

Title: Evaluation of mucosal B cell response to PEDV in infected sows - **NPB # 14-187**

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Scientific Abstract:

Porcine epidemic diarrhea virus (PEDV) is the economically important enteric disease in the swine industry. Since the virus infects naïve and neonatal pigs, mortality is very high which reaches up to 100%. Currently, feedback methods utilizing PEDV infected material of piglets has demonstrated variable success in preventing reinfection of sows and their offspring. Thus, it is challenging for the swine veterinarians to understand the herd immune status against PEDV. Therefore, information on the duration of memory IgA and IgG antibody secreting B cell response in the intestines and lymphoid tissues of PEDV-infected sows, and its association with specific antibody levels in clinical samples such as plasma, oral, and fecal samples is important. Our goal of this study was to quantify PEDV specific IgA and IgG positive memory B cell response in sows with a clear history of infection of approximately 1 and 6 months post-exposure to virus. Further, due to expected differences in the immune status of primiparous vs. multiparous sows against PEDV, we included them in our study and compared the data with background values of uninfected age-matched sows. For this study, a total of 36 sows (n=6 sows per group), were resourced from multiple commercial swineherds in Mid-Eastern part of the US. Our results suggested that PEDV specific IgA response in the plasma and oral fluid (but not fecal samples) is ideal for diagnosis; and plasma for immune status evaluation in terms of virus neutralizing antibody titers until six months post-infection in sows. Data on PEDV specific IgA and IgG secreting B cell response in sows at mucosal and systemic sites indicated that, though their levels decline by 6 months at both ileum and spleen, but their levels and strong VN titers in plasma appears to be sufficient to react rapidly to reinfection in sows. In summary, PEDV specific B cell response at the intestines and spleen of infected sow associates strongly with the antibody response in plasma and oral fluid until six months post-infection that we evaluated, and such levels in sows might be sufficient to combat reinfection and protect offsprings.

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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