132 Replacement of fishmeal with Amino Balance™ in diets for 5-10 kg pigs. J. D. Hahn*, S. A. Hansen, and B. V. Lawrence, Hubbard Feeds, Inc.

Performance effects from feeding Phase 1 (P1) and Phase 2 (P2) nursery diets containing a proprietary protein blend, Amino Balance™ (AB), as a replacement for fishmeal, were evaluated. Initially 1008 PIC pigs (C22 x TR4) weighing 5.4 kg ± 0.2 kg were allotted to two treatments (n=18), in a conventional nursery at 28 pigs/pen. The feeding program utilized a 1.50% Lys P1 and a 1.40% Lys P2 diet from 0-7 days and 8-18 days post-weaning, respectively. The control (CONT) was P1 and P2 diets containing 11% and 6.5% fishmeal, respectively. The experimental (EXP) regimen was P1 and P2 with 12.5% and 9.0% AB, respectively. During the 0-7 day period, the ADG, ADFI, and GF were 178 vs. 186 g/d, 148 vs. 161 g/d, and 1.21 vs. 1.16 g/g for the CONT and EXP regimens, respectively. During the 0-18 day period, the ADG, ADFI, and GF were 251 vs. 248 g/d, 273 vs. 277 g/d, and 0.92 vs. 0.89 g/g for the CONT and EXP regimens, respectively. The EXP regimen increased (P < 0.05) ADFI in the 0-7 day period, but all other parameters were not affected (P > 0.10). In Trial 2, 1000 terminal cross pigs (Duroc x Large White/Landrace) weighing 5.8 kg ± 0.2 kg were allotted to CONT and EXP regimens (n=20), in a conventional nursery, at 25 pigs/pen. The same feeding program was utilized, with the exception that the P2 diet was fed from 8-21 days post-weaning. The CONT was P1 and P2 diets with 4.5% and 3.5% fishmeal, respectively. The EXP regimen was P1 and P2 with 6.5% AB. During the 0-7 day period, the ADG, ADFI, and GF were 77 vs. 104 g/d, 112 vs. 132 g/d, and 0.73 vs. 0.83 g/g for the CONT and EXP regimens, respectively. During the 0-21 day period, the ADG, ADFI, and GF were 265 vs. 277 g/d, 319 vs. 324 g/d, and 0.83 vs. 0.86 g/g for the CONT and EXP regimens, respectively. EXP regimen increased (P < 0.05) ADG for the 0-21 day period. In these trials, substitution of Amino Balance™ for fishmeal produced no negative effects on nursery pig performance.

Key Words: Nursery Pigs, Growth, Fishmeal

133 Effect of diets containing mycotoxins with or without Mycosorb® on piglet performance. S. W. Castel1, L. W. Pace1, G. E. Rotthausen1, T. J. Evans1, and P. Spring2, 1University of Missouri, 2Swiss College of Agriculture, Switzerland.

The purpose of this experiment was to determine the effect of diets containing mycotoxins with or without Mycosorb® on piglet performance. Fifty piglets 7-days post weaning were assigned to 10 treatment groups. The trial lasted 14 days. Feed and water were provided ad libitum. Starter (S-2) diets meeting NRC nutrient requirements were fed as mash. Diets contained no toxin, aflatoxin (0.5 ppm), deoxynivalenol (DON, 5 ppm), zearalenone (ZEA, 4 ppm) or a combination of the 3 toxins. Each diet was tested with 2 levels (0 and 0.2%) of Mycosorb® (Alltech Inc.). Performance of the piglets was measured and external appearance was described. Statistical comparisons were performed using a one-way ANOVA, and pair-wise comparisons were made using a t-test. For statistical analysis, relative growth rates (% of body mass/day) were calculated as (weight gain (kg/day)/initial body weight (kg) * 100). Only those piglets fed diets containing 3 mycotoxins (aflatoxin, DON and ZEA) or DON alone had reduced relative growth rates from the control (P < 0.05). The relative growth rate of the pigs fed DON with Mycosorb® was increased compared to the animals fed the control diet (P < 0.07); however, it was not statistically different from the DON only group. Pigs fed a combination of aflatoxin, DON and ZEA with Mycosorb® grew better than those pigs fed the same combination of mycotoxins without the adsorbent (P < 0.05). DON and the combination of aflatoxin, ZEA and DON led to a reduction in growth rate compared to the control. Mycosorb® alleviated some of the negative effects of a combination of aflatoxin, ZEA and DON on growth.

