the long storage of virus or low titre of antigen itself *i.e.* polyhedra. Similar decrease in haemagglutination of the CPV of *B. mori* has been reported when the virus is kept at 4°C for more than 2 days[4]. Specific components like PIB protein, virion or PIB have been shown to contain haemagglutinins and they are capable of agglutinating mammalian or avian erythrocytes[4,5]. The negative response of NPV of *C. cephalonica* may be due to the fairly large number of spindle shaped bodies found along with PIBs of NPV of *C. cephalonica*[8].

3 July 1984; Revised 25 April 1985

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HISTOMORPHOLOGY OF CEREBRAL NEUROSECRETORY SYSTEM IN THE CARIDIAN PRAWN, *CARIDINA RAJADHARI* (BOUVIER)

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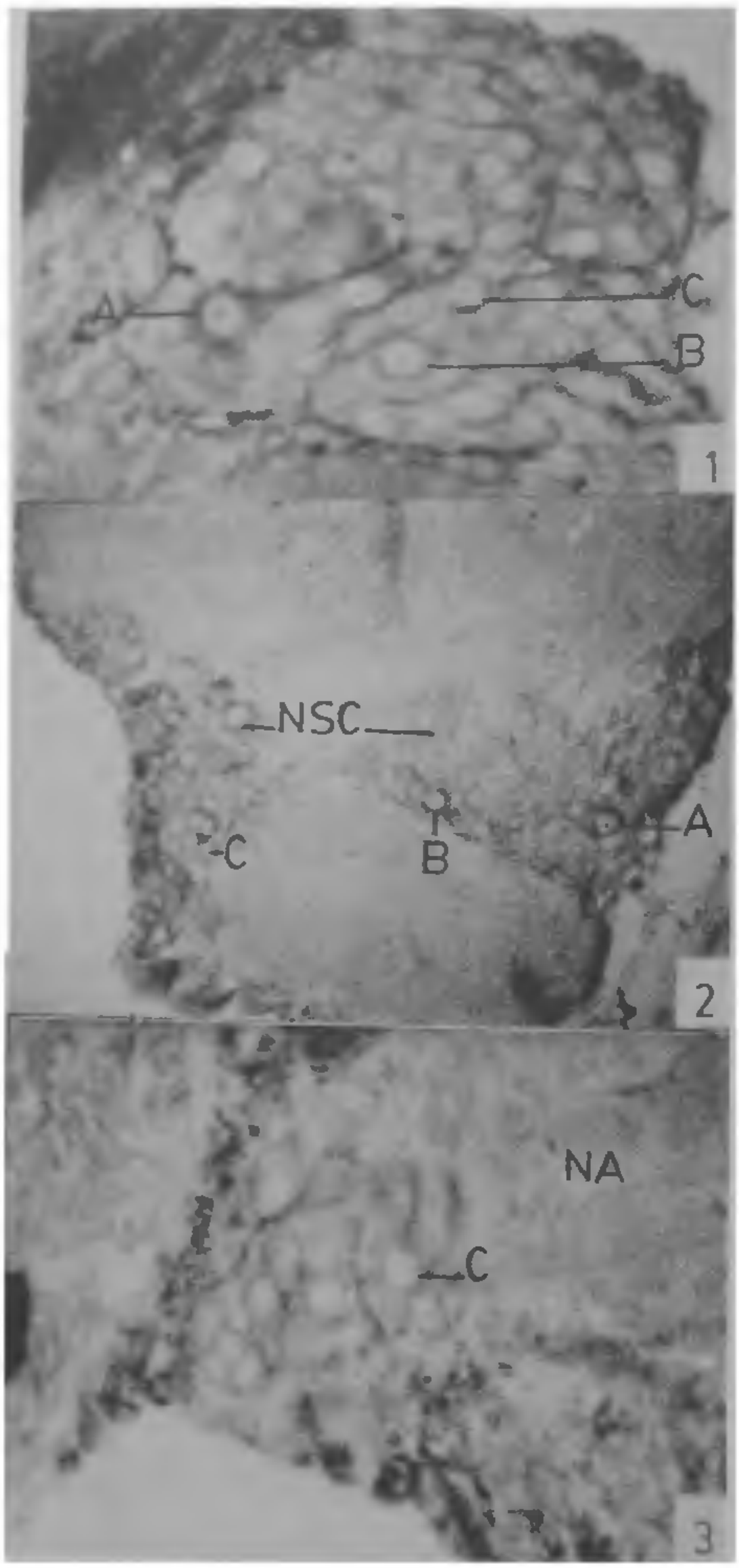
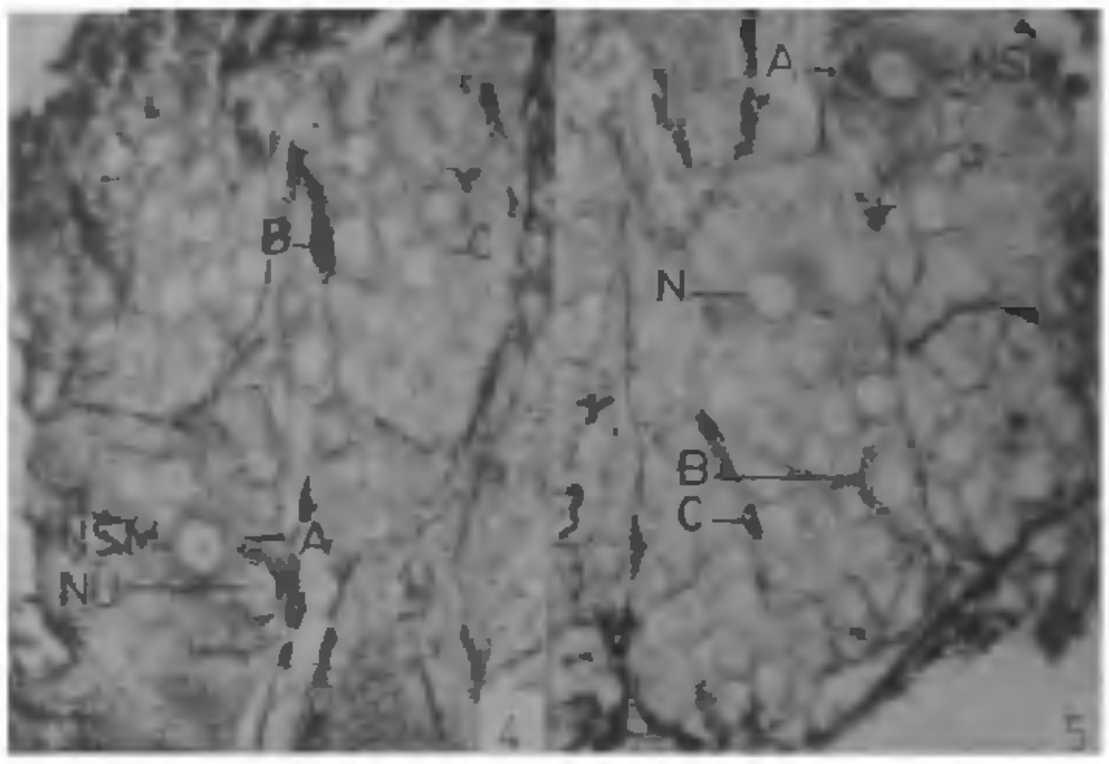
THE study of hormonal regulation in decapod crustacea has shown the important role played by the neurosecretory system. Histological investigations of neurosecretory cells furnish more information on their nature and secretory activity. Cerebral ganglion (brain) is an important neurosecretory centre in several decapods[1–3]. In many animals, the neurosecretory cells are often clumped into groups, which are very conspicuous features of central nervous system[4]. In the present study the various kinds of neurosecretory cells (NSCs) in the cerebral ganglion of *Caridina rajadhari* were histologically studied and their distribution was demonstrated.

