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INFORMATION

Hokkaido University conferred the degree of Bachelor of Veterinary Medicine to the following 41 graduates of the School of Veterinary Medicine on March 25, 1998.

The authors' summaries of their theses are as follows:

Morphological characteristics and roles of $\gamma\delta$ T cells in the bovine intestinal epithelium

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The $\gamma\delta$ T cells are characterized by their rich existence in the epithelium of the intestine and skin, but they are less numerous in the lymphoid organs. It is reported that they differentiate thymus-independently and have non-specific antigen recognition. However, their morphology and property are not well known. The present study aims to elucidate their morphological characteristics and relationship with enterocytes in the jejunal epithelium in cattle, in which there is predominence of $\gamma\delta$ T cells.

Immunohistochemistry of frozen sections demonstrated that $\gamma\delta$ T lymphocytes were densely distributed in the villous epithelium but there were fewer in the crypt epithelium and the lamina propria. Ultrastructurally, intraepithelial $\gamma\delta$ T cells were characterized by broad and clear cytoplasm containing electron-dense granules. Intraepithelial lymphocytes (IEL) were interdigitated with or wholly embedded in the enterocyte cytoplasm. Enterocytes, which were inserted by processes of intraepithelial lymphocytes or contacted by their cell bodies, showed morphologic changes seen in apoptotic cell death, such as elevated electron density of the cytoplasm and condensation of the chromatin. Histochemistry for acid phosphatase revealed irregular-shaped macrophages gathering in the subepithelial region of villi. Electron microscopic observation demonstrated macrophages possessing numerous phagosomes which contained enterocytes under different digestive processes. Several macrophages entered the epithelium and phagocytosed apoptotic enterocytes within the epithelium.

These results suggest that in the small intestine of cattle, $\gamma\delta$ T cells are involved in renewal of epithelial cell by inducing apoptosis of epithelial cells.