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## INFORMATION

Hokkaido University granted the degree of Doctor or Master of Veterinary Medicine to the graduates of the Post-Graduate School on June 30, 1967. The authors' summaries of their theses are as follows:

### **STUDIES OF THE MULTIPLICATION OF INFECTIOUS CANINE HEPATITIS VIRUS IN DOG KIDNEY CELL CULTURES**

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(Summary of Doctors thesis written under direction of Dr. R. YANAGAWA)

Little information is available on the nature, origin and synthesis of the soluble antigens of infectious canine hepatitis (ICH) virus. Therefore, the following studies were performed and the results obtained are summarized.

1) Dog kidney cell cultures infected with ICH virus produced two soluble antigens, complement fixing (CF) antigen and hemagglutinating (HA) antigen. These antigens were clearly fractionated by DEAE-cellulose column chromatography.

2) The ICH virus was treated with 1% sodium desoxycholate. It was found that the infectivity was lost, and the HA titer was decreased but, in contrast, the CF titer was increased. The possible mechanism of the change of titers of these antigens was discussed.

3) In the cellular fraction study, it was found that the virus titer was high in the nuclear fraction while CF and HA titers were high in the cytoplasmic fraction, throughout the course of infection.

4) Anti-CF antigen serum and anti-HA antigen serum were labeled and used for fluorescent antibody study. The specific fluorescence was detected 9 hours after infection. The CF antigen first appeared in the nucleus as small granules with less intense fluorescence, and in the next stage, the fluorescence was found as fibrous structure. The HA antigen was found throughout the nucleus as large granules with bright fluorescence. When the process of infection advanced, no difference in fluorescence was found between the infected cells

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stained with anti-CF and anti-HA antigen sera.

5) From the results described above, the author supposed that the CF and HA antigens, the components of virus particle, were mainly synthesized in the cytoplasm, then moved into the nucleus, and assembled into the virus particle.

## ON THE SIGNIFICANCE OF MICROSCOPICAL LESIONS IN THE TEATS OF COWS

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The quarters (208 udders; 207 teats) from indiscriminately collected 52 slaughtered cows (Holstein-Friesian cows, 4~17 years of age) were investigated histopathologically and with special consideration of neuropathology. Formal pathogenesis and significance of lesions in the teats were discussed. One hundred and eighteen teats (119 quarters), which had no mastitis diffusa, mastitis lobularis or galactophoritis, were treated as the primary subject of discussion.

a) In all of the quarters, there were desolations having a character of poly-neuropathy (old or relatively fresh changes) in the nerves innervating the mammae (intramural nerve bundles in the teats, nerve bundles being distributed in the udder, and lumbar nerves (L<sub>1</sub>~L<sub>4</sub>) and their branches. b) In all of the teats, almost all of the blood vessels showed varying degrees of alteration (edematous loosening and swelling of the walls), and c) almost all of smooth muscle fibers manifested hydropic degeneration and loss. d) In the majority of the teats, the lamina propria and tela submucosa of the cistern and streak canal showed edematous conditions in which pseudolaminar edema beneath the epithelium was attracted notice, and e) the epithelium showed hydropic degeneration and desquamation (erosion and ulcer). f) The epithelium of the streak canal revealed hyperkeratosis and the epithelium of the cistern revealed squamous metaplasia.

As for the formal pathogenesis of the aforementioned lesions (a~f), the following discussions were done: Disturbances of the autonomic nerves which were signified by the a might bring on the b; the b might bring on the c and d; the d might bring on the e and f.

With regard to the significance of the lesions, discussions were attempted from the viewpoints of "the teat as a portal of infection". It may be possible