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Radula Morphology In *Cerithidea Obtusa* (Lamarck,1822) (Gastropoda: Potamiddiae) From Sundarbans

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ABSTRACT:*The radula of Cerithidea obtusa (Lamarck,1822) was analyzed by Scanning Electron Microscope. The analyzed radula has been classified and morphologically described in details.Structures and functions of radula studied by various observers have also been discussed in thispaper.*

KEY WORDS *:Potamiddiae, radula, epibenthic, taeinoglossate, cusp, morphology.*

I. INTRODUCTION

Indian part of Sundarbans stands unique among the global ecosystem because of its diversity of habitat and diversity of flora and fauna.It is the home of 32 species of mangrove gastropods under different families.The gastropods species under study is epibenthic in the mangrove mud flats and detritivore or micro algal feeder. The gastropods exibits extraordinary architecture in its radula formation which facilitate its favourite food manipulation. Lindner(1975) classified the radulae. Bandel (1984)observed on the radulae of Carribean and other mesogastropoda and neogastropoda.Fujioka (1985) studied seasonal aberrant radula formation in *Thias bronii* (Dunker) and *T.clavigera* (kuster) (Gastropoda: Muricidae).Wu (1985) studied on the radula of the genus *Acanthina* (Gastropoda :Muricacea) of west America. Huges(1986) dealt in functional biology of marine gastropods. Kool (1987) observed the radula character of Neogastropoda : Muricacea. Hill *et al*., (1988) studied the form and function of radula of pulmonate limpet, *Nerita* and *Littorina*. Nybakken and Perron (1988) studied on ontogenic change in the radula of *Conus magus*. Kool (1993) dealt in phylogenetic analysis of the Rapaninae (Neogastropoda : Muricacea). Fretter and Graham (1994) observedthe radulae of the British prosobranch mollusks. Rebeca Saldec (1995) described radula production rates in two species of *Lacuna* (Gastropoda : Littorinidae). Padilla (1998) studied inducible phenotypic plasticity of the radula in *Lacuna turton* (Gastropoda : Littorinidae) .Reid and and Mak (1999) studied the indirect evidence for phenotypic plasticity of *Littorina* species.Anna Marie Robert (2000) observed comparison of the feeding behavior and the functional morphology of radula structure in nudibranch. Attwood (2001) studied the radular cusp formulae of *Neotricula aperta* (Gastopoda:Potamitopsidae). Carlos A.O. Mierelles and Matthews – Cascon (2003) dealt in relation between shell size and radula size in marine prosobranch (Mollusca :Gastopoda). Martin and Negrette (2007) observed on the radula ultrastructure of south American Ampullaridiae (Gastropoda : Prosobranchia).Juliana M. Harding *et al.,* (2008) dealt in radula morphology in veined rapa whelk, *Rapana venosa* Valenciencinnes (Gastropoda:Muricidae) from Chesapeake Bay, USA. S. Arularasan *et al.,* (2011) observed Scanning Electron Microscopic structure (SEM) of radula of the dog conch *Strombus canarium* (Gastropoda:Prosobranchia: Strombidae).The available information of the internal morphology and mainly of ultra structure of the radula of this species of this family is still in complete.The aim of this work is to focus on the morphological structure of this species.

II. MATERIALS AND METHODS

The materials have been collected randomly at the south east, north east and mid east part of Sagar Island (21’00” to 21’53” north latitude and 88’ 00” to 88’15”east longitude).The radulae were extracted from the radular sac and they were washed in distilled water with the aid of a paint brush. Sample preparation: 2.5% gluteraldehyde (2hrs)-50% alchohol – 5(minutes)- 70% alchohol (30 minutes in two changes) -90% alchohol (30 minutes in two changes)-air dry. Then taken to study them with the Scanning Electron Microscope (Hitachi, S-530).

