IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 3, March 2024

Environmental Impact of Variations in the Oocytes Development of Freshwater Bivavlve, Lammelidens Marginalis During Different Seasons from Kurla Dam, Mahad Taluka (Raigad M.S.).

Dr. Bhosale P.A.
Associate Prof., Department of Zoology.
Sundarrao More Arts, Commerce, and Science (Sr.) College, Poladpur, Raigad, M.S., India
bhosale_popat@rediffmail.com.

Abstract: *Bivalve was found in Indian waters the reproductive cycle and gonad development of the freshwater bivalve Lammelidens Marginalis was studied over a period of 24 months (January 2018- to December 2018). At the regular reproduction molluscs in india. Especially in Maharashtra state, in diocious Lammelidens Marginalis the gonads are common structure in other species of phylum molluscs. Those species are collected from kurla dam, Tal- Mahad Dist –Raigad. Due to the highest oocyte diameter are shown by the winter season and then after slightly significant decrease on diameter in monsoon and then lowest diameter are observed in summer season. As per the variations of Previtelogenic and Vitellogenic oocytes in different seasons. Such as Winter season on Prewinter the previtellogenic oocytes diameter 57.227±3.136 to 63.486±5.170&Vitellogenicoocytes diameter 60.963±2.136 to 63.486±5.170and Postwinter on a Previtellogenic oocytes diameter 61.418±3.259 to 75.223±6.480 and Vitelogenic oocytes diameter 115.428±5.524 to 125.568±4.490 then Monsoon season on the Premonsoon Previtellogenic oocytes diameter 47.117± 2.136 to 33.386±4.170&Vitellogenicoocytes diameter 51.763 ± 2.155 to 58.456±5.570 and Postmonsoon Previtellogenic oocytes diameter 51.412±3.249 to 655.217±5.458, Vitelogenic oocytes diameter 98.428±4.524 to 105.468±3.470 and Summer Presummer season, thatsPrevitellogenic oocytes diameter 44.325±2.236 to 50.465±5.160 & Vitellogenicoocytes diameter 48.763±2.178to51.445±4.265 and Postsummer Previtellogenic oocytes diameter 47.318±3.563to63.183±5.4520 and Vitelogenic oocytes diameter 92.428±5.248 to90.568±3.458 diameters of oocytes are observed. (All values are in µm.).*

Keywords: Lammelidens Marginalis**,** Oocytes, Variations of seasons

I. INTRODUCTION

Biochemical composition of aquatic organisms and their different biochemical processes are useful in determining the mechanism of toxicity and severity of various toxicants. Naturally there is a protective mechanism of the body to resist and combat the toxic effect of the pollutant like heavy metals and their derivatives. Besides it is observed that some biochemical alterations occurring in the body give alarming first indicatioin of stress condition .Similarly there are some competitive inhibitors of the normal Biological molecules which are readily mobilized and thus make the syntesised biomolecules inactive. However they have many serious side effects which need to be studied with some biological systems. (Clark et al 2001).

In diocious *Lammelidens Marginalisthe*gonads commonly occur among the intestinal loops in the base of the foot. Several environmental factors such as temperature, lunar periodicity, depth, mechanical factor light intensity, genetic & hormonal control. The maturation of gonads is also dependent on the richness of food supply which depends on climate. Generally the reproductive cycle of bivalve Molluscan population includes activation, growth and gametogenesis. Many species of bivalve molluscs found in Indians water which can sustain regular growth of development particularly in Maharashtra state several species of commercially , edible and important species both marine and freshwater bivalve

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 3, March 2024

plays and imp role as bio- indicator to detect various environmental fluctuation . Due to the highest oocyte diameter are shown by the winterseason and then after slightly significant decrease on diameter in monsoon and then lowest diameter are observed in summer season. (Mark Harrmann, josee.f. & jurgen Laudens (2009)) Freshwater bivalve molluscs species is *Lamellidens Marginalis* as a filter feeder animal easy food engulfing the food in an aquatic mode of life due to feeding habitat is the role of transformation of energy in aquatic food chains.

