135 The effects of functional feed additive proteins with or without antibiotics on the growth and health status of nursery pigs. Leigh A. Ruckman, John F. Patience, *Iowa State University*

The objective of this experiment was to determine the effects of dietary functional proteins with or without antibiotics on the growth and health of nursery pigs. A total of 1,230 pigs weaned at 15–18 days (4.93 ± 0.02 kg BW; PIC 359 X 1050, Hendersonville, TN) were randomly assigned to 1 of 6 dietary treatments (10 pens/treatment) for a 42-d experiment. Treatments were arranged as a 2 X 3 factorial of in-feed antibiotics (no vs yes) and functional feed additive proteins [none (CON), spray-dried plasma proteins (SDPP; AP 920, APC Inc., Ankeny, IA), or dried egg protein with IgY (DEP; Globimax JS, EW Nutrition, Des Moines, IA)]. Diets were fed in 4 phases with phase 3–4 common across treatments. Proteins were fed in phases 1 (d 0–13; 3% SDPP or 0.2% DEP) and 2 (d 13–26; 2% SDPP or 0.1% DEP). Antibiotics were fed in phase 1–3 (662 mg chlortetracycline/kg, 28 mg carbadox/kg, 441 mg chlortetracycline/kg, respectively). Growth performance data were analyzed using PROC MIXED of SAS (9.4). Pen was the experimental unit; proteins and antibiotics and their interaction were considered fixed effects. In the absence of antibiotics, compared with CON, SDPP and DEP increased ADG (CON: 0.237 kg, SDPP: 0.254 kg, DEP: 0.257 kg/d; $P = 0.036$) and ADFI (CON: 0.360, SDPP: 0.378, DEP: 0.383 kg/d; $P = 0.040$). In the presence of antibiotics, SDPP increased ADG compared with DEP, but not CON, (CON: 0.258, SDPP: 0.268, DEP: 0.251 kg/d; $P = 0.036$) and ADFI (CON: 0.385, SDPP: 0.398, DEP: 0.381 kg/d; $P = 0.040$). Diet had no effect on feed efficiency ($P > 0.10$). SDPP and DEP decreased the number of medical treatments administered ($P = 0.001$). In conclusion, the functional proteins increased growth performance in the absence of antibiotics, but not when antibiotics were used. However, the functional proteins were effective in decreasing medical treatments regardless of antibiotic use.

Key words: spray-dried porcine plasma, dried egg immunoglobulins, swine

128 Effects of a *Bacillus*-based probiotic and prebiotics on nursery pig performance, fecal consistency, and fecal microflora. Mariana Boscato Menegat[1], Michaela B. Braun[1], Joel M. DeRouchey[1], Jason C. Woodworth[1], Jim Bryte[2], Mike D. Tokach[1], Steve S. Dritz[1], Robert D. Goodband[1], [1]*Kansas State University,* [2]*Quality Technology International, Inc.*

This study evaluated the progeny of sows fed a control or probiotic diet with *Bacillus subtilis* C-3102 (Calsporin®, Calpis Co. Ltd., Tokyo, Japan) at 500,000 and 1,000,000 CFU/g diet in gestation and lactation, respectively. A total of 358 weaned pigs (DNA 241 × 600) were used in a 42-d trial with 4–5 pigs/pen and 18–19 pens/treatment. Pens were allotted to treatments in a completely randomized design based on BW at weaning. Treatments were a 2×2 factorial with main effects of sow diet (control vs. probiotic) and nursery diet (control vs. probiotic). In the nursery probiotic diet, a product based on probiotic *Bacillus subtilis* C-3102 at 500,000 CFU/g diet and prebiotics β-glucans and mannan oligosaccharides was included at 0.05% (BacPack ABF™, Quality Technology International, Inc., Elgin, IL). Diets were corn-soybean meal-based. Growth performance and fecal consistency on a 1-to-5 scale were evaluated weekly. Fecal samples were collected for microbial analysis by culture method and bacterial quantification of *Bacillus subtilis* C-3102, total *Bacillus* sp., *Lactobacillus* sp., *Clostridium perfringens, Salmonella* spp., *Enterococcus* sp., *Enterobacteriaceae*, total aerobes, and total anaerobes. Data were analyzed using a linear mixed model (PROC GLIMMIX, SAS®) with pen as experimental unit. There was no evidence for effect of sow diet, nursery diet, or interactions ($P > 0.10$) on overall nursery growth performance and fecal consistency. However, growth performance from d 21 to 42 and final BW were greater ($P < 0.05$) in progeny of control-fed sows compared to probiotic-fed sows. Microbial analysis revealed an increase ($P < 0.01$) in *Bacillus subtilis* C-3102 and, consequently, total *Bacillus* sp. in fecal microflora of probiotic-fed pigs. In conclusion, probiotic inclusion to sow diets lowered growth performance of the progeny in late nursery. The probiotic diet provided to sows or nursery pigs did not influence fecal consistency, but altered the fecal microbial population in nursery pigs by increasing total *Bacillus* sp.

Key words: *Bacillus subtilis*, direct-fed microbial, piglet