TFR
Trends in Fisheries Research
An International Peer-Reviewed Journal
www.sciencejournal.in

STUDIES ON BIOCHEMICAL CHANGES OF *LAMELLIDENS MARGINALIS* TO EXPOSURE OF (LYCOPODIUM) IN DIFFERENT TISSUE

Deshpande P. A.
Department of Zoology, Shri Muktanand College Gangapur, District: Aurangabad, (M.S.), (India).

ABSTRACT
The biochemical changes induced by heavy metals, lead, mercury and arsenic in the lipid content on the gastropod, *Bellamya bengalensis.* In addition, biochemical assay provide both qualitative and quantitative changes of tissue level in the bivalve. Sometime specific responses shown by, for example, fishes to certain kind of toxicants such as heavy metals pesticides are particularly useful in fishery management and resources protection. The present study consists of to study the biochemical changes of *Lamellidens marginalis* to exposure of (Lycopodium) in different tissue. In the present investigation the effect of homeopathic drugs on content of lipid in hepatopnacrease lipid content was high in summer and monsoon and low in winter.

KEY WORDS:

INTRODUCTION

Mussels are impacted by loss of fish hosts from fish kills or dams that prevent fish migration. On the other hand, in some parts of the country, it's a non-native mussel causing the most concern. In the Marathwada region, following programmes were conducted for awareness of public regarding pollution control and environment safety.
It is painfully clear that in many ways humans have had a significantly negative effect on aquatic fauna and earth's natural environment as a whole. Humans have the ability to not only understand the problems which has been created and what needs to be done to solve them, but also the capability of accomplishing these tasks. There are two basic venues of thought as to why we should protect mussels and our natural environment, one being fundamental reasoning, and the other being anthropocentric. The inorganic constituents of water have effect on the diversity of the bivalves, the texture of the sediment and the quantity of organic matter seemed to have played a role in their distribution and bivalves are able to survive even in the presence of sandy soil and lesser organic matter. Biochemical composition in bivalve has beenemployed as biomarker in several studies that aimed toevaluate the impact of anthropogenic activities in the environment. The change in metabolic rate has a consequence towards the change in biochemical composition; it is an indicator of stress of nature in the environment which specifically affects lipid with increased catabolism and decreased anabolism (Jagtap *et al.*, 2011).

The Bio-chemical constituents shown cyclic changes in reproducstion due to great amount of energy to be canalized to the gonad during reproduction (Muley, 1988). This is reflected in the deposition of depletion of the nutrients with the advent or departure of reproductive period (Lambert and Dehnel, 1974). Bivalves can be considered to be polysaccharide oriented (Martin, 1961; Martin and Godderd, 1966). Due to the commercial importance and edibility value of number of species of bivalves the aspect of energy metabolism has been reported by a number of workers but the relative influence of gonad development on the distribution in different body parts has been examined in only a few cases (Sastry., 1979., Gobbott, 1975., Bayne, 1976 and Dezwaan, 1983) have reviewed much of the work on bio-chemical changes in bivalves mollusca particularly with reference to the carbohydrates metabolism. Kulkarni *et.al.*, 2005 reported that the no significant change in total lipid content in foot for each exposure period was observed when compared with control and no significant changes in total lipid content in hepatopancrease also at each exposure period was control and same results was observed in gills. Hence in the present investigation to study evaluate the effect of homeopathic drugs on lipid content of *Lamellidiens marginalis.*

MATERIALS AND METHODS

After 24 hours of acclimatization animals were numbered in four sets, containing 10 animals first set is served as control and remaining 3 are experimental for respiration studied. and homoepathic drug (Lycopodium) were injected to the *Lamellidiens marginalis*. In control group animals were injected with w/w, while experimental in 2^{nd} , 3^{rd} & 4^{th} sets. They were injected 0.1, 0.2, & 0.5 ppm respectively.

Animal from control and experimented groups used for estimation of glycogen from different soft body parts. The body parts of 10 animals from each group were used and mantle gills, hepatopancreas. Every time samples were pooled from 5 different animals for each group to estimate lipid by using gravimetric method according to Bila and Dyer, 1959 and percentage differences were also calculated between control and experimental groups in every season. The

estimations were done on 1st day and 15th day of experiment. All the valves of every biochemical content of each tissue were subjected to statistical analysis for significant difference among the control and experimental groups.

