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SEASONAL EFFECTS OF HOMEOPATHIC DRUG (LYCOPodium) ON OXYGEN CONSUMPTION OF LAMELLIDENS MARGINALIS



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Introduction : As relation to the molluscan *Lamellidens marginalis* are economically important as they are used as food source of man and it fulfills the human need of food to some extent in our country. But since last decade. The natural environment is being distributed due to the pollution. The increasing population density, faster urbanization and industrial growth has increased the complexity of population and led to deterioration of environment (Salunk *et.al* 1982).

The fresh water bivalves *L. Marginalis* was selected for experimentation. It is abundantly available in Manjara river at Kallan. Dist. Osmanabad. The animals were collected and brought to the laboratory to acclimatize them with Laboratory. Conditions. The total Oxygen consumption and the rate of Oxygen in consumption were studied by modified Wrinkler's method (Welsh & Smith 1959). The present investigation were subjected to effect of Lycopodium homeopathic drug on *L.marginalis* at 0.1 ppm, & 0.5 pp in 1st, 5th, 10th & 15th day of summer, winter & Monsoon seasons was studied. Respiration in Indian marine bivalves in relation to changes in environmental conditions has been worked out by few investigators. The contributions are those of Nagabhushanan (1960) on *Martesia striata*, Mane & Talikhedkar (1976) on *D. cuneatus*, Rao and Kutty (1965) on *D.Faba*. on Fresh water bivalves *indonaia caeruleus*, Vedpathak (1989). In the respect several investigators have given em-

phasis to the relation between respiration and size of the animal, level of ratio, effect of temperature and salinity, exposure to air, Oxygen tension and seasonal variations. So in the present investigation the seasonal effect of homeopathic drug (Lycopodium) on oxygen consumption of *L.marginalis* was studied.

Materials & Methods : The fresh water bivalve molluscan *Lamellidans marginalis* 65-70 mm in size collected from Manjara river 2km away from Kallan 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 homeopathic drug (Lycopodium) were injected to the *L.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 oxygen consumption of *L.marginalis* due to injection of Lycopodium was studied on 1st, 5th, 10th and 15th days during the experiment period. The oxygen consumption was studied standard methods suggested by APHA (1998) and IAAB (1998).

Results & Discussion : The effects of Homeopathic drugs on the oxygen consumption of *L.marginalis* are represented in table no. 1. The change in the rate of respiration in the control group of animal

in different season is given. The test value represent rate of respiration in term of ml/g/h/I. In summer rate respiration decreased in fifth Day (from 0.1320 \pm 0.0210 to 0.1938 \pm 0.006 & than onwards it almost increased. The experimental period from 0.1342 \pm 0.0060 to 0.1412 \pm 0.0040). The percentage increased, Thus there was significant difference in respiration on 1st Day to 5th Day & 10th Day. In monsoon the rate of respiration did not different on 5th Day, 10th Day. The total percentage variation the rate as significantly increased. In winter season was considerable variation rate of respiration on 1st Day, 5th Day, 10th Day & 15th Day, Thus the rate of respiration shows significant increasing trend. When the animal was injecting Lycopodium there was considerable variation in the rate of respiration in given season at any given time compare to respective controls. In summer the rate of respiration increased (P<0.01) on 10th day shows similar pattern as on 5th Day it showing increasing percentage. In 0.2 it decreased -12.00 %. In summer the rate of respiration increased (P<0.01) (-12.00%) In control group whereas it is different on 5th Day. It shows decreasing -45.35 % (P<0.01) the control group shows similar pattern on 1st Day it decreased 45.35 % (non-significant) on 15th Day both group increase in respiration (P<0.01) when compare to control group -35.92 % (P<0.01), there was significant increasing in 0.2 ppm. On 5th Day (7.069 %) value decreased, but on 10th day it increased.

Thus it can be seen that the experimental group of the rate of respiration increased to compare to the control group followed similar pattern till 15th Day, but it decreased in 0.5 ppm in the experimental group also the rate increased in 0.1 ppm & 0.2 ppm it compare to control group but it decreased later it decreases was more compare 0.5 ppm. Thus the experimental group shows increase in respiration till 0.1 ppm to 0.2 ppm on 5th Day, but it decreased 15th day. This trend of respiration is seen in summer. In winter on 1st day in the control group of rate of respiration is increased by 15.901 % (P<0.01) and also in the 0.2 ppm it is also increased to 18.939 % (P<0.01) non significant & in 0.5 ppm it decreases to 46.06 % (P<0.01) On the Day the rate in the 0.1 ppm group it increased by 70.89 % (P<0.01), whereas in 0.2 ppm it increases to 92.87 % (P<0.01), also in 0.5 ppm it decrease up to 3.81 % (P<0.01) (non-significant). On 10th day the control

group is compared to 0.1 ppm the rate is increased by 0.3421 (15.19 %) (P<0.01) and it also increases in 0.2 ppm to 15.566 % (P<0.01), whereas it decreased by 57.97 % (P<0.01) (non-significant). On 15th Day the control group is compare to 0.1 ppm it increased by 13.61 % (P<0.01) (non-significant) in 0.2 ppm it increased non-significantly by 15.10 % (P<0.01) in 0.5 ppm it decreased to 62.60% (P<0.01). In the present investigation the rate of respiration is considerable affected through different season. The studies carried out on adult *Lamelidens marginalis* revealed that the rate of respiration is considerable affected through different seasons. When the animal experience different environmental parameters and probably by the starvation effect in the laboratory condition. In this dual effect it is seen that through the starvation effect might have occurred in monsoon and winter.

