

Negligible effect of chicken cytokine IL-12 integration into recombinant fowlpox viruses expressing avian influenza virus neuraminidase N1 on host cellular immune responses

ABSTRACT

In comparison to the extensive characterization of haemagglutinin antibodies of avian influenza virus (AIV), the role of neuraminidase (NA) as an immunogen is less well understood. This study describes the construction and cellular responses of recombinant fowlpox viruses (rFWPV) strain FP9, co-expressing NA N1 gene of AIV A/Chicken/Malaysia/5858/2004, and chicken IL-12 gene. Our data shows that the N1 and IL-12 proteins were successfully expressed from the recombinants with 48 kD and 70 kD molecular weights, respectively. Upon inoculation into specific-pathogen-free (SPF) chickens at 10^5 p.f.u. ml⁻¹, levels of CD3⁺/CD4⁺ and CD3⁺/CD8⁺ populations were higher in the wild-type fowlpox virus FP9 strain, compared to those of rFWPV-N1 and rFWPV-N1-IL-12 at weeks 2 and 5 time points. Furthermore, rFWPV-N1-IL-12 showed a suppressive effect on chicken body weight within 4 weeks after inoculation. We suggest that co-expression of N1 with or without IL-12 offers undesirable quality as a potential AIV vaccine candidate.

Keyword: Recombinant fowlpox virus; Avian influenza virus; Neuraminidase; Cytokine; IL-12