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Nacre Secretion with Respect to Tempreture in Fresh Water Bivalvel Parreysia Corrugata from Nanded Region, Maharashtra

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ABSTRACT

The study on fresh water pearl culture is growing as a source of employment and income in many countries including India. A pearl has structural and chemical properties similar to the pearl nacre of the shell interior. Its shape is determined by the irritant foreign body and its quality by the nature of secretion of pearl sac thus the outer epithelium of the mantel tissue is the keynote in the "orchestra" of bio-mineralization of pearl (Simkiss and Wada 1980). Fresh water mollusks like, Lamellidens marginalis, Lamellidens corrianus produce pearl. The species Parreysia corrugata is also commonly found abundantly in fresh water resources of Nanded, Maharashtra. It also secret nacre and able to produce pearl. Considering the importance of pearl in human life the species, Parrysia corrugata selected for the study.

Key words: *Parreysia corrugata, Nacre secretion, temperature.*

INTRODUCTION

Pearls have been considered as one of the nine precious gems all over the world and are cultured in china, Japan and America. Commercial production of fresh water pearls originated in Japan, around 1910, but success was not achieved until 1924, when growers changed from the "Karasu" mussel (*C. plicata*) to the "Ikecho" mussel (*Hyriopsis schlegeli*). Following this success, commercial freshwater pearl culturing began in Japan in 1928. At present China is the world leader in the production of fresh water pearls. Fresh water pearls are the most common type of pearl, as the name suggests they are grown in fresh water usually in mussels that live in lakes and rivers. The most popular wealth of mussels in India are *Lamellidens marginalis, L. corrianus L. consobrinus* and *Parreysia corrugata*[3]. The basic information on the indigenous fresh water pearl culture technology has been detailed by Janki Ram *et al.*,[4]. Some species of bivalves, which have the pearly nacre on the interior of the shell surface, can produce pearl. Natural pearls are produce when foreign Particle such as sand, shell piece or parasite went to the particular region of molluscs and cannot be expelled. As a defense device, the animal secrets a calcium carbonate material known as nacre to coat the foreign body. Layer upon layer secreted on external particle and this deposition of nacre leads to the pearl formation, Nacre is also called mother of pearl, Natural pearl formed in this fashion are usually irregular in shape. Cultured pearls are formed essentially by the same process, except that the natural external particle is nucleus, of desired shape and size is surgically implanted into the body of bivalve mollusk where it is difficult to be expelled. A single pearl oyster can produce between four and six half pearl depending on the size of the pearl oyster and how the nuclei are placed. Once

processed and set as jewelry they can sell for much higher prices. Nanded one of the district of Maharashtra is blessed with fresh water resources such as River Godavari, reservoirs tanks and lakes. Pearl producing bivalves like *Lamellidens marginalis*, *Lamellidens corrianus* and *Pareysia corriugata* are present in fresh water bodies. *Parreysia corrugata* is an important constituent of fresh water fauna of the Indian sub- continent. In India these species is reported to be widely distributed in the States like Panjab, Bihar, Madhya Pradesh, Maharashtra, Orissa and Karnataka [7].presently it has been found to be a potential candidate species for fresh water pearl production . In this region no attempt has been made to culture these animals for the production of pearl, present work was undertaken to produce pearl from P. corrugate and also to find effect of temperature on mortality, growth, and secretion of nacre in these mussels.