RESULTS AND DISCUSSION

Table 1 Effect of Lycopodium on the Lipid content of *Lamellidiens marginalis* during Monsoon Season. (Bracket Values represent percentage differences)

On 1st					**On 15th**			
	Control	01.ppm	0.2ppm	0.5ppm	Control	0.1ppm	0.2ppm	0.5ppm
Mantle	9.40 ±0.8	10.22 ±0.25 (-8.7230) -1.694	9.1833 ±1.075 (2.3653) 0.2809	10.8400 ±1.0759 (-8.3191) -0.74095	10.8833 ±0.5943	10.8833 ±1.4972 (-8.824) -0.440	11.513 ±0.58711 (-5.9421) -1.325	10.84 ±1.103 (0.3978) 0.82627
Hepato Pancreas	8.40 ±0.9	7.28 ±0.700 (13.33) 7.701	6.24 ±0.93 (25.714) 2.8908	9.2 ±0.9300 (9.090) +1.3432	8.81 ±0.5458	7.9166 ±0.5697 (10.415) 2.02770	6.8433 ±1.50878 (22.587) 2.0270	9.15 ±0.97015 (-3.5062) -3.1369
Gonad	9.12 ±0.25	9.22 ±1.12 (-1.31868) -0.7150	8.28 ±0.76 (9.0198) 1.8185	10.2366 ±1.3510	10.85 ±0.5884 (-6.0606) 0.895227	10.2 ±0.98015 (0.29325) 0.04446	10.2033 ±0.9890056 (0.26099) 0.19605	10.2033 ±0.9890056 (0.26099) 0.19605
Gill	3.1 ±0.3	2.25 ±0.5339 (27.4193) 2.4039	2.30 ±0.53 (25.8064) 2.2752	3.10 ±0.15 (0) 0	3.5 ±0.3464	2.96 ±0.49 (-15.5862) 1.55862	3.24 ±0.4435 (7.4285) 0.80157	3.81 ±8.5714

Table 2. Effect of Lycopodium on the Lipid content of *Lamelliderns marginalis*, during Monsoon Season. (Bracket Values represent percentage differences)

On 1st					**On 15th**			
	Control	01.ppm	0.2ppm	0.5ppm	Control	0.1ppm	0.2ppm	0.5ppm
Mantle	10.22 ±0.4	12.2 ±0.22 (-19.375) -7.523	12.98 ±1.81 (-27.0058) -2.578	10.25 ±0.4 (-0.2935) -029939	10.6761 ±0.7001	12.85 ±0.5919 (-20.409) -4.195	12.40 ±10.7252 (-16.225) -2988	10.6633 ±0.87386 (0.11989) 82612
Hepato Pancreas	11.26 ±0.44	10.12 ±0.92 (13.574) 1.93671	12.40 ±0.5715 (6.1518) -273490	10.20 ±0.25311 (39.92) -20043	11.6966 ±0.4800	9.6366 ±0.3992 (17.61436) 5.78467	11.4566 ±0.922 (2.0242) 0.39490	10.89 ±03637 (-9.43531) -3.31346
Gonad	15.83 ±0.56	13.43 ±0.885 (-13.574) 3.3413	14.34 ±0.36 (6.1518) 2.4456	9.18 ±0.37 (39.9214)	14.60 ±0.4972	14.2533 ±0.96027 (2.39671) 1.033413	15.19 ±1.00 (-40117) 0.905600)	9.606 ±0.69787 (34.21624) -1.7730
Gill	4.2 ±0.4	3.1 ±0.3 (26.1906) -3.1141	3.2 ±0.7 (23.8095) -2.1483	3.4 ±0.9 (19.047) -0.2247	4.0 ±0.4	3.5 ±0.2 (12.5) 1.93648	3.5 ±0.3 (12.5) 1.93648	3.6 ±0.11 (10) -7.8087

TFR
Trends in Fisheries Research
An International Peer-Reviewed Journal
www.sciencejournal.in

