

# Supraoesophageal neurosecretory cells of the adult may fly *Anagenesia minor* Eaton (Ephemeroptera: Palingeniidae)

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**Summary.** Two groups of paraldehyde-fuchsin stained neurosecretory cells have been observed in the anterodorsal and median region of the brain. Each group has several tiers of these cells which vary from 28 to 32 in number.

The first description of the protocephalic neurosecretory pathway and the cephalic endocrine glands in Ephemeroptera was given by Hanström<sup>2</sup>. Pflügfelder<sup>3</sup> described the cephalic endocrine glands in the families Prosopistomatidae, Baetidae, Leptophlebiidae and Ephemeridae. Arvy and Gabe<sup>4-6</sup> dealt with the protocephalic neurosecretory pathways, corpora allata and ventral glands of 8 families, namely Siphonuridae, Oligoneuriidae, Ephemeridae, Leptophlebiidae, Baetidae, Ephemerellidae, Ecdyonuridae and Prosopistomatidae. However, none of these described the brain neurosecretory cells (NSC). This may be due to the rare availability and very short adult period of these insects. To the best of the author's information this is the first description of the presence of paraldehyde fuchsin positive brain neurosecretory cells in the order Ephemeroptera.

Adults of *Anagenesia minor* are rarely found and only remain alive for 1-2 days<sup>7</sup>. These insects appeared in swarms under the light during the month of August, 1980 when they were captured and killed by injecting aqueous Bouin's fixative and then dissected to take out the brain for preparing paraffin blocks and bulk staining. Fixation was

done for 18-24 h and bulk staining of the whole brain or of microtome sections was done with paraldehyde fuchsin (PF)<sup>8</sup>.

Two groups of median neurosecretory cells (NSC, figs 1, 2 and 4) occur superficially on the anterodorsal aspect of the pars intercerebralis medialis region of the brain (Br). Each group comprises several tiers of NSC which are either arranged in compact groups (fig. 2) or scattered (fig. 4). The number of these cells varies from 28 to 32 in each group. The cell body may be oval or irregular in shape with the nucleus (Nu) placed centrally. The axonal ends of most of these cells are directed posteriorly. The neurosecretory material (NSM) consist of uniformly distributed granules which indicates that these belong to the A-type. Except for these dorsomedian groups, no other NSC are present in the entire brain. All of these cells, in both the groups, exhibit synchronous secretory activities. Variations in the amount of NSM has been observed in different specimens. The NSC of some individuals were packed with NSM (figs 1, 2 and 4) while those of others contained very little of it. Vacuoles were not found in these cells.

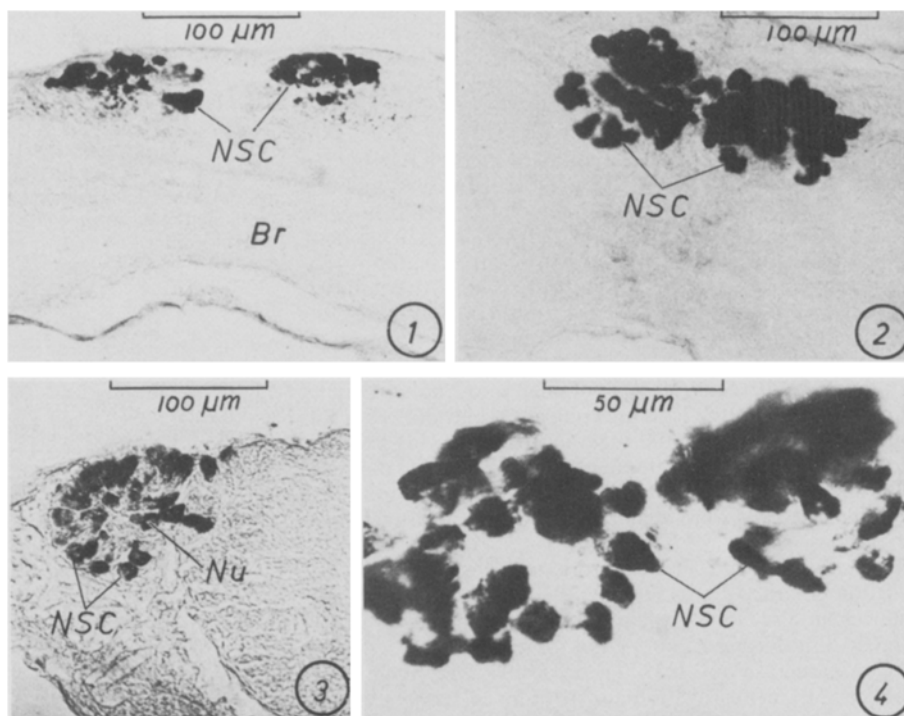


Figure 1. Whole brain preparation of *A. minor* showing 2 groups of neurosecretory cells (NSC).

Figure 2. Whole brain preparation of *A. minor* showing several tiers of compactly arranged neurosecretory cells (NSC).

Figure 3. Frontal section of the brain showing neurosecretory cells (NSC) with centrally placed nuclei (Nu).

Figure 4. Whole brain preparation of *A. minor* showing scattered neurosecretory cells (NSC).

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