Ileal digestibility of protein and amino acids in low protein, amino acid fortified diets for growing pigs. M. Cervantes*,
University Autonoma de Baja California, Mexico City, G.I. Cromwell, University of Kentucky, Lexington, and D.A. Knabe, Texas A&M University, College Station.

An ileal digestibility trial with growing pigs (Hampshire-Yorkshire) was conducted to evaluate the effects of amino acid supplementation of low protein, grain sorghum-soybean meal diets on the apparent digestibility of dietary protein and amino acids. The sorghum was a low tannin, yellow endosperm cultivar that analyzed 8.9% CP, 21% lys (lys), 0.3% threonine (thr), 0.38% methionine + cystine (met+cys), 0.35% isoleucine (ile), 0.11% tryptophan (trp), 0.46% valine (val), and 0.22% histidine (his). Five pigs (25 kg initial BW) were fitted with a T-cannula approximately 10 cm from the ileo-caecal junction. The pigs were fed four times daily at 0730, 1030, 1630, and 2130, during three 10-d feeding periods. Pigs were allowed 7 d of adaptation to the diets before collections were made. Intestinal contents were collected after the second meal, from d 7 to d 10, into bags containing 10% trichloroacetic acid.

Dietary treatments were: (1) basal (91% grain sorghum, 5% soybean meal, vitamins, minerals; 10.5% CP), (2) basal + 4.5% lys + 0.15% thr + 0.08% met + 0.08% ile, and (3) grain sorghum-soybean meal positive control (16.5% CP). Each treatment was replicated five times. The apparent digestibilities (%) of protein and amino acids were: CP, 62.9, 67.5, 78.3; arginine (arg), 73.6, 77.0, 87.3; his, 58.8, 70.0, 77.3; ile, 68.9, 74.8, 82.1; leucine (leu), 72.8, 74.9, 80.5; lys, 50.9, 83.0, 81.8; met, 73.3, 83.3, 84.8; phenylalanine (phe), 70.4, 73.8, 80.7; thr, 58.7, 72.9, 76.2; and val, 70.0, 72.4, 81.0, respectively. The higher dietary protein level resulted in greater digestibilities of CP (P < 0.05) as well as arg, his, ile, lys, met, thr (P < 0.01), and valine (P < 0.10), when compared with the basal diet. Supplementing the basal diet with amino acids increased his (P < 0.10), thr (P < 0.05), lys (P < 0.01), and met (P < 0.01) digestibilities. These results indicate that both dietary protein level and amino acid supplementation influence the availability of dietary amino acids to growing pigs.

Key Words: Pig, Grain Sorghum, Digestibility

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One hundred-eight high-lean growth gilts (45 kg BW) were used to determine the dietary methionine requirement to optimize growth performance and carcass characteristics from 45 to 110 kg. The experiment was designed as a randomized complete block (three pigs/pen, six pens/treatment) with total methionine ranging from 0.25 to 0.425% (21 to 34% digestible methionine). Dietary methionine was increased by replacing corn starch with DL-methionine. The period 1 diet (45 to 75 kg) was formulated to contain 1.15% total lysine (34% digestible), 5.2% cystine, and 34 mg/kg choline, while the period 2 diet contained 1.01% total lysine (33% digestible), 4.9% cystine, and 34 mg/kg choline. The diets were formulated on an ideal amino acid ratio to assure that methionine was the first limiting amino acid. When the pigs mean weight in a pen reached 75 and 110 kg, one pig/pen was randomly chosen for slaughter to determine carcass characteristics. Average daily gain and ADG were not influenced (P > 0.10) by dietary methionine during phase I, phase II, or for the entire experiment (45 to 110 kg). Feed intakes averaged 2.18, 2.9%, and 2.56 kg/for periods 1, period II, and the entire experiment, respectively. Thus, G:F was not influenced by dietary methionine (P > 0.10) for the entire experiment. Average backfat thickness (Avg. BF) and longissimus muscle area were not influenced (P > 0.10) at either 75 or 110 kg. The data from this experiment suggest that the dietary methionine requirement for high-lean growth pigs is at least 0.425%.

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832 Lean growth response of pigs fed diets balanced on a lysine to digestible energy basis from 80 to 110 kg. B. V. Lawrence*, O. Adeola, and T. R. Cline, Purdue University, West Lafayette, IN.

Sixty-six crossbred pigs, (barrows gilts, 1:1), were fed diets formulated to contain 2.5, 3.0, 3.5, or 4.0 grams of lysine per Megacalorie (Mcal) of digestible energy (DE) at 3.25 or 3.5 Mcal DE/kg of diet in a 2 × 4 × 2 factorial experiment. Pigs, weighing 50 to 60 kg, were individually housed and allowed feed and water ad libitum. Body composition at 80 and 110 kg was determined from real-time ultrasound and bioelectrical impedance data. Direct carcass measurements were taken 24 h after slaughter at 112.9 kg. Weight gain increased as the DE level increased (P < 0.05); with barrows gaining faster than gilts (P < 0.01). The lysine:DE ratio also influenced the rate of weight gain (P < 0.05) with the optimum ratio dependent upon gender and DE concentration. Barrows fed 3.0 g Mcal DE at the 3.5 Mcal DE level had the highest rate of weight, lean, and protein deposition. The increased rate of fat deposition (P < 0.05) associated with the 3.5 Mcal DE diets resulted in a reduced lean:fat ratio (P < 0.05) with the difference being gender dependent (P < 0.01). Daily feed intakes were similar across dietary treatments. Lean content at 80 and 110 kg was unaffected by dietary treatment. Differences did exist for total fat, tenth and fast rib fat as measured by real-time ultrasound and direct carcass measurement with barrows being faster than gilts (P < 0.05) and fat depth increasing as DE concentration increased (P < 0.05). Carcass measurement indicated barrows had a 4.3 cm² larger loin eye (P < 0.05) than barrows. Although carcass total fat content differed between gender and DE level, lean percent measured by total body electrical conductivity was similar across gender and dietary treatments. These results indicate the optimum lysine:DE ratio for rate of weight and lean gain lies between 3.0 and 3.5 g Mcal DE for pigs fed the 3.5 Mcal DE diets while pigs gilts fed diets containing 3.25 Mcal DE may have a lower lysine:DE ratio requirement.

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**Energy (P < 0.05)**, Lysine (DE < 0.05). KEY WORDS: Pigs, Methionine, Growth