EXPERIMENTAL STUDY ON THE MUCOSAL IMMUNIZATION OF ANIMALS USING INACTIVATED VIRUSES

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It has been well established that the mucosal immune system plays an important role in the protection of animals from infections on their mucosal surfaces. However, the mechanism of mucosal immunity still remains to be determined. To provide information on mucosal immunity, inactivated viruses were experimentally administered on the mucosal surfaces of animals and their immune responses were analyzed. The results obtained were as follows;

1. In the sera and trachea-lung washes of the rats inoculated with inactivated Newcastle disease virus (NDV) either intraintestinally or intranasally, anti-NDV-specific antibodies were detected.
2. Chickens inoculated once with inactivated NDV nasally or orally did not show any protection against the challenge with a virulent NDV strain. On the other hand, chickens inoculated three times with inactivated NDV showed some resistance to the challenge.
3. Survival periods of chickens intraintestinally inoculated once with inactivated NDV together with adjuvants were slightly longer than those of control birds.
4. More than 60 % of chickens intranasally inoculated three times with inactivated NDV together with cholera toxin B subunit (CTB) resisted the challenge with a virulent NDV strain without showing any disease signs. This protection against infection was probably achieved by mucosal immunity since none of these chickens showed an HI antibody response in their sera before the challenge.
5. In the sera and trachea-lung washes of mice intranasally inoculated with inactivated pseudorabies virus (PrV) together with CTB as an adjuvant, anti-PrV antibodies were demonstrated.

The present results indicate that mucosal immunity of animals against virus infections could be induced by administration with the respective inactivated viruses on their mucosal surfaces, where the infections occur, and that the protective effect could be enhanced by repeated administration with the antigens and by the use of mucosal adjuvants.