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PROTECTIVE IMMUNITY AGAINST NEWCASTLE DISEASE INDUCED
BY A VACCINIA VIRUS RECOMBINANT

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The protective effect of recombinant vaccinia virus (HN-RVV) carrying the hemagglutinin-neuraminidase (HN) gene of Newcastle disease virus (NDV) was examined against virulent NDV challenge. Specific serum antibodies against the HN protein of NDV were also assayed.

Live HN-RVV could replicate only in the combs of chickens when inoculated intradermally into combs. Live HN-RVV induced specific serum antibodies against the HN protein of NDV and elicited protective immunity against virulent NDV challenge in all immunized chickens. Inactivated HN-RVV induced only low or undetectable levels of the antibody and could not elicit sufficient protective immunity. Protective effects of the inactivated HN-RVV were increased by either an increase of the immunization dose or an addition of complete adjuvant to the virus. Antibodies were not detected in some chickens immunized with the inactivated HN-RVV; however, they were protected against the challenge.

These results indicate that immunization with live HN-RVV in chickens induces effective protection against virulent NDV challenge. In the case of pox virus-based recombinant virus, replication of a vector virus or expression of inserted foreign genes on the surface of the infected cells may be important to induce protective immunity.