Thesis Title The Ultrastructure of Coelomic Sac of Giant Freshwater Prawn, Macrobrachium rosenbergii de Man

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## ABSTRACT

This study was aimed to demonstrate the finely detailed morphology of coelomic sac of Macrobrachium rosenbergii de Man by using light microscopy, scanning electron microscopy and transmission electron microscopy. Adult prawns were maintained in recirculating water and fed with mussels for 2-3 days before sacrificed. Twenty antennal glands were dissected after being perfused with fixative. After routeinly processed, the surface morphology of the coelomic sac was examined, under scanning electron microscope (SEM). Fourty antennal glands were prepared and processed, for ultrastructural study by transmission electron microscopy (TEM).

As revealed by LM and SEM, the coelomic sac contained clusters of undifferentiated cells at the outer cortex whereas cells in the inner region were more differentiated. The inner cells posses numerous foot processes adhering to the basement membrane. Under TEM, the coelomic

sac in the inner cortex region showed morphologic arrangement resemble to what have been observed in immature mammalian glomerulus, except that no endothelial cells were present.

To further determine whether the basement membrane of Macrobrachium rosenbergii de Man's coelomic sac cells contains the same constituents as those known components found in the vertebrate glomerular basement membrane, polyethyleneimine (PEI) was used as an anionic probe for the site-distribution in the basement membrane. After perfusion of PEI into the antennal glands, the glands were briefly immersed in PEI. The tissues were processed for TEM study. PEI electron-dense particles were found evenly distributed throughout the whole thickness of the basement membrane. The staining was negative, however, on the cell surface or slit diaphragm.

The results suggest that coelomic sac of Macrobrachium rosenbergii de Man, although seems primitive, may function as charge-selective barrier for filtering molecules in the hemolymph.