Two, 28-d studies were conducted to determine the fourth-limiting amino acid in finishing diets containing NutriDense® corn. A total of 1,134 (37.2 kg) and 1,090 (77.3 kg) PIC pigs were used in Exp. 1 and 2, respectively. Pigs were blocked by BW and randomly allotted to one of six diets with 7 replications in each experiment. Dietary TID lysine was 0.91% in Exp 1 and 0.72% in Exp. 2. Treatments were 1) positive control containing 0.15% L-Lys HCl; 2) negative control with 0.45% L-Lys HCl, 0.085% DL-Met, and 0.15% L-Thr; 3) diet 2 with 0.05% L-Ile; 4) diet 2 with 0.05% L-Val; 5) diet 2 with 0.05% L-Trp; and 6) diet 2 with 0.05% L-Ile, 0.05% L-Val, and 0.05% L-Trp. In Exp. 1, ADG was 0.87, 0.77, 0.82, 0.80, 0.82, and 0.87 kg/d and G/F was 0.39, 0.37, 0.37, 0.38, 0.38, and 0.38 for treatments 1 to 6, respectively. Pigs fed added Ile or Trp had greater ADG (P<0.05) than pigs fed the negative control. Pigs fed the combination of added Ile, Trp, and Val had greater (P<0.05) G/F then pigs fed all other diets. Pigs fed the positive control, added Trp, or the combination of added Ile, Trp, and Val had greater (P<0.05) ADG then pigs fed all other treatments. The combination of added Ile, Trp, and Val had greater ADG (P<0.05) than all other treatments. Pigs fed added Ile or Trp had greater ADG (P<0.05) than pigs fed the negative control. Pigs fed the combination of added Ile, Trp, and Val had greater ADFI (P<0.05) then pigs fed the negative control. There were no differences in G/F. In Exp. 2, ADG was 0.88, 0.74, 0.78, 0.75, 0.84, and 0.85 kg/d and G/F was 0.33, 0.28, 0.29, 0.29, 0.31, and 0.31 for treatments 1 to 6, respectively. Pigs fed the positive control, added the combination of added Ile, Trp, and Val had greater (P<0.05) ADG then pigs fed the negative control or pigs fed either Ile or Val. Pigs fed the positive control had greater (P<0.05) G/F then pigs fed all other diets. Pigs fed the combination of added Ile, Trp, and Val had greater (P<0.05) G/F compared to pigs fed the negative control or added Val. These results suggest that, in diets containing NutriDense® corn, Trp and Ile are the co-fourth limiting amino acids for 36 to 59 kg pigs, while Trp is fourth limiting for 77 to 100 kg pigs.

Key Words: Amino acids, Corn, Swine

Effect of increasing lysine/net energy concentration on growth performance and plasma urea nitrogen concentration of late-finishing barrows fed low-protein amino acid-supplemented diets and Paylean®. R. Moreno*, P. S. Miller, and T. E. Burkey, University of Nebraska, Lincoln.

A study was conducted to evaluate the effects of increasing the lysine (lys):NE ratio on growth performance and plasma urea nitrogen concentration (PUN) of late-finishing barrows fed low-CP AA-supplemented diets and Paylean (ractopamine•HCl; RAC). Twenty-four late-finishing barrows (83.6 kg) were used in a 28-d experiment. Pigs were individually penned and had ad libitum access to feed and water. The pigs were randomly allotted to 1 of 6 dietary treatments consisting of 1 corn-soybean meal diet (5.24 g lys/Mcal NE; 20% CP) and 5 low-CP AA-supplemented diets with increasing lys:NE concentration (16% CP; 3.35 to 5.83 g lys/Mcal NE) and RAC inclusion (0 and 5 ppm). Body weight and feed disappearance were measured and ADG, ADFI, and G:F were calculated. Blood samples were collected weekly. Backfat depth (BF) and LM area (LMA) were measured at the 10th rib by ultrasound. There were no differences among treatments for final weight (P = 0.62). No effect of lys:NE was detected for ADG, ADFI or G:F (P = 0.41, 0.33, and 0.55). Increasing dietary lys:NE concentration resulted in a linear decrease in BF (P = 0.01). The greatest BF (2.26 cm) was recorded for the 3.35 g lys/Mcal NE treatment and the lowest (1.65 cm) corresponded to the 5.2 g lys/Mcal NE treatment; treatments did not affect final LMA (P = 0.69). We observed treatment effect for PUN on d 21 and 28 (P = 0.01 and 0.03 respectively), which indicates that feeding low-CP AA-supplemented diets and RAC resulted in decreased AA deamination and catabolism, especially at the end of the experimental period. The results of this experiment indicate that growth performance was not affected by increasing lys:NE concentration in low-CP AA-supplemented diets with 5 ppm of RAC inclusion; however, increasing lys:NE concentration results in decreased BF and decreased AA breakdown.

Key Words: Ractopamine, Pigs, Protein

Dietary inclusion of colicin E1 prevents post weaning diarrhea in a seeder challenge model. S. A. Cutler*, N. A. Cornick1, S. M. Lonergan1, and C. H. Stahl2, 1University of Missouri, Columbia, 2The Maschhoffs Inc., Carlyle, IL, 3Ajinomoto Heartland LLC, Chicago, IL.

Post-weaning diarrhea (PWD) continues to cause significant economic losses to the swine production industry. The efficacy of Colicin E1 (Col E1) as an alternative to dietary antibiotics to prevent PWD has been demonstrated. A pure Col E1 was included at 20 mg/kg diet for the...