

Improved immunogenicity of Newcastle disease virus inactivated vaccine following DNA vaccination using Newcastle disease virus hemagglutinin-neuraminidase and fusion protein genes

ABSTRACT

The present study describes the development of DNA vaccines using the hemagglutinin-neuraminidase (HN) and fusion (F) genes from AF2240 Newcastle disease virus strain, namely pIRES/HN, pIRES/F and pIRES-F/HN. Transient expression analysis of the constructs in Vero cells revealed the successful expression of gene inserts in vitro. Moreover, in vivo experiments showed that single vaccination with the constructed plasmid DNA (pDNA) followed by a boost with inactivated vaccine induced a significant difference in enzyme-linked immunosorbent assay antibody levels ($p < 0.05$) elicited by either pIRES/F, pIRES/F+ pIRES/HN or pIRES-F/HN at one week after the booster in specific pathogen free chickens when compared with the inactivated vaccine alone. Taken together, these results indicated that recombinant pDNA could be used to increase the efficacy of the inactivated vaccine immunization procedure.

Keyword: DNA vaccine; Newcastle disease virus; Antibody response; Inactivated vaccine