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THE ROLE OF T CELL SUBSETS IN THE MECHANISM OF
MAREK'S DISEASE VACCINES

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Marek's disease (MD) is a lymphoproliferative disease of chickens which is characterized by CD4⁺ T cell lymphoma formation. MD vaccine, which is administered at hatching, produces a regressive effect on MD lymphoma formation. However, the vaccination mechanism has not been clarified.

Many studies reported that latent infection of Marek's disease virus (MDV) is maintained in activated T cells, but it has not been clarified which T-cell subsets, CD4⁺ or CD8⁺ T cells, are more susceptible to the virus.

To titrate MD in T-cell subsets by plaque assay, MDV was isolated from T-cell subsets of chickens which had been infected with virulent MDV (strain Md5) only or chickens vaccinated with attenuated MDV (strain CVI998) and challenged with Md5. In the group infected with Md5, the viral titer was higher in CD4⁺ T cells than in CD8⁺ T cells and declined day by day in both T-cell subsets. In the MD-vaccinated group challenged with Md5, the MDV titer was lower than in the non-vaccinated group, but viral distribution in T-cell subsets and its kinetics were similar to those in the non-vaccinated group.

To elucidate the roles of the CD8⁺ T-cell subset in vaccinal immunity, CD4⁺ and/or CD8⁺ T-cell-depleted chickens which had been produced by thymectomy and injection of monoclonal antibodies specific for CD4 or CD8 molecules, were vaccinated and challenged with Md5. In two groups, the CD8⁺-depleted group and CD4⁺/CD8⁺-deplete group, none of the chickens showed pathological changes such as lymphoma formation. These results suggest that cytotoxic T lymphocytes against MD lymphoma cell might not play an important role in inhibition of MD tumor formation due to MD vaccination.