Fine Structure of the Hemocytes of the Orb-web Spider *Araneus ventricosus*

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Fine structural characteristics of the hemocytes of the spider *Araneus ventricosus* were investigated with transmission electron microscope. The hemocytes of this spider were classified into two major groups: granulocytes and non-granulocytes. The granular hemocytes were subdivided into three subtypes according to their histochemical properties which are eosinophilic granulocytes (EGs), basophilic granulocytes (BGs) and cyanocytes. The EGs, which have small granules within the cytoplasm comprise about 5% of the total hemocytes. In addition, the granules of EGs are smaller than those of BGs. The cyanocytes were characterized to contain hemocyanin granules in their cytoplasm. On the other hand, the non-granulocytes were divided into three subtypes: hyaline leucocytes, oenocytoids, and molting hemocytes. The hyaline leucocytes are the most abundant and the smallest hemocyte type in this spider. The oenocytoids that have 10-15 ㎛ in diameter are mostly found at the marginal region of the myocardium in the heart tube. The molting hemocytes, which only appeared during the molting period, contains plenty of glycogen particles in their cytoplasm.

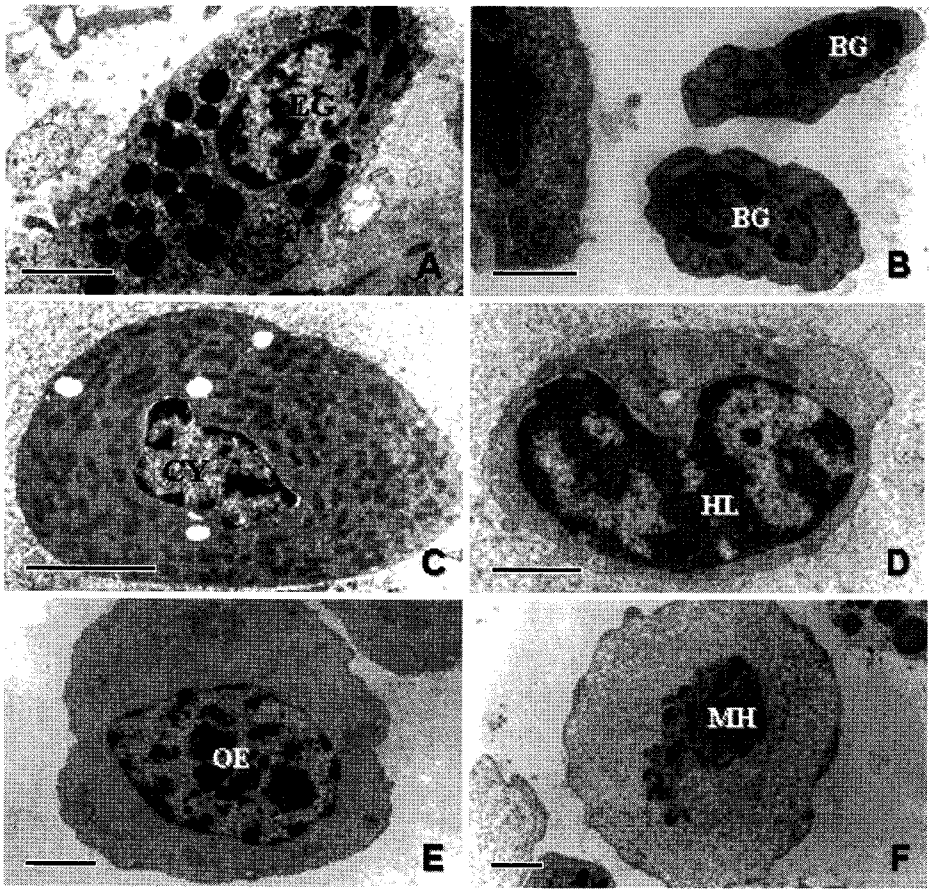

Fig. 1. Electron micrographs of the hemocytes in the spider *A. ventricosus*. A: Most of the eosinophilic granulocytes (EG) have numerous small granules approximately 0.3 ㎛ in diameter. B: The basophilic granulocytes (BG) have large granules with high electron densities approximately 0.5-1.5 ㎛ in diameter. C: Cyanocyte (CY) contains many hemocyanin crystals and few vacuoles within the cytoplasm. D: The nucleus of the hyaline leucocyte (HL) is relatively larger in comparison with its cytoplasm. E: Oenocytoid (OE) contains cartwheel shaped nucleus including rough endoplasmic reticulum and mitochondria within the cytoplasm. F: During the molting period, a characteristic molt-related hemocyte (MH) appeared in the circulating hemolymph. Scale bars indicate 2 ㎛ (A-F).