Table 3. Effect of lycopodium on theLipid content of *Lamelliderns marginalis*, during Monsoon Season. (Bracket Values represent percentage differences)

On 1st					On 15th			
	Control	01.ppm	0.2ppm	0.5ppm	Control	0.1ppm	0.2ppm	0.5ppm
Mantle	13.10 ±1.05	12.45 ±1.245 (-31.5934) 5.82322	13.9433 ±1.6460 (23.3884) -2.578	14.45 ±1.38 (20.6044) -0.74095	13.4 ±1.132	14.1776 ±0.8630 (-57955) 0.5827	13.786 ±0.5398 (-2.88059) -2.9763	14.706 ±1.0250 (-974826) 0.82627
Hepato Pancreas	14.22 ±0.6	12.30 ±0.4 (13.502) 4.61167	13.45 ±0.7 (5.4149) -2.7376	14.25 ±1.75 (-0.2109) -3.66621	13.85 ±1.6139	12.49 ±0.9727 (9.8794) 0.98445	15.4166 ±0.7015 (-11.3119) 39434	13.1066 ±0.8457 (5.3675) 31394
Gonad	16.22 ±0.92	14.20 ±0.5 (12.45) 3.3413	15.20 ±0.47 (2.44560) 6.288	13.48 ±0.56 (-2.0430) 16.8917	16.21 ±1.01	15.32 ±0.5631 (4.2560) 1.0330	16.1860 ±1.0052 (0.14435) -0.90991	13.22 ±0.9951 (18.4454) -2.1322
Gill	2.22 ±0.42	3.00 ±0.2 (-35.135) 2.9041884	2.9 ±1.73 (-30.630) 2.148335	2.5 ±0.67 (-12.6/12) 0.227485	2.773 ±0.563	2.153 ±0.1418 (-85.719) -1.78922	2.93 ±0.8265 (-5.6617) 1.73204	1.9266 ±0.6621 (30.4002) 1.604832

The seasonal variation of lipid content in *Lamellidiens marginalis* are expressed in table No. 1,2 and 3.In the present investigation on 1st Day Lipid content in mantle ,in summer decreased in both the groups compared to control . In 0.1ppm it decreased by 8.72 % (10.22±-0.25) and in 0.2ppm significantly by 2.36 % (9.18±1.07), there was 8.31 % decreased in content of 0.5ppm compared to control group. In Monsoon also the content showed significant decreased trend in both the 0.1ppm & 0.2ppm. In 01ppm the content increased by 31.59 % (12.15±1.2) and in 0.2ppm by 23.38 % (13.94±1.64) compared to control. Thus there was 20.60 % increased in the content in 0.5ppm (14.45±1.38). In winter also the content significantly decreased in both 0.1ppm there was 19.37 % (12.2±0.2) and in 0.2ppm 27.00 % (12.98±1.81) decrease I content giving 29.3 % (10.25±0.4). On 15th day the Lipid content in mantle, in summer decreased in both the groups compared to control. In 0.1ppm it decreased (non-significant) by 8.82 (10.88 ±1.49) and in 0.2ppm significantly by 5.94% (11.51 ±0.58), there was 79.7 % decreased in content of 05ppm compared to control group (non-significant). In Monsoon also the content showed significant decreased trend in both the 0.1ppm & 0.2ppm. In 0.1ppm the content increased by 5.79 % (14.17 +8.86) and in 0.2ppm by 2.88 % (13.78 ±0.53) compared to control. Thus there was 9.74 % increase in the content in 0.5ppm (14.70 +1.02). In winter also the content significantly decreased in both 0.1ppm & 0.2ppm compared to control. In0.1ppm there was 20.40 % (12.85 ± 0.59) and in 0.2ppm 16.22 % (12.40 ±10.72) decrease in content giving 11.9 % (10.66 ±0.87).