III. RESULTS

The radular formula of the analyzed specimen is 2.1.C.1.2. (taeinoglossate type) with Straight rows of teeth. The base of the radula consists of a radular ribbon to which the teeth are attached.The seven teeth are disposed in the following way;the central tooth is flanked on each side by lateral one and two marginal ones (inner and outer marginal ones). The lamina basal settles on radula ribbon. The posterior ends of the basal plate are sharp-pointed curving inwards.

Cerithidea obtusa (Lamarck, 1822)

The radula is a long ribbon of uniform width and measures about 7×1 mm. and the dental formula is 2.1.C.1.2. figs. (1,2). The surface of the teeth is smooth. The teeth of two lateral rows are same in structurally and convenience of the row adjacent to the central one is designated as lateral 1 and outer one as lateral 2.The rachidian tooth bears a finely serated, round central cusp and 2 small dentricles on either side. The dentricles is gradually become smaller laterally. The teeth of the lateral one row are also broad and bear one large cusp. Two widely separated dentricles are present on the entocone while on narrowly curved exocone to closely placed small dentricles are found.The exocone is absent and cusp has shifted laterally. Two small dentricles are present on the entocone.The marginal teeth are broad and long and different in structurally. Inner marginal bears a broad cusp and 2 small dentricles and outer marginal consist of a cusp with 7 dentricles.The free ends bears a broad dentricles laterally and one small dentricles medially.

IV. DISCUSSION

The radula of the species of the Potamiddiae family is of taeinoglossate type. Dentral formula is 2.1.C.1.2. This is characterized by central tooth,lateral and marginal tooth. The central teeth,one per row , are subsequently displayed, being perpendicular to the sagittal plane of odontophore.The lateral teeth form parallel rows among themselves and with respect to the central teeth, they form an angle oriented towards the posterior region of radula. There two marginal teeth per horizontal row; they are located one next to the other. Results of the radula of the species Potamiddiae family carried out using SEM indicate that the characters of the central teeth together with those of the lateral and marginal teeth can be used to differentiate the species among themselves. In the case when the odontophore is at rest the outer marginal tooth accommodates over the inner marginal one. The lateral shows a concavity where the lateral rests projecting towards the central or rachidian tooth. The region that arises from these teeth are much thinner and it always in two points, on the other hand , the base is broader or cone shaped.The stricter could be used as an anchorage in the radular ribbon allowing the coordinated movement of the remaining teeth of same rows and allowing the mechanism of cutting and collecting food by the snail (Martin and Negrette, 2007).