II. MATERIALS AND METHOODS

The adult bivalve molluscs, *Lamellidens Marginalis,*with specific measurement (small, medium & large) were collected from fixed location of down steam kurla dam at mahad 125 km away from Raigad . First they are made acclimatized to laboratory condition and afterward they are washed. The water in the aquarium was changed regularly water after every 24 hours. After the acclimatization bivalves 30-35 mm shell widths and 50-60 mm length were freshly collected between various different seasons. Immediately after bringing to the laboratory the shells of the animals were clean with freshwater in order to remove the algal biomass and mud. The animals kept carefully and gonad flesh of animals was fixed in carnoys fixative for 24 hours. The gonad tissue were then removed and processed for preparation of paraffin blocks .Dehydration of gonad was done through serial grades of ethyl alcohol while xylene was replaced by toluene during the process. The tissue were embedded in paraffin was at 58^0C. The section of gonad was cut out 5-6µm thickness. The gonads were stained Mallory's tripple stain. A the section are observed under the binocular microscope and wherever necessary measurement were made in oocytes on binocular lense are used 50 mm measurement in microscope.

The adult animals with 62-65 mm shell length and 80-82 mm shell length were freshly collected between 3.00 – 4.00 p.m. on every full noon days of during monsoon season. Immediately after bringing to the laboratory the shells of the animals were brushed and washed with freshwater in order to remove the algal biomass, mud and other waste materials. The animals were soaked carefully and flesh of animals was fixed in Bouin's fixative for 24 hrs. The gonad tissue were then removed and processed for preparation of paraffin blocks. Dehydration of gonad was done through serial grades of ethyl alcohol while xylene was replaced by toluene during the process. The tissues were embedded in paraffin was at 58^0C. The sections of gonad were cut out 6 – 7 µm thickness. The gonads were stained with Mallory's Triple stain. All the sections were observed under the research binocular microscope and wherever necessary, measurements were made before microphotography.

Discussion :

Metals are known to decrease the energy level interfering the metabolic pathway (Torreblanca et.al., 1992). Pollutants comprising heavy metals may alter cellular functions, ultimately affecting physiological and biochemical mechanisms of animals (Radhakrishnan et.al.1991).

Seasonal variation is oocytes have been reported by many workers. Gabbot and Bayne (1973) reproduction and developing oocytes of bivalves depends upon the neuroendocrine control of bivalve which is the so many impacts of climatic factors are responsible for the oocytes maturation and development. Nagbhushnam .R. and Mane U.H.(1975). Though considerable several aspects of exogenous and endogenous regulation in reproduction and energy metabolism in bivalve molluscs, bivalves are hermaphrodite animals posses a pair of gonads located near to the digestive gland the maturation of gonad is depends upon the high nutritional content of food supply and better climatic factor responsible to the gonad development.Sastry A.N.(1970). Spawning, fertilization, development and growth these phases functioning continuous in co-ordination with seasonal environmental change.

III. RESULTS

Histological section of gonads and its measurement of the developing oocytes from female gonads of *Corbicula Striatella* due to different pre and post seasons are given in table no.1 showing the oocytes diameter as in a winter season on the prewinter previtellogenic 57.227±3.136 to 63.486±5.170&Vitellogenic 60.963±2.136 to 63.486±5.170and postwinterprevitellogenic61.418±3.259 to 75.223±6.480 and vitelogenic115.428±5.524 to 125.568±4.490 then Monsoon season on premonsoonprevitellogenic 47.117± 2.136 to 33.386±4.170 &Vitellogenic51.763 ± 2.155 to 58.456±5.570 and postmonsoonprevitellogenic51.442±3.249 to 655.217±5.458,

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 3, March 2024

vitelogenic98.428±4.524 to 105.468±3.470and summer season on the presummer previtellogenic44.325±2.236 to 50.465±5.160 &Vitellogenic48.763±2.178 to 51.445±4.265 and postsummerprevitellogenic47.318±3.563to63.183±5.4520 and vitelogenic92.428±5.248 to90.568±3.458 diameters of oocytes are observed.

