HN-SPECIFIC CELL-MEDIATED IMMUNE RESPONSE TO A RECOMBINANT VACCINIA VIRUS EXPRESSING THE HN GENE OF NEWCASTLE DISEASE VIRUS

Yoshiki ISHIKAWA

Department of Epizootiology,
Faculty of Veterinary Medicine,
Hokkaido University, Sapporo 060, Japan

Recently, a recombinant vaccinia virus expressing the hemagglutinin-neuraminidase (HN) gene of Newcastle disease virus (NDV) was developed. This recombinant virus (HN-rVV) can induce high hemagglutination-inhibiting antibodies and protection against NDV challenge in chickens. However, the role of the cell-mediated immune response induced by HN-rVV has not been clarified. This study was carried out to determine whether HN-specific cell-mediated immunity could be induced in mice by vaccination with HN-rVV.

Spleen cells from mice vaccinated with HN-rVV responded to A31 cells expressing HN glycoprotein (HN-A31 cells), HN antigen expressed by the baculovirus vector (AcNPV-HN Ag) and infectious virus particles as measured by lymphocytes proliferation assay. The immune spleen cells did not respond to A31 cells, Marek's disease virus B antigen expressed by the baculovirus vector or A31 cells infected with wild type VV.

Spleen cells from mice vaccinated with HN-rVV which were restimulated *in vitro* by HN-A31 cells or AcNPV-HN Ag, showed cytotoxic activity against HN-A31 cells but not against A31 cells. These effector cells also could lyse A31 cells infected with HN-rVV but not those infected with VV-WR. Treatment of the immune spleen cells with anti-CD8 monoclonal antibody and rabbit complement diminished HN-specific cytotoxicity. Spleen cells from C57BL/6N mice ($H\text{-}2^k$) vaccinated with HN-rVV responded to AcNPV-HN Ag in the lymphocyte proliferation assay, but did not show any cytotoxicity against HN-A31 cells which were derived from BALB/c ($H\text{-}2^d$) strain, indicating the restriction of cytotoxicity by H-2 histocompatibility antigens.

In conclusion, HN-rVV induced HN-specific cell-mediated immunity in mice. The cell-mediated immunity induced by vaccination with this recombinant virus may play an important role in protection against NDV in chickens.