There was little variation in the rate respiration throughout the experimental period. However, in winter the rate mostly founded to be in increasing pattern over experimental period. This suggests that starvation effect might have taken place at the time gonads are fully mature and spawning takes place. Future it can be noted that prevailing low temperature in winter, compared to summer and monsoon, did not result in the decrease in the rate of respiration. It has been observed that in content even through the increasing total carbonate might act as a buffering system (as stated earlier). In monsoon and winter temperature being moderate and plenty of oxygen availability along with the suitable particles for feeding revealed almost the similar respiratory rates. Temperature variation from summer to monsoon and monsoon to winter is almost in the narrow range compare to that in winter to summer. The high oxygen content and availability of food material. Comparatively during monsoon to winter resulted no change in oxygen consumption of *Lamelidens marginalis* through the experimental period. Even when animals were kept for 15 days in laboratory conditions without food. Prevailing low temperature in winter compare to other seasons did not result in decreasing the rate of oxygen consumption as stated by many workers. (Mane 1973), Lohgaonkar, (1976) In fact, the decreases in expected result at the time of prevailing low environmental temperature, but the field animals maintain ac-

cording to their physiological needs it is reported in marine bivalves that the rate of respiration is also affected with the animals reproductive status (Gabbot and Bayne, 1973) The relationship between gametogenesis body reserves and routine rate of oxygen consumption in bivalves has been documented by Bayne and Thomson (1970), Widdows and Bayne, (1971) and Bayne (1973).

Conclusion : In the present study the effect of homeopathic drugs on oxygen consumption to *L. Marginalis* shows that the rate of respiration was measured in terms mg/lit/hr. on 1st day, 5th Day, 10th Day,

15ths Day. The rate of respiration was measured during experiment period the rate of respiration from control group showed increased the rate during summer monsoon and winter, all the seasons the rate tended to in 0.1 ppm and 0.2 ppm increase in the respiration in all the seasons. 0.1, 0.2, ppm con of homeopathic drugs (Lycopodium) caused increased the rate of respiration & it decreased gradually at higher concentration (0.5 ppm Lycopodium).

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Table No. 1 Effect of homeopathic drugs on Oxygen consumption of *Lamilidens marginalis* on different concentration and seasons.

SEASON CONC.	EXPOSURE PERIOD	CONTROL	0.1 ppm	0.2 ppm	0.5 ppm
SUMMER	1 st	0.1320 ± 0.0210	0.2912 ± 0.0022 (-13.59)	0.3120 ± 0.0080 (-13.873)	0.1732 ± 0.009 (-4.3421)
	5 th	0.1938 ± 0.0060	0.2817 ± 0.0100 (-45.356)	0.2983 ± 0.00066 (-53.3917)	0.1801 ± 0.0075 (-2.3996)
	10 th	0.1342 ± 0.0060	0.2722 ± 0.0072 (-25.5030)	0.3145 ± 0.0055 (-134.35)	0.1823 ± 0.02138 (-08.0863)
	15 th	0.1412 ± 0.0040	0.2785 ± 0.0095 (-23.0709)	0.2940 ± 0.0055 (-36.7022)	0.1430 ± 0.011 (-2.3893)
MONSOON	1 st	0.1410 ± 0.0090	0.3212 ± 0.0040 (-37.6904)	0.3124 ± 0.0079 (-24.7901)	0.1215 ± 0.0095 (1.721)
	5 th	0.2442 ± 0.00110	0.3602 ± 0.0090 (-13.1615)	0.3251 ± 0.0080 (-9.2832)	0.1287 ± 0.0105 (-5.04872)
	10 th	0.2412 ± 0.0094	0.3712 ± 0.0014 (-13.1615)	0.3510 ± 0.0020 (-19.788)	0.1323 ± 0.0038 (-14.3313)
	15 th	0.2522 ± 0.0110	0.3602 ± 0.0090 (-13.1615)	0.3251 ± 0.0080 (-9.2832)	0.1287 ± 0.0105 (-5.0487)
WINTER	1 st	0.2438 ± 0.0041	0.3419 ± 0.0041 (-18.533)	0.3820 ± 0.0101 (-18.399)	0.1926 ± 0.0051 (-6.3717)
	5 th	0.2340 ± 0.0125	0.3312 ± 0.0098 (-10.5992)	0.3738 ± 0.0772 (-3.09627)	0.2012 ± 0.0054 (0.9481)
	10 th	0.2234 ± 0.0122	0.3421 ± 0.0093 (-13.4020)	0.3431 ± 0.0033 (-16.4044)	0.2296 ± 0.0102 (-0.1756)
	15 th	0.2132 ± 0.092	0.3334 ± 0.0038 (-26.246)	0.3545 ± 0.0050 (-23.3731)	0.2296 ± 0.193 (-3.58002)

All values are expressed in ml/ g/lit/hour.

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