significantly affected by the iron supplement. In summary, the oral iron supplement may efficiently replace iron injection in newborn piglets.

P68. Can production modifications of a soy protein concentrate alter digesta kinetics and nutrient digestibility in weaned piglets?

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A soy protein concentrate (SPC) is on the market that used a pH reduction step and high temperatures (indicated as MSPC) and is suggested to improve piglet performance and health as a result of improved protein (CP) utilisation than other SPCs and soybean meals (SBM). In this trail the effect of MSPC or SPC/SBM (acidified or not) on nutrient digestibility and kinetics were evaluated. A total of 3 treatments were evaluated: 1) SBM + SPC; 2) SBM + SPC acidified; and 3) MSPC. The trial was performed with 6 piglets/ treatment (±30 days age) and diets were provided ad lib from d0. During the first 7d post-weaning (PW) piglets were housed in pairs. From d7 (BW 11.4 kg; SD = 1.01) piglets were housed individually and were fed semi ad lib (3.2 × maintenance). During d11-15 PW faeces and urine were collected. Piglets were euthanized at d15 PW. The data were analysed with ANOVA. The acid binding capacity at pH 4 (ABC-4) of the diet was 260, 138, and 126 meq/kg for treatments 1, 2, and 3. Average daily gain between d0-7 PW was 307, 316, and 390 g/day for treatments 1, 2, and 3. Treatments 1 and 2 resulted in lower stomach protein hydrolysis (P = 0.04), lower faecal CP digestibility (P = 0.02), and lower N retention (P = 0.02) than treatment 3 (81, 80 and 84% respectively for faecal CP digestibility and 15, 15, and 16% respectively for N retention). Treatment 1 had a lower jejunal digesta viscosity (P = 0.02) than treatment 2 and 3 (3.18, 2.10, and 2.14 cP, respectively). Lastly, treatment 1 and 2 resulted in a higher SCFA colon content than treatment 3 (P = 0.03). The results indicate that MSPC positively influenced nutrient digestion and that MSPC can modify digesta kinetics.

P69. Determination of the net energy in soybean meal fed to group-housed pigs

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In addition to providing amino acids, soybean meal (SBM) also provides energy to diets for pigs, but the net energy (NE) in SBM fed to group-housed pigs has not been reported. Therefore, the objective of this experiment was to test the hypothesis that NE in SBM from the U.S. fed to modern genotypes of group-housed pigs is greater than the value that is currently used in diet formulation. A basal diet contained corn as a sole source of energy. Five additional diets were formulated to contain corn and 15, 25, 35, 45, or 55% SBM, respectively. A total of 24 growing pigs (initial body weight: 26.5 ± 1.0 kg) were housed in groups of 4 pigs in 6 calorimeter chambers and allotted to a 6 × 6 Latin square design with the 6 diets and six 15-d periods. Throughout the experiment, pigs were allowed ad libitum access to feed and water. Oxygen consumption and CO_2 and CH_4 productions were measured during the fed and fasting states and faecal and urine samples were also collected to calculate energy and N losses. Intakes of digestible energy (DE), metabolizable energy (ME), and NE from SBM were regressed against SBM intake and concentrations of DE, ME, and NE in SBM were obtained from the slopes of regressions. Results for this experiment indicated that the apparent total tract digestibility of DM and GE linearly decreased (P < 0.01) by adding SBM to the diets. Concentrations of DE and ME did not differ among diets, but NE in diets decreased (quadratic, P = 0.011) with increased SBM in diets. Concentrations of DE, ME, and NE in SBM were calculated by regression and values of 3,228, 3,103, and 2,233 kcal/kg (P < 0.001), respectively, were obtained. In conclusion, NE in SBM was greater than previous values, which confirms the hypothesis of this experiment.

P70. Apparent and standardized ileal amino acid digestibilities in heat stressed pigs fed wheat-soybean meal diets supplemented with L-arginine and DL-methionine

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Exposure of pigs to heat stress (HS) is associated with damage of the small intestine epithelia affecting digestibility and absorption of amino acids (AA). Both Arg and Met can enhance antioxidant and intestinal cell proliferation activity, thus supplementing them in diets might alleviate epithelia damage and correct the reduced AA digestibility. A 10-d experiment was conducted with 10 ileal-cannulated pigs exposed to HS to evaluate the effect of adding extra L-Arg and DL-Met to the diet on the apparent (AID) and standardized ileal digestibility (SID) of AA. Ileal lumen temperature was continuously monitored at 15-min intervals during the experiment. Following adaptation to diets, pigs were divided into two treatments: Control, wheat-soybean meal diet supplemented with L-Lys, L-Thr, DL-Met, L-Trp; and Control diet added with 0.20% L-Arg and 0.20% DL-Met (Arg-Met). Pigs were exposed to HS conditions (29.6 to 36.1 °C) and fed twice a day for 8 days. Ileal digesta was continuously collected for 12 h, starting at 0700, on d 9 and 10 of the study. Chromic oxide was used as indigestible marker. Data was analysed as a completely randomized design; treatment means were compared using Tukey. Ileal temperature ranged from 40.3 to 41.5 °C. The AID of Arg, His, Met, and Thr, and SID of His and Met were higher in pigs fed the Arg-Met diet (P < 0.05). Threonine and Val had the lowest whereas Arg, Met and Lys had the highest AID values. Intake of Arg (r = 0.64) and Met (r = 0.84) was highly correlated with their AID values. Methionine intake was also highly correlated with its SID value (r = 0.72). Valine was the AA with the lowest SID, whereas Arg had the highest SID value. In conclusion, supplementing L-Arg and DL-Met to diets fed to HS pigs partially improves the AID of AA but only the SID of Arg.

P71. Digestibility of amino acids is not affected by increasing calcium from deficient to over-sufficient concentration in diets fed to pigs

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Dietary interactions between Ca and P include precipitation of Ca and P in the intestinal tract of pigs and chelation of Ca ions to phytate. Increasing dietary Ca thus reduces P digestibility. It is possible that high concentrations of Ca in diets increase pH of the digesta, which may negatively affect activation of proteases. However, effects of increasing