In the present investigation the lipid content on 1st Day the Lipid content in Hepaopancreas, in summer decreased in both the groups compared to control. In 0.1ppm it decreased (non-significant) by 13.33 % (7.28±0.70) and in 0.2ppm significantly by 25.71 % (6.24±0.93) , there was 9.09 % decreased in content of 0.5ppm compared to control group (non-significant) . In Monsoon also the content showed significant decreased trend in both the 0.1ppm & 0.2ppm. In 0.1ppm the content increased by 13.50 % (12.30±0.4) and in 0.2ppy by 5.41 % (13.45±0.7) compared to control. Thus there was 21.09 % increased in the content in 0.5ppm (14.25±1.75). In winter also the content significantly decreased in both 0.1ppm & 0.2ppm compared to control. In 0.1ppm there was 13.57 % (10.12±0.92) and in 0.2ppm 6.15 A% (12.40±0.57) decrease in content giving 39.92 % (10.20±0.25). On 15th day the Lipid content in Hepatopancreas, in summer decreased in both the group compared to control. In 0.1ppm it decreased (non-significant)by 10.44 % (7.91±0.56) and in 0.2ppm significantly by 22.58 A% (6.84±1.50), there was 3.50 % decreased in content of 0.5ppm compared to control group (non-significant). In monsoon also the content showed significant decreased trend in both the 0.1ppm & 0.2ppm. In 00.1ppm the content increase by 9.87 %A (12.49±0.97) and in 0.2ppm by 11.31 % (15.41±0.70) compared to control. Thus there was 5.36 % increase in the content in 0.5ppm (13.10±0.84). In winter also the content significantly decreased in both 0.1ppm & 0.2ppm compared to control. In 0.1ppm there was 17.61 % (9.63±0.39) and in 0.2ppm 2.02 % (11.45±0.92) decrease in content giving 9.43 % (10.89±0.36) .

In the present study the lipid content on 1st day in Gonad, it is decreased in summer in both the groups compared to control. In 0.1ppm it decreased in both the groups compared to control. In 0.1ppm it decreased (non-significant) by 1.31 % (9.22±1.12) and in 0.2ppm significantly by 9.01 % (8.28±0.76) , there was 21.9 % decreased in content of 0.5ppm compared to control group. In monsoon also the content showed significant decreased trend in both the 0.ppm & 0.2ppm. in 0.1ppm the content increased by 12.45 % (14.20±0.5) and in 0.2 ppm by 2.44 % (15.20±0.47) compared to control. Thus there was 2.04% increase in content in 0.5ppm (13.48 +- 0.6). in winter also the content significantly decreased in both 0.1ppm & 0.2 ppm compared to control. In 0.1ppm there was 13.57 % (13.43 ±0.88) and in 0.2ppm 6.15 % (14.34± 0.36 decrease in content giving 39.92 % (9.18±0.37). On 15th day the Lipid content in Gonad, in summer decreased in both the groups compared to control. In 0.1ppm decreased (non-significant) by 6.06 % (10.85 ±0.58) and in 0.2ppm significantly by 2.93 % (10.2±0.98), there was 26.09 % decreased in content of 0.5ppm compared to control group (non-significant). In monsoon also the content showed significant decreased trend in both the 0.1ppm & 0.2ppm. In 0.1ppm content increased by 4.25 % (15.32±0.56) and in 0.2ppm content increased by 4.25 % (15.32±0.56) and in 0.2ppm by 1.44 % (16.18±1.00) compared to control. Thus there was 18.44 % increase in the content in 0.5ppm (13.22±0.99). In winter also the content significantly decreased in both 0.1ppm and 0.2ppm compared to control. In 0.1ppm there was 2.39 %(14.25 ±0.96) and in 0.2ppm 40.11 % (15.19 ±1.00) decrease in content giving 34.21 % ± 0.69).