Key Words: Mycotoxin, Pig, Growth

134 Influence of dietary δ-aminolevulinic acid supplementation on growth performance and hematological changes in weaned pigs. B. J. Min1, I. H. Kim1, J. W. Hong*1, O. S. Kwon1, W. B. Lee1, K. S. Shon1, J. H. Cho1, and J. H. Kim2, 1Dankook university, Korea, 2Agribrands Purina Korea, Inc.

This study was conducted to investigate the effects of δ-aminolevulinic acid supplementation on growth performance, nutrient digestibility and hematological changes in weaned pigs. Seventy five LYT pigs (7.21±0.02kg average BW) were used in a 20 d growth assay. Dietary treatments included: 1) NC (negative control; basal diet), 2) PC (positive control; NC diet+0.1% Apramycin+0.1% oxytetracycline, antibiotics), 3) ALA0.1 (NC diet+0.1% δ-aminolevulinic acid, Envirolax® EnBioGene Inc.), 4) ALA0.2 (NC diet+0.2% δ-aminolevulinic acid) and 5) ALA+AB (PC diet+0.2% δ-aminolevulinic acid). In entire experimental period, ADG was greater for pigs fed ALA+AB diet than for pigs fed NC diet (P<0.05). However, there was no difference in ADG for pigs fed PC, ALA0.1 or ALA0.2 diets. Also, ADFI and Gain/Feed were not affected by treatments. On d 20, digestibilities of DM and N were higher (P<0.05) for pigs fed ALA+AB diet than for pigs fed NC and ALA0.1 diets. Total protein concentration of serum was increased in ALA+AB treatment compared to NC and PC treatments (P<0.05). In iron concentration of serum, pigs fed δ-aminolevulinic acid supplemented diets were greater than for pigs fed NC and PC diets (P<0.05). In experiment period, δ-aminolevulinic acid supplementation diets were greater than for pigs fed NC and PC diets (P<0.05). TIBC concentration of serum was increased in ALA+AB treatment compared to NC, PC and ALA0.1 treatments (P<0.05). Pigs fed ALA+AB and ALA0.2 diets had higher hemoglobin (Hb) and hematocrit (HCT) concentration of blood than pigs fed NC and PC diets (P<0.05). RBC and WBC concentrations of blood were higher (P<0.05) for the pigs fed ALA0.2 and ALA+AB diets than for pigs fed NC diet. Lymphocyte concentration of blood was increased in δ-aminolevulinic acid supplementation treatment compared to NC treatment (P<0.05). In conclusion, δ-aminolevulinic acid and antibiotic mixture supplementation may result in greater effective growth performance in weanling pigs.

Key Words: Pigs, δ-Aminolevulinic Acid, Growth Performance


A total of 276 pigs (initially 9.9 kg) were used to determine the effects of added Hemicell® on growth performance in a 19-d growth assay. Hemicell® is a patented fermentation product of Bacillus lentus. The active ingredient in the fermentation product is β-mannanase. However, other enzymes such as amylase, xylanase, cellulases, and α-galactosidase also are present. The proposed mechanism for Hemicell® is that it degrades β-mannan in feed, thus, removing its effects as an anti-nutritive factor in swine diets. Dietary treatments were arranged as a 2 x 3 factorial, with or without 0.05% Hemicell®, in diets with 3 energy densities (3,060, 3,280, 3,501 ME, kcal/kg). The 100 kcal increments were also present. The proposed mechanism for Hemicell® is that it degrades β-mannan in feed, thus, removing its effects as an anti-nutritive factor in swine diets. Dietary treatments were arranged as a 2 x 3 factorial, with or without 0.05% Hemicell®, in diets with 3 energy densities (3,060, 3,280, 3,501 ME, kcal/kg). The 100 kcal increments were achieved by the addition of wheat bran or soy oil to a corn-soybean meal based diet. There were 6 pigs per pen and 5 pens per treatment. There were no Hemicell® x dietary energy interactions (P > 0.12). Increasing energy density of the diet resulted in a quadratic (P < 0.03) improvement in ADG (456, 492, and 481 g/d) and feed efficiency (G/F; 0.67, 0.71, and 0.71). The addition of Hemicell® to the diets, regardless of energy level, did not improve (P > 0.60) ADG (478 vs 475), ADFI (685 vs 686), or G/F (0.70 vs 0.69) compared to those pigs fed diets with no added Hemicell®. In conclusion, increasing the energy density of the diet improved pig performance; however, Hemicell® did not influence pig performance.

Hemicell: Without With

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Key Words: Weanling Pigs, Energy, Enzyme