C3d enhanced DNA vaccination induced humoral immune response to glycoprotein C of pseudorabies virus

Pseudorabies, or Aujeszky’s disease (AD), is a serious swine disease in the world. The causative agent is pseudorabies virus (PrV), one member of the subfamily Alphaherpesvirinae in the family Herpesviridae. Recently DNA vaccines to PrV have been actively studied. It was demonstrated that DNA expressing major glycoproteins of PrV gB, gC, and gD, which are involved in essential steps of viral infection, confers protective immunity in pigs and mice (2). Although DNA vaccines induce strong cell-mediated immunity, they are challenged by slow antibody rise, compared to protein or attenuated viral vaccines. C3d, the activated complement product, was able to augment humoral immunity to both the coupled proteins (1) and expressed fusion proteins in DNA vaccine. The authors examined whether mouse C3d and its complement receptor 2 binding domain could enhance the DNA vaccine encoding a fusion protein of PrV glycoprotein C by determining both cellular and humoral immune response and the protection against lethal PrV (3). The results demonstrated that C3d fusion directed Th1-biased immune response for gC DNA vaccination towards a balanced and more effective Th1/Th2 response for gC-C3d DNA to conquer PrV infection.

References: