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# STUDIES ON THE PORCINE ENTEROVIRUSES*

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On the basis of common properties of four strains of enteric viruses isolated from swine it has been presumable that a virus to be included among the porcine enteroviruses has the predilection to the alimentary tract of swine and satisfies the biophysical and biochemical properties of the Picornavirus group, having proper size of viral particle (30~40 m$\mu$).

The pattern of experimental infection of porcine enteroviruses in specific pathogen-free (SPF), colostrum-deprived pig was similar regardless their pathogenicity to the host. The initial step of infection could be multiplication of the virus in the alimentary tract of the pig. Subsequently, the virus spread out into the various organs and tissues by viremia. The final stage of infection consisted of a co-existence of specific antibodies formed in the blood of the host and the virus hid in the alimentary tract. The pathogenic enteroviruses induced polio-encephalo-myelitis in affected animal.

Contrariwise, the infection observed in the SPF pig was not reproduced in pigs which were nursed by dam having serum neutralizing antibodies against the viruses. And it was experimentally revealed that humoral antibody contained in the colostrum not only disturbed propagation of the virus in the alimentary tract of suckling litter for 2~3 weeks after birth, but also passively immunized the litter. The antibody in the litter arrested viremia and protected the animals from invasion of the pathogenic enterovirus into the central nervous system which is nenessary to cause apparent infection.

From result of investigations into natural infection of porcine enteroviruses it was prospected that protective mechanisms of piglets against apparent infection of the pathogenic virus were owing to the quantitative and qualitative balance between the antibodies in dams and the virus which invades into their litter.

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* The contents of this thesis are described briefly in "Journal of the Japan Veterinary Medical Association", Vol. 11, Nos. 4 & 5, 1964 in Japanese.