



# Seasonal Effect of Homoeopathic Drugs on Glycogen Content of Different Tissues in LAMELLIDENS MARGINALIS form Manjra River Near Kallab Dist.-Osmanabad

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## Research Paper—Zoology

**Introduction:-**Gabbolt (1975, 1976), Bayne (1976 a) and DaZwaan (1983) have reviewed much of the work on biochemical changes, Particularly the carbohydrates. A review of lipids in marine invertebrates including bivalves is given by Giese (1966), Lawrence (1976) and Voogt (1983). Seasonal variations in the biochemical composition of *Mytilus edulis* in British waters have been reported by Daniell (1920, 1921, 1922), Williams (1969) and Bayne and Thompson (1970). Ansell et.al (1964) determined seasonal changes in biochemical composition of adductor muscle, mantle, siphon, visceral mass (gonad), digestive gland and foot in *Mercenaria mercenaria*.

**Materials & Methods:-**The fresh water bivalve molluscs *Lamellidens marginalis* 65-70 mm in size collected from Manjra river 2km away from Kallam in Osmanabad District Maharashtra. All the collected animals were brought in to laboratory and washed to remove fouling biomass & acclimatize. 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 homoeopathic drug (Lycopodium) were injected to the *Lamellidens marginalis*. In control group animals were injected with w/w, while experimental in 2, 3 & 4th sets. They were injected 0.1, 0.2, & 0.5 ppm respectively. The glycogen content of *Lamellidens marginalis* due to injection of Lycopodium was studied on 1<sup>st</sup>, and 15 days during the experiment period. Animal from control and experimented groups also sacrificed for estimation of glycogen

from different soft body parts. The body parts of 10 animals from each group were used as mantle, gills, hepatopancreas. The glycogen content of different tissues of *L. Marginalis* was estimated by using Anthrone reagent as given by Dezwann and Zandee (1972).

**Results & Discussion-**The seasonal variations of content of glycogen in different tissues in *L. Marginalis* are represented in table No. 1, 2 and 3. In the present investigation in mantle the glycogen content was high in winter (1.72 + 0.14) and low in summer (10.40 + 0.5), but in Monsoon it was high (16.34 + 0.89). The percentage variation in the content between summer and monsoon was 73.58, whereas between monsoon and winter it was 11.28 and between winter and summer it is 7.30 in 0.2 ppm. The percentage variation between summer and monsoon was 2.56% whereas between monsoon and winter it was 21.48%. In 0.5 ppm the content varied from 8.7+0.945 to 12.92+0.55 in summer and monsoon but in winter it was low (10.22+0.301). The percentage variation between summer and monsoon was 18.39% but between monsoon and winter it was 36.90% and between winter and summer it was 22.45%.

On 15<sup>th</sup> Day The control group compare to 0.1 ppm, the content was high in monsoon (17.2671+0.1208) and high in winter (18.4918+.6236), In summer it was (10.28+1.0393). The percentage variation between summer and monsoon 45.52%, whereas between monsoon and winter it was 40.16% and between winter and summer it was 14.01%. In 0.2 ppm the content was high in monsoon

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(13.47+0.31) and almost equal in winter season (14.0214+0.82) & in summer season it was (10.85+0.58). The percentage variation between summer and monsoon was 19.94%, whereas between monsoon and winter it was 30.18% , and between winter and summer it was 25.95% . On 1<sup>st</sup> Day in Hepatopancreas glycogen in 0.1 ppm content was high in monsoon (19.22+0.44) and low in summer (9.20+0.50) , but in winter it was (10.12+0.44) The percentage variations in the content between summer and monsoon was 3.67%, whereas between monsoon and winter it was 9.64% and between winter and summer it was 17.85% . In 0.2ppm the content was high in monsoon (18.2+0.55), and low in winter content was high monsoon (18.2+0.55), and low in winter (8.10+0.9). In summer it was (9.46+0.88). The percentage variation between summer and monsoon was 8.72%, whereas between monsoon and winter it was 27.48% and between winter and summer it was 15.53%. In 0.5 ppm the content varied from (18.22+0.87) and (8.42+0.9) in monsoon and summer but in winter it was low (6.26+0.74). The percentage variation between summer and monsoon was 7.79% but between monsoon and winter it was 44.10% and between winter and summer it was 24.82%.