MATEREAL METHODS

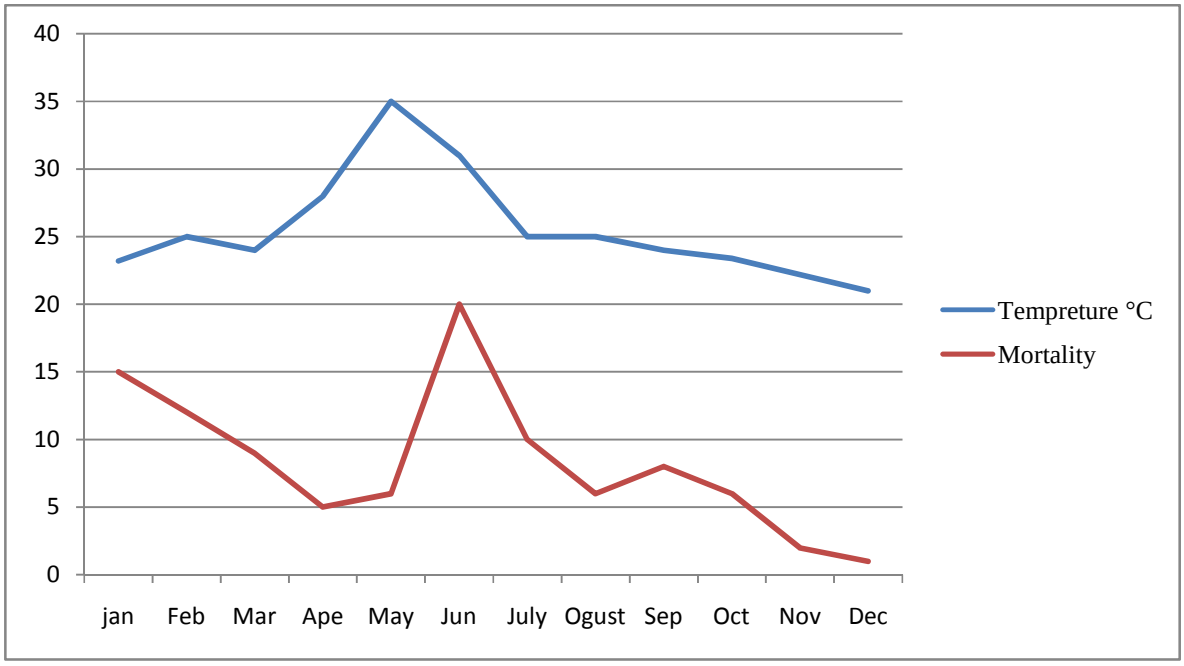
Pareysia corrugata collected from freshwater bodies around Nanded and subjected to pre-operative conditioning for two days. By keeping in Ferro-cement tanks to ensures proper relaxation of adductor muscles in preparation for surgery. Individual mussels were taken up for a particular type of implantation. Such as the mantle cavity insertion method, mussels of required shell length and weight were taken. Mussels were carefully opened by means of a speculum, 0.5 cm wide, without causing injury to the adductor muscle and soft parts of the mussels. A small area of the mantle from the anterior side is carefully detached from the upper shell valve and a nucleus of the desired size and shape (up to 1 cm in size for designed pearl) inserted slowly into the mantle cavity and is further pushed in deep to avoid rejection. Both the valves of a single mussel can be implanted with the preferred foreign body. The pearls produced using the acrylic beads are fairly compatible to traditional shell bead nucleated pearls. Post-operative care is an important step in freshwater pearl culture operation that is required for the implanted mussels to recover. The implanted mussels are placed at the rate of two mussels per bag in a ventral side up position for a period of 10 days. Sufficient care is taken to allow free opening and closing of the shell valves for respiration. The units are daily examined; dead mussels and those that reject the nucleus are removed. The implanted mussels are placed in nylon bags (1.0 cm mesh, 12 x 14 cm) at two mussels per bag and reared. The physsico-chemical parameters and water level of the ponds are monitored throughout the culture period. At the end of the culture period (12 to 14 months), harvesting was done. The mussels were sacrificed for collection of pearls.

RESULTS AND DISCUSSIONS

Mortality rate is depends upon the temperature, increasing temperature leads to heavy mortality. In of January mortality is due to stress condition it is caused by surgery, afterwards they slowly adjust. 20% mortality occurred in June. Mortality % decreased after the August. Nacre secretion is depends upon the availability of food, temperature and physicochemical parameters of water. We found that increasing temperature leads to the formation of thick nacre with no shine or dull in winter due to the temperature and good environmental condition leads to the formation of thin nacre layer with good shine or the pearly shine.

It has been observed that in the mantle cavity insertion of nucleus leads to the pearl sac formation within 15 days the first step towards the pearl formation [5]. A few half pearls can be check six months after implantation to determine if the nacre is thick enough to allow harvest. The nacre covering the nucleus should be at least 1.5 mm thick so we can determined whether the nacre is sufficiently developed or not. Out of 100 mussels implanted, only few will produce gem quality pearls, 15 will yield good pearls and 80 will produce nothing of value [2]. Graph shows the Moth wise mortality according to temperature, and photo's shows nacre deposition on external particle on mantel cavity of *Parreysia corrugata.* In our study we observed that pearl culture is possible if we develop the suitable artificial conditions provide for culture.

Graph shows the rate of mortality according to temperature



Photo's shows nacre deposition on external particle on mantal cavity of *Parreysia corrugata*

CONCLUSION

Pearl formation result indicates that *parreysia corrugata* secret the nacre after inserting the external particle as per temperature. Temperature is an important factor at the time of nacre secretion.

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