RESEARCH ABSTRACT

SWINE HEALTH

Title: Feed transmission of PEDV to neonatal pigs**, NPB Project #13-266**

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Scientific Abstract: Porcine epidemic diarrhea virus (PEDV) was detected in swine in the United States (US) for the first time in May 2013 and since that time has caused significant economic losses for the swine industry. The main objective of this research was to determine by bioassay whether feed or feed components containing PEDV could transmit virus to neonatal pigs resulting in clinical disease and viral shedding. Complete feed, feed pre-mix and dried porcine plasma samples retained by feed manufacturers and collected shortly after the emergence of PEDV in US swine tested positive for PEDV by polymerase chain reaction (PCR) and were utilized in this bioassay. Additionally, PEDV-negative complete feed was spiked with PEDV isolated in the laboratory to serve as a positive control. Five-day-old, PRRSV- and PEDV-negative, neonatal pigs were fed a suspension of the PEDV-positive retained feed components and the positive control feed for 7 days. Positive control pigs first appeared thin and exhibited diarrhea 3 days post-infection (dpi) and continued to have diarrhea until the end of the trial. None of the pigs in the groups fed a suspension of PEDV PCR-positive feed components or the negative control group developed diarrhea throughout the duration of the trial. PEDV was detected in the feces by PCR in all pigs in the positive control group from day 3 dpi and feces remained PEDV PCR positive through the end of the trial. Additionally, the positive control pigs were the only group to exhibit microscopic evidence of atrophic enteritis consistent with PEDV infection. These results confirm that feed containing live PEDV can serve as a vehicle for transmission of this virus leading to the development of clinical disease in neonatal pigs. However, retained PEDV PCR-positive feed components collected by manufacturers shortly after PEDV was confirmed in the US did not transmit virus to neonatal piglets under the conditions of this study.