Table1.Measurement of Oocytes of freshwater bivalve, *Lamellidens Marginalis during* winter season.

SrNo.	Season on	Previtellogenic oocytes diameter	Vitellogenic oocytes diameter
1)	Pre winter	57.227±3.136 to 63.486±5.170	60.963±2.136 to 63.486±5.170
2)	Post winter	61.418±3.259 to 75.223±6.480	115.428±5.524 to 125.568±4.490

Table: *2Measurement of Oocytes of freshwater bivalve, Lamellidens Marginalis during Monsoon season.*

Sr No.	Season on	Previtellogenic oocytes diameter	Vitellogenic oocytes diameter
1)	Pre monsoon	47.117± 2.136 to 33.386±4.170	51.763 ± 2.155 to 58.456±5.570
2)	Postmonsoon	51.412±3.249 to 655.217±5.458	98.428±4.524 to 105.468±3.470

Table: *3.Measurement of Oocytes of freshwater bivalve, Lamellidens Marginalis during Summerseason.*

Sr No.	Season on	Previtellogenic oocytes diameter	Vitellogenic oocytes diameter
1)	Pre summer	44.325±2.236to50.465±5.160	48.763±2.178to51.445±4.265
2)	Postsummer	47.318±3.563to63.183±5.4520	92.428±5.248 to90.568±3.458

IV. CONCLUSION

The study revealed that gonads consist of numerous follicle innervated by the connective tissues and muscles upon the amount of connective tissue was found to depends upon the maturity of gonads. The follicles were mostly packed with the germ nutritive cells, and lipid globules with the onset of gametogenesis variation of oocytes range of *Lamellidens Marginalis* due to the depends upon the climatic temperature is responsible for the spawning ,hatching, fertilization ,development this factors are direct impacts of the reduction of shapes and size of developing of oocytes .

ACKNOWLEDGEMENT

Authors are thankful to my research guide, Zambare S.P former Prof. &B.C.U.D.director, Department of Zoology, Dr. BabasahebAmbedkarMarathwada University, Aurangabad (MS), India for providing support my research work.

REFERENCES

[1]. Clarke R.B.,Frid C., and Attrill M..(2001): Marinepollution (5th ed.), Clarendon Press , Oxford.250-552
[2]. Gabbot P.A. and Bayne B.L.(1973): Biochemical effect of temperature and nutritive tress on mytilusedulisL,j,Mar.Boil.Assoc,UK,53269-286.
[3]. MarkHarrmann et.al.(2009): Reproductive cycle and gonadal development of the northern Argentinean mesodesmamactroides (Bivalvia :mesodesmatidae).I.j. of aquatic biology vol4(3)45-48.
[4]. Nagbhushnam .R. and Mane U.H. (1975): Reproduction in the mussel, mytilusviridis at ratnagiri .Bull Dept.mar.sci.Uni.Chochin.India 7; 377-387.
[5]. Radhakrishnan K., Suresh A., Urmila, Shivarama B. and Krishnan B. (1991): Effect of mercury on lipid metabolism profiles in the organs of Cyprinuscaprio(Linn.). J.Mendal. 8: 125-135
[6]. Sastry A.N.(1970): Reproductive physiological variation in latitudinallyseprated population of the scallop.Aequepectinirradians(Lamarks).bio.Bull.138:56-65.
[7]. Torreblanca A., Ramki J.D. and Diaz Mayans J. (1992): Changes in biochemical composition of gills, hepatopancrease and muscle of the red cray fish, Procambarus clarkia (Girad) after sublethal exposure to mercury, Comp. Biochem. Physiol., 102C, (2): 247-252.

Copyright to IJARSCT
www.ijarsct.co.in