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Ruth Cronje, and Jan Swanson;

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Use of a Defined, Porcine-origin Competitive Exclusion Culture to Protect Piglets from Disease Associated with Enterotoxigenic *E. coli*

R. B. Harvey¹, K. J. Genovese¹, R. C. Anderson¹, E. Dunlap², and D. J. Nisbet¹

¹Food and Feed Safety Research Unit, Agricultural Research Service, United States Department of Agriculture, College Station, TX 77845 USA

²MS Biosciences, Dundee, IL 60118 USA

Escherichia coli (EC) is one of the most important causes of diarrhea in piglets. Various age-dependent serotypes of EC can induce disease and death in neonates or in piglets during the post-weaning period. We have developed a defined, porcine-origin competitive exclusion culture that has been shown to reduce fecal shedding and cecal colonization by *Salmonella choleraesuis* (1, 3). The purpose of the present study was to evaluate a recombinant derivative of the competitive exclusion culture (RPCF) for efficacy against an enterotoxigenic EC in neonatal piglets and to evaluate RPCF against enterotoxigenic EC disease under commercial swine production conditions. In the laboratory study, piglets were administered RPCF by oral gavage at 12 and 24 hours after birth and challenged 48 hours later with an a 987P strain of EC. The RPCF-treated piglets had significantly ($P<0.05$) reduced mortality, fecal shedding, and gut colonization by EC when compared to controls. Mortality in untreated pigs was 17.5% whereas mortality was 4.4% in RPCF-treated pigs (2). In the field study, 1000 piglets were administered RPCF within the first 24 hours following birth and were raised in a commercial swine production facility. An equal number of untreated piglets from the same farrowing barns were raised in the same nursery facilities. Production data of both groups were compared for 40 days post-weaning. The administration of RPCF significantly ($P<0.10$) increased post-weaning nursery weights and significantly ($P<0.05$) reduced mortality (14% versus 9%) from an F18 strain of EC. These data suggest that RPCF is effective in protecting both neonatal and post-weaned piglets against disease associated with enterotoxigenic EC.

Summary

These data are important because CE may be an intervention strategy for the control and reduction of EC and could potentially improve overall health and performance of young pigs.

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