

Establishment of a Thermostable Newcastle Disease Vaccine Candidate Strain and Its Adaptation to Vero Cells

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Abstract : From field isolates of Newcastle disease virus (NDV) in Japan, one avirulent strain, APMV/northern pintail/Japan/Aomori/2003 (dk-Aomori/03, NDV 261), was selected for its excellent thermostability, and the strain was heat-treated at 56°C temperatures for 30 min with each passage into Vero cells to maintain thermostability and to adapt Vero cells. After serial 20 passages in Vero cells, it was named NDV Vero20. When growth curves were tested in Vero cells, NDV Vero20 grew well to compare the original NDV261. The HN gene was sequenced, and found motifs that show thermostability. The intracerebral pathogenicity index (ICPI) test score was 0. The thermostability of the virus was confirmed by storing it at different temperatures, including at 37°C. When susceptible chicks were inoculated with NDV Vero20 through eye drops, induced adequate levels of antibody were measured using a serum neutralization test. The results showed that NDV Vero20, a vaccine candidate strain is thermostable, Vero cell adapted, and has immunogenic potential, which would make as an alternative to the traditional embryonated chicken eggs-based vaccine.

Keywords : Newcastle disease virus, thermostability, vaccine, Vero cell adaptability

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