

Structure and distribution of the chloride cells in the larvae of *Kamimuria tibialis* Pictet (Insecta: Plecoptera)

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At the surface of the tracheal gill epithelium as well as that of the body of mayflies and stoneflies, special type of cells may be observed, which has previously been considered to have secretory or respiratory function. However, from recent ultrastructural and histochemical observations these cells are now termed chloride cells (Wichard and Komnick, 1971, 1973, 1974; Komnick and Abel, 1971, 1972; Komnick, Rhees and Abel, 1972; Kapoor and Zachariah, 1973a, 1973b) because they are very similar to the chloride cells which distribute in teleost gills and has been known to have osmoregulatory function (Harb and Copeland, 1969). Ultrastructural studies of the chloride cells found in Plecoptera were so far carried out only with a limited number of species belonging to four families, such as Perlidae, Perlodidae, Nemouridae and Gripopterygidae (Kapoor and Zachariah, 1973; Wichard and Komnick, 1973, 1974; Wichard and Eisenbeis, 1979). From these studies the chloride cells were divided into 4 types such as; 1. caviform, 2. coniform, 3. bulbiform, and 4. floriform, respectively. The first type consists of only single cell, whereas other three types consist of several cells.

In the present paper I report fine structures and distribution of the chloride cells found in the first, second and matured larvae of *K. tibialis* observed after scanning electron microscope.

The chloride cells found in *K. tibialis* is coniform which is $10\mu\text{m}$ in diameter and $1\mu\text{m}$ in height, and morphologically very similar to the chloride cells found in other larvae of Perlids and Perlodid and those found in ephemeropteran larvae. In the first instar larvae of *K. tibialis*, the chloride cells distribute at the posterior margin of each of first 9 abdominal segments; only one pair of the chloride cells may be found in the first abdominal segment, whereas in other 8 segments two pair of them occur. In the second instar larvae two chloride cells may be found in the coxa as well as in the femur of each leg, and in the antero- as well as postero-lateral regions of membranous part of the thoracic segments four of them occur. In the matured larvae numerous chloride cells are observed in the following regions; 1. coxa, trochanter and femur of each leg, 2. ventral surface of thoracic segment except its median region, 3. first 6 abdominal segments, 4. pleura, 5. basal portion of the tracheal gill, and 6. postmentum. It seems that the chloride cells distribute more abundantly in the membranous parts than in the sclerotized parts of the larval body.

References

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