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Histological and Histochemical Analyses of the Secretory Cells in the Gastrointestinal Tract after Starvation of *Bombina orientalis*

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Histological and histochemical changes of the amphibian gastrointestinal tract in Korean fire-bellied toad, *Bombina orientalis* were analysed after long duration of starvation. For the histochemical analysis, the gastrointestinal tract of the toad were basically stained with hematoxylin-eosin (H-E), periodic acid-Schiff's (PAS) and alcian blue (AB) of pH 2.5 and pH 1.0 after fixation of formalin solution. The normal gastrointestinal epithelial cells were observed as strong PAS-active in stomach, whereas active reactions in PAS and alcian blue (pH 2.5) in small intestine, and active in alcian blue (pH 2.5) in large intestine. After starvation of long period, the PAS-active mucosubstances in the gastric cells were remarkably increased characteristically. Moreover, the alcianophilic mucosubstances at both pH 2.5 and pH 1.0 were remarkably diminished in the goblet cells of both small and large intestines after starvation.

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Terminal Dilation of Protein-filled ER Cisternae to form Protein Bodies at Late Stage of Seed Maturation in *Pisum sativum*

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This paper has investigated the route of the formation of protein bodies (PB), i.e. terminal dilation of protein-filled ER in pea cotyledon cells. The dramatic increase of the number of protein bodies at stages somewhat later in seed maturation can not be explained by already-known process of fragmentation, budding, *de novo* development and/or transformation. Enzymatically separated single cells from sliced pea cotyledon tissues can enhance the fixation of seeds for electron microscopy. Individual ER cisternae without ribosomes at their surface and almost completely filled with osmiophilic substances, are often seen interdigitated between stacks of rER. These cisternae have a regular luminal width, which is somewhat two or three times larger than the rER cisternae, and the terminal swellings or dilations of these ER to form cytoplasmic protein bodies. These protein bodies are known to be developed independently with the royal route of PB development from protein deposits at the periphery of protein storage vacuole (PSV).