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Oral sodium chlorate, topical disinfection and weaning age modify *Salmonella enterica* shedding in pigs.

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Chlorate can be converted to cytotoxic chlorite by salmonellae, but not by mammalian cells. Oral consumption of chlorate reduced CFU/g of feces following experimental challenge to *S. Typhimurium* (Anderson et al., 2001). Offsite weaning has been used to produce pigs free *S. Choleraesuis* (Nietfeld et al., 1998). We hypothesized that the combination of chlorate, given for a five day period, topical disinfection and offsite early weaning may be effective in breaking the cycle of infection from dams to offspring. To test this, a chlorate/nitrate/lactate (CHLORATE) oral dose was administered daily for five days following weaning. A total of 80 pigs were weaned at 10 or 21 days of age; half were topically disinfected at weaning. Litters were selected from sows that were *Salmonella* culture positive at 0 to 2 days after farrowing, thus making piglet exposure likely and mimicking exposure that might be expected in commercial production. *Salmonella* were qualitatively detected in fecal samples collected from piglets on days -2, 10 and 14 relative to weaning. The number of *Salmonella* colony forming units (CFU) per g was estimated for fecal samples collected on days 0, 5 and in feces and cecal contents collected on 14 days post-weaning (DPW).

CHLORATE effectively reduced shedding (CFU/g and prevalence), but did not prevent shedding in weaned pigs. Weaning age had no impact on shedding at weaning or 5 DPW, although younger weaning age was associated with lower shedding (CFU/g and

prevalence) in subsequent samples. CHLORATE reduced the CFU/g of *Salmonella* in 5 DPW fecal samples and in 14 DPW cecal samples. The protective effects detected persisted through 14 DPW. Pigs weaned younger (10 d) pigs had fewer CFU *Salmonella* / g in cecal contents and lower prevalence in ileocolic lymph nodes than did older weaned (21 d) pigs. Disinfection reduced but did not eliminate shedding.

The sustained effect of CHLORATE the 9 day followup in this study suggest that changes in gut microecology may provide benefits for an extended period. In this study, CHLORATE was ineffective in breaking the cycle of transmission at weaning, even when done in combination with other treatments. CHLORATE, topical disinfection and weaning age may be useful tools to reduce *Salmonella* shedding in farms that practice segregated weaning, and where sow to piglet transfer of *Salmonella* is an important source of infection in nursery pigs.

References

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