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 ± .02 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 effected ($P > 0.10$). In Trial 2, 1000 terminal cross pigs (Duroc x Large White/Landrace) weighing 5.8 kg ± .02 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 and ADFI for the 0-7 day period. EXP regimen increased ADG ($P < 0.05$) and GF ($P < 0.08$) 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. Casteel[1], L. W. Pace[1], G. E. Rottinghaus[1], T. J. Evans[1], and P. Spring[2], [1]*University of Missouri* [2]*Swiss 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. Min[1], I. H. Kim[1], J. W. Hong*[1], O. S. Kwon[1], W. B. Lee[1], K. S. Shon[1], J. H. Cho[1], and J. H. Kim[2], [1]*Dankook university, Korea,* [2]*Agribrands 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 LYD 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, EnviroVax®, 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 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

135 Evaluation of Hemicell® on growth performance of late nursery pigs. N. A. Lenehan*, R. D. Goodband, M. D. Tokach, J. M. DeRouchey, J. L. Nelssen, S. S. Dritz, C. N. Groesbeck, C. W. Hastad, T. P. Keegan, K. R. Lawrence, and M. G. Young, *Kansas State University* .

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 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			
ME Kcal/kg:	3060	3280	3501	3060	3280	3501	SE
ADG, g	445	503	476	467	481	485	0.03
ADFI, g	671	712	676	694	689	671	0.04
Gain:feed	0.66	0.71	0.70	0.67	0.70	0.72	0.02

Key Words: Weanling Pigs, Energy, Enzyme