

SWINE HEALTH

Title: Bioassay for Porcine Epidemic Diarrhea Virus contaminated feed – NPB #14-150

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Scientific Abstract:

Retrospective investigation into an outbreak of PEDV in a commercial swine production system in January 2014 found feed testing PEDV-positive with RT-PCR. This finding indicated that contaminated feed may have been a potential source of PEDV introduction into the herd. Since RT-PCR only detects the presence of viral RNA and it does not mean viable and infectious virus was present in the sample, this project was initiated as a timely follow-up to assess if the suspect feed (testing positive for PEDV with RT-PCR) was infectious to pigs. At the time of the outbreak, the attending veterinarian froze aliquots of the suspect feed as a wet mash and in the originally manufactured, pelleted form in an attempt to preserve viable virus. The suspect feed aliquots were fed to PEDV susceptible young pigs (starting at 14 d of age) for one week, during which the pigs, feed, and environment were repeatedly tested for PEDV.

The feed tested weakly PEDV positive with RT-PCR during the study (mean Ct =36.5). Pigs showed no clinical signs of disease during the bioassay. Environmental and rectal swabs collected daily during the study were negative for PEDV using RT-PCR. Microscopic examination of intestinal tissues collected from the piglets at the end of the study revealed no significant morphologic lesions. The result of the bioassay provided no evidence that the feed contained infectious PEDV and was capable of causing disease.

While we were not able to identify infectious PEDV with the present bioassay study, the inherent limitations of a retrospective bioassay make it impossible to rule out feed as a potential source of virus for this outbreak. Molecular sequencing and epidemiological data from this case may provide more insight to potential routes of PEDV introduction. Nonetheless, the growing number of case reports implicating feed as a potential PEDV source indicates systematic, active surveillance of emergent porcine coronaviruses in feed and feed components is needed to overcome the limitations of retrospective investigations.

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 This report has not been peer-reviewed.

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