On 15<sup>th</sup> Day in Hepatopancreas glycogen in 0.1 ppm content was high in monsoon (20.07+0.21) and low in summer (9.49+0.53), but in winter it was (9.53+0.59). The percentage variations in the content between summer and monsoon was 8.34%, whereas between monsoon and winter it was 21.19% and between winter and summer it was 20.02% .In 0.2ppm the content was high in monsoon (19.075+0.16), and low in winter (9.10+0.10). In summer it was (9.23+1.11). The percentage variation between summers and monsoon was 2.97%, whereas between monsoon and winter it was 24.76% and between winter and summer it was 22.10%. In 0.5 ppm the content varied from (19.75 + 0.50) and 9.51 + 0.57) in monsoon and summer but in winter it was low (5.80+0.46). On 1<sup>st</sup> Day in Gonad glycogen in 0.1 ppm content was high in summer (9.42+0.50) and low in monsoon (6.22+0.28), but in winter it was (14.2+0.23). The percentage variations in the content between summer and monsoon were 22.88%, whereas between monsoon and winter it was 21.97% and between winter and summer it was 17.85%. In 0.2 ppm the content was high in summer (10.22+0.43), and low in monsoon (7.20+0.405). In winter it was (12.12+0.47). The percentage variation between summer and monsoon was 10.44%, whereas between monsoon and winter it was 33.40% and between winter and summer it was 8.91% .In 0.5 ppm the content varied from (6.24+0.82) and (8.44+0.73) in monsoon and summer but in winter it was high (10.24+0.66). The percentage variation between summer and monsoon was 22.38% but between monsoon and winter it was 43.73% and between winter and summer it was 24.77%. On 15<sup>th</sup> Day I Gonad glycogen in 0.1 ppm

content was high in winter (15.094+0.86) and low in monsoon (8.85+0.90), but in summer it was (11.10+0.83). The percentage variations in the content between summer and monsoon was 1.83% , whereas between monsoon and winter it was 17.03% and between winter and summer it was 11.32% . In 0.2 ppm the content was high in winter (11.46+0.48), and low in monsoon (9.53+0.58). In summer it was (11.85+0.58). The percentage variation between summer and monsoon was 13.45% , whereas between monsoon and winter it was 37.03% and between winter and summer it was 5.34% . In 0.5ppm the content varied from (6.54+0.60) and (9.49+0.62) in monsoon and summer but in winter it was low (8.19+0.61).

The percentage variation between summer and monsoon was 22.15 % but between monsoon and winter it was 51.10 % and between winter and summer it was 24.27 % . On 1<sup>st</sup> Day in Gill glycogen in 0.1 ppm content was high in winter (6.1+0.12) and low in monsoon (5.12+0.19), but in summer it was ( 5.45+0.67). In summer it was (4.9+1.02) .The percentage variation between summer and monsoon was 4.85 % , whereas between monsoon and winter it was 58.23 % and between winter and summer it was 20.96% . In 0.5 ppm the content varied from (4.32+0.79) and (3.90+1.13) in monsoon and summer but in winter it was high (6.2+0.96) . The percentage variation between summer and monsoon was 4.8% but between monsoon and winter it was monsoon and winter it was 21.09 % and between winter and summer it was 37.09 % . On 15<sup>th</sup> Day in Gill glycogen in 0.1 ppm content was high in winter (6.78+0.49) and low in monsoon (5.20+1.01), but in summer it was (5.84+0.58). The percentage variation between summer and monsoon was 29.9 % , whereas between monsoon and winter it was 75.82 % and between winter and summer it was 7.30 % . In 0.5ppm the content varied from (3.84+0.58) and (4.59+1.24) in monsoon and summer but in winter it was high (6.24+-1.23) .

**Conclusion :-**The seasonal cycle of storage and utilization of glycogen reserve in *Lamellidens marginalis* is closely linked to the annual reproductive cycle. Abundant food is available in monsoon and there is a marked increase in glycogen content in mantle, foot, gonad and hepatopancreas. In summer and monsoon the depositions of tissues like hepatopancreas store more glycogen than in winter. In the present investigation bio-chemical analysis were made for glycogen in different soft body parts like mantle, hepatopancreas, gonad, gills and it shows that the effect of *Lycopodium* is occur in glycogen. In the winter season rise is caused due to effects of homeopathic drug to desiccation during summer than in monsoon and winter.