On 1st Day the Lipid content in Gill, in summer decreased in both the groups compared to control. In 0.1ppm it decreased (non-significant) by 27.41 %(2.25±0.53) and in 0.2ppm significantly by 25.80 % (2.30±0.53) , there was 0 % decreased in content of 0.5ppm compared to control group(non-significant). In Monsoon also the content showed significant decreased trend in both the 0.1ppm & 0.2ppm. In 0.1ppm by 30.63 % (2.9±1.73) compared to control. Thus there was 12.60 % increase in the content in 0.5ppm (205±0.67). In winter also the content significantly decreased in both 0.1ppm & 0.2ppm compared to control. In 0.1ppm there was 26.19 % (3.1 ±0.3) and in 0.2ppm 23.80 % (3.2±0.7) decrease in content giving 19.01 % (3.4 +-0.9). On 15th day the Lipid content in Gill, in summer decreased in both the groups compared to control. In0.1ppm it decreased (non-significant) by 15.58 % (2.96±0.49) and in 0.2ppm significantly by 7.42 %(3.24±0.44), there was 10.5 % decreased in content of 0.5ppm compared to control groups. In monsoon also the content showed significant decreased trend in both the 0.1ppm & 0.2ppm. In 0.1ppm content increased by 85.71% (2.15±0.14) and in 0.2 ppm 5.66 % (2.93±0.82) compared to control. Thus there was 30.40 % increase in the content significantly decreased in both 0.1ppm & 0.2ppm compared to control. In 0.1ppm there was 12.5 %(3.5±0.29) and in 0.2ppm 12.5 % (3.5±0.2) decrease in content giving 10.0 % (3.0±0.11). In the present investigation the effect of homeopathic drugs on content of lipid in hepatopnacrease lipid content was high in summer and monsoon and low in winter. Similar observation were made by authors Sastry, 1970., Sastry and Blake,1971.; Kulkarni, *et.al.*, 2005; Mane and Talikhedkar 1976.

CONCLUSION

In the present investigation the bio-chemical analysis were made for lipid content in different soft body parts like from mantle, hepatopancreases, gonad and gill due to the effect of lycopodium is occur in lipid in winter increases in caused due to decreased during summer than monsoon and winter.

ACKNOWLEDGEMENT

Author is thankful to the Principal, Shri Muktanand College Gangapur, District: Aurangabad, (M.S.), (India), of the college for support and facilities.

REFERENCES

Bayne B.L. (1976). Marine Musels, their ecology and physiology, Cambridge University Press, Cambridge, London, New York, Melaborne, 1 – 495.

Blig E.G. and Dyar W.J. (1959). A rapid method of lipid extraction and purification. *Can. J. Biochem. Physiol*. 37: 911-927.

Dezween A.(1983). Carbohydrate catabolism in bivalves. In : The Mollusca ″(Ed. Wilbur, K.M.), Academic Press, New York, London, Vol., 1 : 137-175.

Gabbott P.A. (1976). Energy metabolism. In "Marine mussels" (Ed. Bayne, B.D.), Cambridge University Press, London, New York.

Kulkarni A.N., Kamble, S.N. and Keshvan R. (2005). Studies on impact of hidden on bio-chemical constituents in the freshwater mussel, *Carrianus. J. Aqua. Biol.* 20 (1): 101-104.

Lambert P. and Dahnel P.A. (1974). Seasonal variations in biochemical composition during the reproductive cycle of the intertidal gastropod, *Thais lamellosa* (Gastropoda, Prosobranchaia). *Can. J. Zool., 52 : 305-318.*
Mane U.H. (1975). Oxygen consumption of the clam, *Katelysia opima* in relation to environmental conditions. *Broteria.* 60(1-2) : 33-38.
Mane U.H. and Talikhedkar P.M. (1976). Respiration of the wedge clam, *Donax cuneatus. Indian J. Mar Sci.*, 5 : 243-246.
Martin A. and Goddard C. (1966). Carbohydrate metabolism in physiology of mollusca (Ed. By Wilbur K. and Young c) Academic press, New York, 2 : 275-308.
Martin A. (1961). The carbohydrate metabolism in Hetero thermic animals (Ed. By martin). University of Washington *Prerss Scatle.* 35-64.
Muley S.D. (1988). Reproductive physiology of Lamellibranch molluscs from Maharashtra state. Ph.D. Thesis, Marathwada University, Aurangabad. 1 - 292.
Sastry A.N. (1979). Petecypoda (excluding ostreidea) : In : Reproduction of marine invertebrates (Eds. Giese & A.C. and Pearse, J. S.), Academic Press, New York, Vol. 5 : 113-1295.