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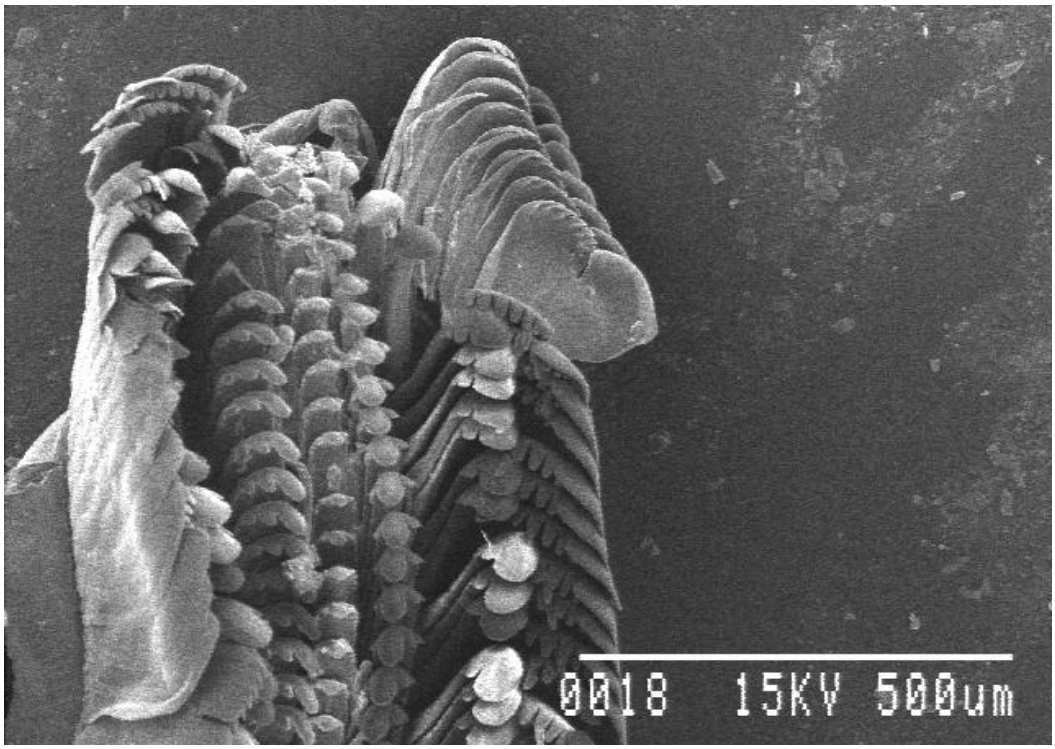
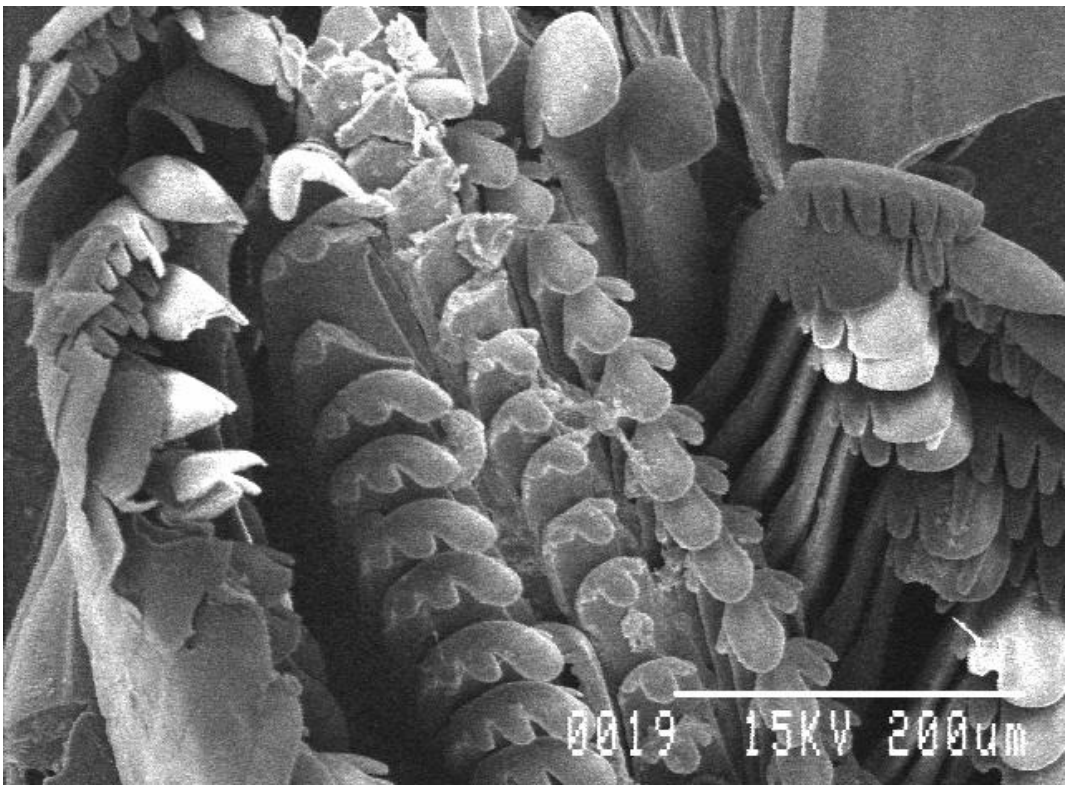


1. Scanning Electron Microphotograph of *Cerithidea obtusa* (Lamarck,1822)



2. Scanning Electron Microphotograph of *Cerithidea obtusa* (