

branchial lamellae. Each branchial lamella has functional unit of the branchial gills, the gill filaments. The branchial lamella is consist of about 25 - 30 filaments. The width of each filament is approximately 28 mm, and has longitudinally oriented folds along its surface. The gill receives hemolymph from the artery and supplies all the filament. The passage of hemolymph is hemolymphatic canal in the central region of the filament and the water flows between these filaments. The epidermis of filament is made of columnar and squamous epithelial cells. Each epithelial cell has numerous mitochondria, microvilli and thin longitudinal rows of cilia run along the filament.

C113

Fine Structural Analysis of the Hemocytes During the Molt in a Spider, *Araneus ventricosus*

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The functional modification of the spider hemocytes between the molt and intermolt period were investigated using cytochemical and fine structural observations. By the cytochemical methods of the hemocytic separation with the density of percoll gradients, the hemocytes of the spider *Araneus ventricosus* were classified into four main groups which were hyaline leucocytes, granulocytes, oenocytoids, and molting hemocytes (leberidocytes). The granulocytes were further divided into two subtypes according to the color variations of the Wright's-Giemsa stain; basophilic and acidophilic granulocytes. It has been observed that molting hemocytes which appeared only the molting period were oriented from the acidophilic granulocytes. This hemocytes appeared 2 to 4 days before molting and then reached the peak at just molting and 1-2 day after and disappeared

slowly 10 to 12 days later. The most characteristic feature of the molting hemocytes were cytoplasmic swellings by the ingestion of certain materials. Both of Sudan black B staining for lipids and the periodic acid-Schiff (PAS) staining for carbohydrates produced a negative result for the molting hemocytes.

C114

Fine Structural Analysis of the Cell Death During the Tail Degeneration in the Tadpole, *Rana nigromaculata*

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Fine structural modification of the progressed cell death in the tail epithelium of the tadpole, *Rana nigromaculata*, were analysed using transmission electron microscope. The initial indication of the apoptosis was condensation of chromatin within the nuclear envelope, and nuclear breakdown and cytoplasmic condensation were followed. Subsequent cytoplasmic buddings of the apoptotic cell were produced by membrane-bounded cell fragments with relatively well preserved organelles. Another interesting findings were that of the appearance of lysosome-rich cell at the vicinity of apoptotic cells. This distinctive lysosome-rich cells were also a kind of cutaneous epidermal cells which constitute tadpole skin. Apparently, the processes of degradation and ingestion of the damaged apoptotic cells were accomplished by the aid of these cells. At early stage of the degradation, well preserved organelles and nuclear fragments can be identified in the cytoplasm of lysosome-rich cells, however they soon reduced to lysosomal residual bodies through the progressive degradation.

C115

Fine Structure of the Gill Filament in the Clam, *Ruditapes philippinarum* (Mollusca: Bivalvia)

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The fine structural characteristics of the gill filaments in *Ruditapes philippinarum* were examined by light and electron microscopes. The branchial lamellae of the gill filament were characterized by their abundant mitochondria, by an extensive system of regularly branch. Gill lamellae were thickened structure to ensure increasing blood/gas diffusion distance, and nodules maintain wide spacing between lamellae. The coelomic epithelium was composed of myoepithelial cells and ciliated cells. The ciliated cells were arranged in lines along the branches. Small surface microvilli were seen between the cilia providing a useful size comparison. Examination of histological and TEM preparation has revealed that a very similar structure with mainly two cell types both in the epidermis (supporting and ciliated cells) and in the coelomic epithelium (myoepithelial and ciliated cells).

C116

Fine Structural Analysis of the Silk Producing Apparatus in Funnel-web Spiderer, *Agelena limbata*

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Silk producing apparatus of the funnel-web spider, *Agelena limbata* was located at the ventral end of the abdominal part, and was composed of internal silk glands and external spinnerets. Among the

three pairs of spinnerets, the posterior pairs were highly elongated along the body axis. By the light and electron microscopic inspections, it was found that four types of silk glands were connected through the typical spinning tubes of each spinnerets. Anterior spinnerets comprise 2 pairs of the ampullate and 125 to 150 pairs of pyriform glands. Another 2 pairs of ampullate glands, 5 to 7 pairs of tubuliform glands, and 18 to 26 pairs of aciniform glands were connected on the median spinnerets. And 8 to 10 pairs of tubuliform and 37 to 54 pairs of aciniform glands were on the posterior spinnerets respectively. Among the 4 types of silk glands, the ampullate and tubuliform glands were connected with large spinning tubes (spigots), and the tubuliform glands were only observed in female spiders.

C117

The Protective Effect of MHJ Extract on Acute Gastropathy by NSAID

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This study was performed to investigate the protective effect of Mockdanpigamihyungbangjihoangtang (MHJ) on acute gastropathy by non-steroid anti-inflammation drug (NSAID). After MHJ intragastric injection (3.3 ml/kg/day) for 3 days, the acute gastropathy on male Balb/c mice were induced by subcutaneous injection of indomethacine (25 mg/kg). The degree of lipid peroxidation in MHJ group conspicuously was decreased. The erosion of gastric mocosia in MHJ group was soften and appeared normal configuration of surface and neck mucous cell in gastric pit. The