RESEARCH ABSTRACT

SWINE HEALTH

Title: Comparison of the level of protection and long-term duration of immunity induced by different commercial PCV2 vaccines and an experimental PCV1-2 live vaccine in conventional pigs – **NPB #08-269**

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Scientific Abstract

The efficacy of commercial porcine circovirus type 2 (PCV2) vaccines and a live PCV1-2a chimeric vaccine were compared in conventional PCV2 positive piglets using a PCV2-PRRSV-PPV coinfection model. Seventy-three 2-week-old pigs were randomized into seven groups (PCV1-2, FDAH-1, BIVI-1, Intervet-2, FDAH-2, Positive and Negative) based on vaccine given and dose size; also included were a positive and negative control. Pigs in the vaccinated groups were vaccinated at 3 weeks of age (one dose) or at 3 and 6 weeks (two dose). Pigs in the positive and negative groups received no vaccination. At 16 weeks of age all pigs excluding negative controls were challenged with PRRSV, PPV and PCV2b. All the pigs except those in the negative control group were viremic for PRRSV and PPV at 7 days post inoculation (dpi). At 14-21 dpi, 100% pigs were viremic for PRRSV and 45-100% were viremic for PPV in the positive control group, whereas the viremia percentage in vaccine groups was 90-100% for PRRSV and 64-100% for PPV. Blood was collected on a weekly basis and tested for anti- PCV2 antibodies using an ELISA and for the presence of PCV2 DNA by quantitative real-time PCR. There were no significant differences in the mean group PCV2 ELISA S/P ratios between one-dose and two-dose vaccination regimens. All vaccinated groups had significantly ($p<0.05$) lower prevalence of PCV2 viremia and mean $\log_{10}$ PCV2 loads at 16 weeks compared to the positive control group, with an overall reduction of PCV2 viremia by 49.9-89.5%, specifically78.9% for one-dose vaccines and 68.1% for two-dose vaccines. Pigs were necropsied three weeks after challenge (21 dpi) corresponding to 19 weeks of age. Microscopic lesions, characterized by mild interstitial pneumonia and mild lymphoid depletion and histiocytic replacement in lymphoid tissues, were present in all challenged groups. There were no significant differences in mean group scores for any of the evaluated lesions among challenged groups. In general, vaccine regimens were effective in reducing natural occurring PCV2 viremia at 16 weeks of age and after PCV2 challenge, demonstrating the capability of the products to induce a lasting protective immunity despite presence of PCV2 viremia at vaccination.