

A HISTOCHEMICAL STUDY OF THE NEUROSECRETORY MATERIAL IN THE GANGLIA OF THE MUSSEL, *MYTILUS VIRIDIS*

ABSTRACT

The nature of neurosecretion in the cerebral and visceral ganglion of the marine bivalve *Mytilus viridis* was studied by histochemical techniques. The positive colour reactions showed the presence of lipoprotein, glycoprotein and phospholipid.

NEUROSECRETORY cells have been studied in some bivalve molluscs by using selective stains like chrome alum haematoxylin-phloxin and Mallory's triple stain (Gabe, 1955; Lubet, 1955; Fahrmann, 1961; Antheunisse, 1963 and Nagabhushanam, 1968). However, no detailed study appeared to have been done on the cytochemistry of the neurosecretory cells of bivalve molluscs. The present note deals with a histochemical study of the neurosecretion of the cerebral and visceral ganglia of the mussel, *Mytilus viridis*.

The specimens of *Mytilus viridis* used in the present study were collected from Ratnagiri. The cerebral and visceral ganglia were fixed in Bouin's fluid, dehydrated in alcohol, cleared in xylol and embedded in Tissuemat. In an earlier communication, the neurosecretory cells of *M. viridis* were fully described (Nagabhushanam, R., *et al.*, 1972). All the cytochemical techniques were taken from Pearse (1960). The results are presented in Table 1.

TABLE 1. *Histochemical observations on the neurosecretory cells of the mussel, Mytilus viridis.*

Neurosecretion tested for	Method	Result
Protein	Mercury bromophenol blue	+
Amino acids	Ninhydrin reaction	+
Lipids	Sudan black B	+
Lipids	Baker's acid hematin	+
Phospholipids	Acid hematin test before pyridine extraction. Acid hematin after pyridine extraction	—
Carbohydrate	PAS	+
Carbohydrate	PAS after treatment with diastase	Reduced
Glycogen and starch	Iodine method	+

The neurosecretory material is located in certain neurons of the cerebral and visceral ganglia of *Mytilus viridis*. Such neurosecretory material was observed by Gabe (1955), Fahrmann (1961), Nagabhushanam (1968) and others in the central nervous system of lamellibranchs. Histochemical tests indicate that the neurosecretory material from the central ganglia of *Mytilus* contains lipoprotein. The intense staining of the secretory substance with Baker's acid hematin before pyridine

extraction but not after, suggests the presence of phospholipid. This substance may be incorporated in the membranes bounding the secretory granules. The PAS positive reaction suggests that the secretory material might be a glycoprotein as in the case of *Parreysia corrugata* (Nagabhushanam and Lomte, 1971). The carbohydrate might be glycogen, as has been suggested for vertebrate neurosecretory material (Schiebler, 1952). In any case it signifies that the carbohydrate moiety might be associated with the neurosecretory protein of *Mytilus*.

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