

SWINE HEALTH

Title: Extent of contamination, quantification and survival of PEDV in fomites and effect of disinfectants on swine coronaviruses – **NPB #14-275**

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Scientific Abstract: The swine enteric coronaviruses PEDV, PDCoV and TGEV are shed in the feces of infected animals in large amounts, are transmitted by the fecal oral route, and can survive for long periods in the environment. Survivability in fomites relevant to biosecurity practices is unknown and because of the estimated prolonged survivability, it is necessary to use appropriate disinfection methods to decontaminate fomites and the environment. We conducted this study to evaluate the survivability of PEDV in various fomites including Styrofoam, nitrile disposable gloves, cardboard, aluminum foil, cloth and Tyvek coveralls at both room temperature and 4 C for up to 15 days. We also evaluated the virucidal efficacy of four commercial disinfectants against PEDV, PDCoV and TGEV using two different methods e.g., the suspension test and the surface test. The results showed that PEDV could be viable at 4C for 10 days in nitrile gloves, cardboard, aluminum foil and cloth, while it remained viable for 15 days in Styrofoam and Tyvek coveralls. In contrast, at room temperature survivability was significantly reduced to 2 days for all the materials. In regards to the disinfectant, the results showed that TGEV was the most sensitive and PDCoV was the least sensitive to these disinfectants. For PEDV, DC&R was the most effective killing 3 log₁₀ of the virus within 30 seconds in both tests. It was also able to kill more than 4 log₁₀ of PEDV within 60 seconds (in the suspension test). Tek-Trol was also able to inactivate 3 log₁₀ of PEDV within 30-45 seconds, depending on the test used. The remaining disinfectants were also effective killing at least 2 log₁₀ PEDV within 15 seconds. These results should be helpful in improving biosecurity measures and selecting appropriate disinfectant for the control of swine enteric coronaviruses.

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