RESEARCH ABSTRACT

SWINE HEALTH

Title: Improving the performance of PRRSV oral fluid diagnostics – **NPB #15-158**

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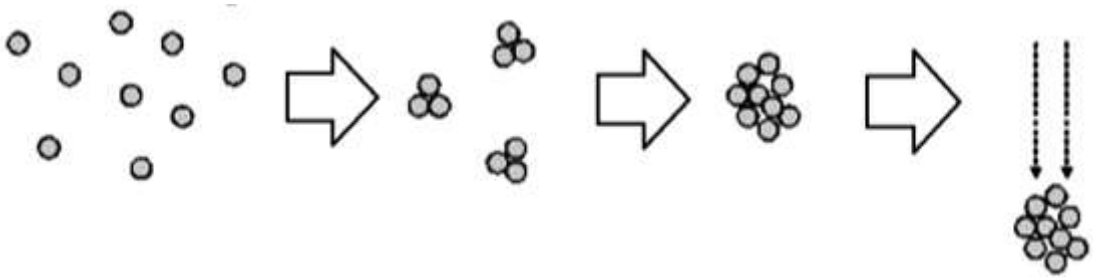
Scientific Abstract:
The purpose of surveillance is to guide efforts to control infectious disease, assure animal health and welfare, and improve producer profitability. Although serum is the traditional ante mortem surveillance sample, oral fluid is recognized as a more efficient and cost-effective alternative specimen. However, oral fluids are often contaminated with feed, feces, and inorganic particles from the environment, which in the severest cases, may affect test performance. Removal of particulates by centrifugation or filtration is not a solution because centrifugation removes diagnostic targets, filtration is too expensive, and both procedures require too much time to be performed routinely in the diagnostic laboratory.
This project is was a continuation of our work on the improvement of oral fluid diagnostics by treating samples with "coagulants". Coagulants are nonhazardous chemicals that cause particles to destabilize, clump together, and then precipitate out of solution (Figure 1). Coagulants have a long history of use in a wide variety of applications, including the treatment of drinking water, wastewater, and swimming pool maintenance. Their mode of action is conceptually simple, very fast, and highly effective at removing solids from liquids.

Figure 1. "Clean up" based on the process of coagulation - flocculation - precipitation



Particles produce turbidity	Coagulation	Flocculation	Precipitation

Objectives:
The objective of this project is to create an inexpensive and rapid oral fluid "clean up" protocol that improves both PRRSV oral fluid ELISA and RT-PCR diagnostic performance in high-throughput laboratories. In order to achieve this objective, we followed the next experimental design:

A. Generate a panel of oral fluid samples from pigs of known PRRSV status.
B. Use samples of known PRRSV status to optimize the clean-up procedure.
C. Evaluate the effect of coagulant treatment on PRRSV antibody detection in experimental samples.
D. Improve the performance of the PRRSV RT-PCR for oral fluid.