

168 The evaluation of liquid disinfectants to reduce *Salmonella* contamination on animal food manufacturing surfaces. M. B. Muckey*, A. R. Huss, C. K. Jones, *Kansas State University, Manhattan.*

Recent research had demonstrated that *Salmonella* and Porcine Epidemic Diarrhea Virus have been isolated from feed, ingredients, and feed manufacturing equipment surfaces. However, there is limited data regarding the sanitation of animal food manufacturing surfaces. The objective of this experiment was to evaluate the effects of liquid chemical treatments to reduce *Salmonella* contamination of metal surfaces. Metal coupons (103cm², stainless steel 316; Built-so-Well, Manhattan, KS) were placed in sterile Petri dish, and inoculated with 1 mL of *Salmonella* Typhimurium Coupons were incubated overnight at 35°C, then subjected to treatments for 15 min: 1) no inoculation or sanitation treatment (positive control), 2) inoculated with no sanitation treatment (negative control), 3) inoculated and treated with a liquid alcohol-based commercial equipment sanitizer (DrySan Duo, Ecolab, St. Paul, MN), and 4) inoculated and treated with a liquid formaldehyde-based commercial product (SalCURB; Kemin Inc., Des Moines, IA). Immediately following treatment, excess material was removed by tapping. The coupon was then swabbed and the swab vortexed in neutralizing broth (EMD Chemicals, Darmstadt, Germany) before dilution. Samples were then serial diluted (10⁻¹ to 10⁻⁶) and spread to Trypticase Soy Agar plates. Plates were incubated at 35°C for 24 h, and then enumerated. The quantity of *Salmonella* colony forming units (CFU) are depicted as CFU/cm². Data were analyzed using the GLIMMIX procedure of SAS as a completely randomized design with 3 replicates per treatment. As expected, treatment affected ($P < 0.0001$) residual *Salmonella* concentration, and there was no growth on the positive control treatment. The liquid formaldehyde-based commercial product was highly effective, resulting in no detectable growth ($P < 0.05$). Treating metal surfaces with the liquid alcohol-based commercial equipment sanitizer reduced ($P < 0.05$) *Salmonella* concentrations by 2 logs compared to the negative control. Liquid sanitizer treatment of metal surfaces led to a reduction in *Salmonella*, and can be effective steps in bacterial contamination in feed and animal food manufacturing. However, liquid sanitizers have drawbacks because they may be corrosive and most feed manufacturing equipment is not designed as clean-in-place to withstand liquid sanitation. More research is needed to evaluate dry sanitation methods that are able to break biofilms and sanitize animal food manufacturing surfaces.

Key Words: feed, sanitation, *Salmonella*

doi: 10.2527/msasas2016-168

169 Effects of lactic acid bacteria complex and *Enterococcus faecium* DSM 7134 in weanling pigs. P. Y. Zhao*, H. N. Tran, H. Y. Shin, I. H. Kim, *Department of Animal Resource & Science, Dankook University, Cheonan, South Korea.*

As beneficial effects are observed, probiotics have been used as alternatives of antibiotics in swine industry. We conducted this study to compare the effect of lactic acid bacteria complex (*L. casei*, *L. rhamnosus*, *L. lactis*, *L. plantarum*, *S. thermophilus*, and *B. longum*) and *E. faecium* DSM 7134 on growth performance, nutrient digestibility, fecal microflora and characteristics in weanling pigs. A total of 120 weanling pigs (24 d) were used in a 5-wk feeding trial, and allotted into 3 dietary treatments: CON, basal diet; LA, CON + 0.1% lactic acid bacteria complex; EF, CON + 0.1% *E. faecium* DSM 7134. Pigs were weighed on d 0, 14, and 35 while feed consumption was recorded to calculate ADG, ADFI, and G:F. Fresh fecal samples were obtained on d 14 and 35 to determine the ATTD of DM, GE, and N by adding 0.2% chromium oxide. One gram of fecal sample was diluted with 9 mL of 1% peptone broth and then homogenized. Viable counts of bacteria were conducted by plating serial 10-fold dilutions onto agar plates. The pH value of each sample was measured using a pH meter. The same samples were then first air-dried at 60°C, followed by an equilibration and moisture determination at 105°C to determine fecal moisture. All data were subjected to the GLM procedures of SAS and differences among treatments were separated by Tukey's multiple range test with a $P < 0.05$ indicating a significance. The ADG (from Day 0 to 14, Day 15 to 35, and overall period) and G:F (overall period) was higher ($P < 0.05$) in EF than that in CON. On Day 14 and 35, the ATTD of DM, N, and GE was greater ($P < 0.05$), fecal *Lactobacillus* counts were increased ($P < 0.05$), and fecal pH was decreased in LA and EF compared with CON. Results indicated that both lactic acid bacteria complex and *E. faecium* can increase nutrient digestibility and fecal *Lactobacillus* concentration, as well as decrease fecal pH. Additionally, *E. faecium* DSM 7134 have better effects on growth performance than lactic acid bacteria complex in weanling pigs.

Key Words: lactic acid bacteria complex, *Enterococcus faecium* DSM 7134, weanling pigs

doi: 10.2527/msasas2016-169