

870 Effects of phytobiotics on nursery pig performance. R. C. Sulabo^{*1}, J. Y. Jacela¹, J. M. DeRouchey¹, M. D. Tokach¹, F. Neher², R. D. Goodband¹, S. S. Dritz¹, and J. L. Nelssen¹, ¹Kansas State University, Manhattan, ²Biomim Inc., San Antonio, TX.

A total of 192 weanling pigs (initially weighing 5.85 kg and 22 ± 2 d of age, PIC) were used in a 42-d growth assay to determine the effects of phytobiotics (Biomim[®] P.E.P. 125 and 125T) on post-weaning growth performance. Pigs were blocked by initial weight and randomly allotted to one of four treatments: 1) negative control (feed containing no antibiotic or phytobiotic); 2) negative control + phytobiotic 1 (125 g/ton of Biomim[®] P.E.P. 125); 2) negative control + phytobiotic 2 (125 g/ton of Biomim[®] P.E.P. 125T), and 4) positive control (feed containing 140 g/ton of neomycin sulfate and 140 g/ton of oxytetracycline HCl; Neo/OTC). Each treatment had six pigs per pen and eight replications (pens). Phase 1 and 2 diets were fed from d 0 to 14 and d 14 to 42, respectively. Overall (d 0 to 42), ADG (g), ADFI (g), and G:F was 453, 642, and 0.71 for pigs fed the negative control; 481, 658, and 0.73 for pigs fed phytobiotic 1; 477, 649, and 0.74 for pigs fed phytobiotic 2; and 502, 705, and 0.71 for pigs fed the positive control. Pigs fed Neo/OTC had greater (P<0.03) ADG and ADFI than pigs fed the negative control diet and pigs fed diets with phytobiotics. Addition of phytobiotics to the nursery diet also increased (P<0.03) ADG and G:F compared to pigs fed diets without antibiotics and improved (P<0.01) G:F compared to pigs fed the positive control diet. No differences (P>0.38) were observed in ADFI between pigs fed the negative control diet and pigs fed either phytobiotic. Pigs fed diets with Neo/OTC had similar (P>0.28) G:F compared to pigs fed diets without antibiotics. No differences (P>0.52) were observed in ADG, ADFI, and G:F between pigs fed diets with phytobiotic 1 and 2. In conclusion, phytobiotics in nursery diets improved post-weaning growth performance when added to diets without antibiotics. Further research is needed to elucidate specific modes of action that caused positive effects in post-weaning growth and efficiency.

Key Words: Phytobiotics, Antibiotics, Nursery Pig

871 Dietary supplementation with *Acanthopanax Senticosus* extracts enhances the digestion and absorption of dietary protein and amino acids in weaned pigs. F. G. Yin^{*1}, X. F. Kong¹, Y. L. Yin¹, H. J. Liu¹, F. F. Xing¹, Q. H. He¹, T. J. Li¹, R. L. Huang¹, P. Zhang¹, and G. Y. Wu^{1,2}, ¹Institute of Subtropical Agriculture, The Chinese Academy of Sciences, Changsha, Hunan, China, ²Texas A&M University, College Station.

This study was conducted to determine the effects of dietary supplementation with *Acanthopanax senticosus* extracts (ASE) on the digestion and absorption of protein and amino acids in weaned pigs. Sixty piglets weaned at 21 d of age were randomly assigned to one of the three treatment groups, representing supplementation with 0 (control) or 0.1% ASE or 0.02% colistin (an antibiotic) to a corn- and soybean meal-based diets for 28 d (n=20 pigs/group). On d 0, 7, 14 and 28 post the initiation of ASE supplementation, venous blood samples were obtained from 5 pigs per group and sera were analyzed for amino acids. On d 28, pigs were euthanized to obtain digesta from the terminal ileum for determining total amino acids. The results indicated that serum concentrations of total amino acids in all groups of pigs were gradually increased (P<0.05) with increasing age. On d 28, serum concentrations of His and Lys in ASE-supplemented pigs were higher (P<0.05) than those in the other two groups, whereas serum concentrations of Thr in ASE-supplemented pigs were higher (P<0.05) than those in colistin-supplemented pigs. Serum concentrations of Phe, Tyr, Leu, Ile and Ala in ASE-supplemented pigs were higher (P<0.05) than those in the control group. Concentrations of Phe, Tyr, Leu, Ile, Ala, Gly, Asp, Glu, His, Lys and Ser in the digesta of in ASE-supplemented pigs were lower (P<0.05) than those in the other two groups. Further, concentrations of Val, Arg and Thr Ser were lower (P<0.05) in ASE-supplemented pigs than those in colistin-treated pigs. Collectively, these findings suggest that dietary supplementation with ASE enhances the digestion and absorption of protein or amino acids in weaned pigs.

Key Words: Herbal Extracts, Amino Acids, Weaned Pigs

Nonruminant Nutrition: Weanling Pig Nutrition

872 Effect of organic acids and antibiotic growth promoters on growth performance, gastrointestinal pH, intestinal microbial populations and immune responses of weaned pigs. Z. Li¹, D. Li¹, G. Yi^{*2}, J. Yin¹, and P. Sun¹, ¹China Agricultural University, Beijing, P.R. China, ²DaChan NorthEast Asia Corp, Beijing, P. R. China.

Two experiments compared the effects of feeding organic acids and antibiotic growth promoters (AGP) in weaned pigs. Nursery pigs (N=96, 7.80 ± 0.07 kg) were allotted to a control or supplemented with AGP (200 ppm chlortetracycline plus 60 ppm Lincospectin), 0.5% potassium diformate, or 0.5% dry organic acid blend ACTIVATE Starter DA. During 4 weeks postweaning, pigs fed AGP or ACTIVATE had better ADG (P<0.03) and GF (P<0.04) than controls. On d 14 postweaning, control pigs had the lowest fecal lactobacilli counts among all treatments (P<0.02), whereas pigs fed AGP or ACTIVATE tended to have lower fecal E. coli counts compared to the controls (P<0.08). Serum IGF-1 levels of pigs fed AGP was greater than control pigs (P<0.03). Weaned pigs (N=24, 5.94 ± 0.33 kg) were used

to evaluate AGP and ACTIVATE on performance, gastrointestinal measurements, and immune response of E. coli K88+ challenged pigs. Pigs were fed a control, or supplemented with AGP (100 ppm colistin sulfate, 50 ppm Ketasamycin plus 60 ppm Olaquinox), 0.5, or 1% ACTIVATE. During d 5 to 14 after E. coli K88+ challenge, pigs fed AGP, 0.5, or 1% ACTIVATE had higher gain than controls (P<0.01). Furthermore, control pigs had the worst GF among all treatments (P<0.03). On d 14, compared to the control pigs, pigs fed 0.5% ACTIVATE had higher lactobacilli in the duodenum, and pigs fed AGP and 1% ACTIVATE tended to have higher lactobacilli in the ileum (P<0.08). Pigs fed AGP, 0.5% or 1% ACTIVATE diets tended to have lower ileal E. coli counts compared to the controls (P<0.08). Serum interleukin-6, cortisol, or digesta pH values were not affected by treatment (P=0.11). These results indicate that AGP and organic acid blend ACTIVATE can improve growth performance of weaned pigs, mainly via modulating intestinal microflora populations or somatotrophic axis.

Key Words: Antibiotics, Growth Performance, Organic Acid