Mature animals of *C. rajadhari* (Crustacea, Decapoda, Atyidae) (2.5 cm long) were collected from Kham river, near Aurangabad, Maharastra. Immediately after collection, the cerebral ganglion of non-ovigerous, intermoult (stage-c) animals with matured ovary was carefully dissected out in Van Harreveld's solution[5] and fixed in aqueous Bouin's for 24 hr. The tissues were dehydrated in ethanol, cleared in xylene and embedded in paraffin wax (m.p. 58–60°C). Serial sections, 5–6 μm thick were cut and mounted on glass slides. The staining method used to locate neurosecretory cells and structures was Ewen's (1962) modification of Gomori's paraldehyde fuchsin (PF) technique with Halmi's (1952) counterstain[6]. The size, shape, differential stainability and cell inclusions were used as the main criteria in identifying the neurosecretory cell types[7].

The cerebral neurosecretory cells of *C. rajadhari* in their morphology and general pattern of distribution were similar to those found in other natantians *Caridina weberi*[1], *Penaeus japonicus*[2] and *Metapeneus monoceros*[3]. In *C. rajadhari*, greater number of NSCs occured in the protocerebrum (figure 1). Two paired groups of NSCs were found on each side of the deutocerebrum (figure 2). The tritocerebrum had small group of NSCs, especially noticeable on the base of the cerebral ganglion (figure 3). The size and staining reactions of the NSCs allowed the differentiation of 3 types called, A-, B- and C-neurosecretory cells (figures 4–5). Three types of NSCs were also observed in the brain of other decapods *Paratelphusa hydrodromous*[8], *Scylla serrata*[9], and *Paragrapsus gaimardii*[10].

A-type cells of *C. rajadhari* were large monopolar PF-positive cells and measured about 21–22 μm in diameter. They were fewer in number and more secretory in activity. They had a coarsely granular fuchsinophilic cytoplasm with perinuclearly arranged patches of large purple granules. The nuclei were oval in shape and the nucleoli had a noticeable affinity for the orange-G component of Halmi's counterstain. Only one nucleolus occurred per nucleus (figure 4). The B-type cells were more numerous than A-cells with 17–18 μm in diameter. The cytoplasm was granular and the perikarya contained secretory granules (figure 5). The most abundant type of cell was the





Figures 4, 5. 4. Dorsal deutocerebral NSCs showing 3 kinds of cells (× 600) **5.** Ventral deutocerebral NSCs showing 3 kinds of cells (× 600). **Abbreviations:** A—Cell type 'A'; B—Cell type 'B'; C—Cell type 'C'; N—nucleus; NA—neurophile area; NSC—neurosecretory cell; NSM—neurosecretory material; NU—nucleolus.

Figures 1–3. Longitudinal sections of cerebral ganglion of *Caridina rajadhari*. **1.** Photomicrograph showing protocerebral NSCs of *Caridina rajadhari* (× 600) **2.** Distribution of deutocerebral NSCs (× 250) **3.** Distribution of tritocerebral NSCs (× 600)

smaller C-type cells, measuring about 8–10 μm in diameter. A big round nucleus occupied major part of the cytoplasm. These cells were found among other neurosecretory cell groups. Their cytoplasm stained violet purple with small peripheral vacuoles.

The accumulation of stainable material found in the A- and B-type NSCs, in mature females can be considered evidence for distinct secretory activity in relation to ovarian maturation.

1 April 1985

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