

SWINE HEALTH

Title: Use of interferon alpha as an immunomodulator and metaphylactic therapeutic during PRRSV outbreaks
NPB #13-185

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Scientific Abstract:

Type I interferons, such as interferon alpha (IFN α), contribute to innate antiviral immunity by promoting production of antiviral mediators and also play a role in the adaptive immune response. Porcine reproductive and respiratory syndrome (PRRS) is one of the most devastating and costly diseases to the swine industry world-wide and has been shown to induce a meager IFN α response. Previously we administered porcine IFN α using a replication-defective adenovirus vector (AD5-IFN α) and challenged with a moderately virulent PRRSV. There was a better clinical outcome in pigs treated with IFN α , including lower febrile responses and decreased percentage of lung involvement. Viremia was delayed and there was a decrease in viral load in the sera of pigs treated with IFN α . In addition, there was an increase in the number of virus-specific IFN γ secreting cells, as well as an altered cytokine profile in the lung 14 days post-infection, indicating that the presence of IFN α at the time of infection can alter innate and adaptive immune responses to PRRSV. In this experiment we further explored the use of IFN α as an adjuvant given with attenuated PRRSV virus vaccine to determine if it would result in an enhanced immune response to the vaccine. One injection of the Ad5-IFN α given with the vaccine was able to totally abolish replication of the vaccine virus resulting in no detectable immune response. Although the IFN α did not end up having the desired adjuvant effect, the results are promising for the use of IFN α as a treatment for PRRSV infection. An additional study will examine its use as a metaphylactic treatment for an outbreak of PRRSV to both treat and prevent spread of the virus.

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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