

**Title:** The effect of disinfection practices on RT-PCR detection of PEDV – NPB #14-151

**Investigator:** Andrew S. Bowman, MS, DVM, PhD, DACVPM

**Institution:** The Ohio State University

**Date Submitted:** December 1, 2014

**Scientific Abstract:** Currently the detection of PEDV is limited to RT-PCR and the present study sought to test disinfectants for their ability to both inactivate PEDV and disrupt the viral RNA so that PEDV became undetectable using RT-PCR. Five classes of disinfectants were evaluated in plastic petri dishes at varying concentrations, both in the presence and absence of swine feces. The testing was conducted under three different temperatures (37°C, 4°C, or -20°C). The disinfectants were a phenolic compound; a quaternary ammonia compound; sodium hypochlorite; an oxidizing agent; and a quaternary ammonium/glutaraldehyde combination. Three dilutions of the oxidizing agent (0.5%, 1% and 2%) and four dilutions of sodium hypochlorite (0.17%, 0.52%, 1.03%, and 2.06%) were tested. All of the tested disinfectants were able to render PEDV non-infectious in cell culture. All the disinfectants except for 0.17% sodium hypochlorite produced significant reductions in the estimated number of PEDV copies on RT-PCR in all tested settings; however, none of the disinfectants were able to produce RT-PCR results that were completely PEDV negative across all replicates. Strong solutions of sodium hypochlorite and 0.5% oxidizing agent did produce intermittent negative RT-PCR test results.

Secondly, aluminum coupons were pitted with 5% acetic acid to simulate a livestock trailer. PEDV was applied to the coupons, allowed to dry, and then treated with either 2.06 % sodium hypochlorite or 0.5% oxidizing agent. The surface of the aluminum was swabbed; the samples were tested with RT-PCR and used to inoculate both cells and naïve pigs. Neither of these two disinfectants was able to produce completely negative PCR results on pitted aluminum but these samples were not infectious in cell culture or to naïve pigs.

All of the disinfectants tested in the present study were able to render PEDV non-infectious but few were able to render PEDV undetectable with RT-PCR. Results of the present study indicate that oxidizing agents and sodium hypochlorite are most likely to produce negative RT-PCR results.

---

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.

---

For more information contact:

National Pork Board • PO Box 9114 • Des Moines, IA 50306 USA • 800-456-7675 • Fax: 515-223-2646 • [pork.org](http://pork.org)

---