low temperature increases the oxygen contents of the water [10&12].

Also it has been noticed that micro organisms at this time may enrich the water.The

importance of leaf litter as food for aquatic organisms maybe providing energy source for microbial growth through the preference of animals for leaves that support micro organisms. Thus, the particulate organic matter is likely to get higher during winter to summer season [1&4]. Large quantity of organic matter resulting from terrestrial break down will find their way into the river system. These processes coupled with the data. The micro flora and water uniqueness are leading us to a point where the silt concern and production can be investigated to understand the rate kept by bivalve molluscs in deposition of biomolecules [5&7].

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