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**Table No. 1. Effect of Lycopodium on the Glycogen content of Lamellidens marginalis, during Winter season. (Bracket Values represent percentage differences)**

				On 15 <sup>th</sup> day			
Control	0.1ppm	0.2ppm	0.5ppm	Control	0.1ppm	0.2ppm	0.5ppm
16.2 ±0.22 (-5.679)	17.12 ±0.14 (-0.11285)	12.72 ±1.2 (-21.4814)	10.22 ±0.301 (36.9012)	17.770 ±1.0480	18.4918 ±0.6236 (-40.16)	14.0214 ±0.82164 (21.12)	8.8549 ±0.5840 (30.18)
11.2 ±0.45	10.12±0.44 (-9.64285)	8.10±0.09 (27.4814)	6.26±0.74 (44.107)	12.0987 ±0.8558	9.533836 ±0.5918 (21.1999)	9.1022 ±0.10045 (24.7671)	5.8019 ±0.4621 (52.045)
18.2 ±0.285	14.2 ±0.23 (21.9797)	12.12 ±0.47 (33.4068)	10.24 ±0.66 (43.73)	18.2025 ±0.9798	15.09462 ±0.86639 (17.030)	11.4610 ±0.4850 (37.0361)	8.190 ±0.6180 (51.105)
5.12 ±0.20	6.1±0.12 (-19.1406)	8.1±0.16 (-18.2313)	6.2±0.96 (-21.093)	5.01446 ±0.7552	6.78493 ±0.4948 (-35.3033)	8.8166 ±0.6994 (-75.823)	6.24258 ±1.238 (-24.491)

**Table No. 2 Effect of Lycopodium on the Glycogen content of Lamellidens marginalis, during monsoon season. (Bracket Values represent percentage differences)**

				On 15 <sup>th</sup> day			
Control	0.1ppm	0.2ppm	0.5ppm	Control	0.1ppm	0.2ppm	0.5ppm
15.22 ± 0.23	16.34 ± 0.89 (-73.587)	14.22 ± 0.49 (-2.56)	12.92 ± 0.55 (18.396)	16.5152 ± 0.5777	12.2671 ±0.1208 (-4.5527)	13.47 ± 1.3188 (18.415)	13.221 ± 0.6789 (19.442)
15.22 ±0.23	16.34 ±0.89 (-73.587)	14.42 ±0.49 (2.56)	12.92 ±0.55 (18.396)	16.5152 ±0.5777	17.2671 ±0.120 (-45527)	13.47 ±1.3188 (18.415)	13.221 ±0.6789 (19.942)
8.04	6.22 ±0.28 (22.885)	7.20 ±0.405 (10.447)	6.24 ±0.82 (22.380)	8.4040 ±1.0765	8.250 ±0.9071 (1.8324)	9.535 ±0.5861 (-13.457)	6.5425 ±0.6079 (22.15016)
4.12	5.12 ±0.19 (-24.2718)	4.12 ±0.6821 (-4.85439)	4.32 ±0.79 (-4.854)	4.8889 ±0.4986	5.2002 ±1.01649 (6.3674)	4.5317 ±0.5891 (7.3063)	4.5992 ±12.44 (5.925)

**Table No.3 .Effect of Lycopodium on the Glycogen content of Lamellidens marginalis, during, summer season. (Bracket Values represent percentage differences)**

	On 1 <sup>st</sup> day				On 15 <sup>th</sup> day			
	Control	0.1ppm	0.2ppm	0.5ppm	Control	0.1ppm	0.2ppm	0.5ppm
Mantle	11.22 ±0.35	1040 ±0.5 (7.3083)	9.2 ±0.4 (18.00)	8.7 ±0.945 (22.459)	11.95 ±0.1877	10.28 ±1.093 (14.014)	10.85 ±0.5888 (9.2385)	8.852 ±0.554 (25.958)
Hepatopancreas	11.2 ±0.24	9.20 ±0.5062 (17.857)	9.46 ±0.88 (15.535)	8.42 ±0.9(24.821)	11.87 ±0.5971	9.499 ±0.5355 (-20.021)	9.2325 ±1.11 (22.1025)	9.5119 ±0.5718 (19.918)
Gonad	11.22 ±0.82	9.42 ±0.5062 (17.857)	10.22 ±0.43 (8.912)	8.44 ±0.734 (24.777)	12.2122 ±0.5619	11.1098 ±0.8389 (11.324)	11.8596 ±0.5872 (5.344)	9.4975 ±0.6257 (24.279)
Gill	6.20 ±1.00	5.45 ±0.67 (1.20967)	4.9 ±1.02 (209644)	3.90 ±1.13 (37.096)	7.1943 ±1.0185	5.8418 ±0.58025 (18.79)	5.1008 ±0.28759 (29.0996)	3.8416 ±0.5806 (46.60)

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