

PORK SAFETY

Title: Effects of Competitive Exclusion on Post-Weaning *Escherichia coli* Infection - **NPB #00-137**

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Abstract:

The objective of the proposed research was to evaluate the effects of a porcine-derived competitive exclusion culture (RPCF) on an experimental enterotoxigenic *E. coli* (ETEC) infection in weaned pigs. The litters of eighteen sows, split into 3 studies, were used. Piglets in the RPCF group received the RPCF culture within 12 hours of birth by oral administration. Control piglets received a placebo. Upon weaning, piglets in the RPCF and infected control groups were administered 10^8 , 10^9 , or 10^{10} colony-forming units (CFUs) of an enterotoxigenic *Escherichia coli* (studies 1, 2, 3, respectively) that also expressed the F 18 fimbrial antigen and produced the STx2e toxin associated with edema disease in weaned pigs. In studies 1 and 2 where a lower challenge dose was used, reductions in the tissue positive and the CFU determinations for EC F18 STx2e were observed in the RPCF group. No mortality was associated with the two lower challenge doses and no differences in weights were recorded. However, in the high challenge dose studies (Study 3), no reductions in gut colonization by EC F18 STx2e were observed. The infected control group in Study 3 experienced 14.3% mortality, while no mortalities were recorded in the RPCF-treated pigs. Again, no differences in weight gain were observed. These studies demonstrate that the RPCF competitive exclusion culture may be an alternative or possibly adjunct prophylactic measure for the control of ETEC in weaned pigs.

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