

conclusion, feeding the optimized diet led to higher digestibility and, surprisingly, to lower brush border enzyme activities and ADG compared to the standard diet. No effect of dietary protein levels was observed.

P94. Ileal nutrient digestibility and digesta transit behaviour of diets varying in fibre level and particle size

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The physical characteristics of dietary fibres may affect the digestibility of nutrients due to variation of digesta flow behaviour. This study aimed to elucidate the effect of level and particle size of indigestible fibres on apparent ileal digestibility (AID) of dry matter (DM), starch and nitrogen (N), and on digesta flow behaviour in the proximal gastrointestinal tract (mouth-ileocaecal junction). We hypothesized that more coarse fibres added translate into lower AID and higher retention time. Eight growing barrows (26.8 ± 2.08 kg) were fitted with a T-cannula (25 mm) at the distal ileum. Six pigs were assigned to three dietary treatments according to a 3x3 double Latin square design. One millimetre ground (fine) or intact (coarse) oat hulls (OH) and soybean hulls (SBH) were added to a maize-soybean-wheat based diet at 50 (low) or 250 g/kg (high), to obtain a low and fine fibre diet (LF), high and fine fibre diet (HF) and high and coarse fibre diet (HC). Both, oat and soybean hulls were added in a 50:50 proportion to all diets. TiO₂ was included to calculate AID from pooled samples collected every 30 minutes for 9 hours on two consecutive days. A generalized linear mixed model with beta-distributed error for the dependent variables was used, considering diet as a fixed effect and accounting for correlated errors for measurements within pigs across periods. Preliminary results show that HF reduced AID of DM 10.8%-units ($P = 0.005$) compared with LF; no difference in starch AID (LF = 97.8% vs HF = 97.7%; $P = 0.791$) and a tendency for AID of nitrogen ($P = 0.053$) were observed (LF = 78.3% vs HF = 65.9%). Particle size (HF vs HC), did not affect AID of DM, starch, nor N ($P > 0.15$). It is concluded that the addition of fibres reduces N AID of other ingredients, and the grinding of fibres does not increase AID of starch, N or DM.

P95. The impact of dietary crude protein and non-starch polysaccharidase inclusion on nursery pig performance and nitrogen retention

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Our objective was to evaluate the effect of dietary crude protein (CP) and non-starch polysaccharidase (NSPase) on nursery pig performance and nitrogen (N) retention. 792 mixed sex pigs (6.2 ± 0.12 kg BW) were randomly allotted (3x2 factorial design) to three CP diets with or without NSPase (12 pens/treatment), fed in two phases (10 and 11 days). The diets by phase were 17% CP containing (1.40 and 1.35% SID Lys (LCP1.4)); 24% CP containing (1.40 and 1.35% SID Ly (HCP1.4)); 17% CP containing (1.20 and 1.15% SID Lys (LCP1.2)). Pen average daily gain (ADG), average daily feed intake (ADFI), and gain to feed

(G:F) were reported from d 0–21. On d 10, one barrow per pen was moved to metabolism crates and fed at 90% ad libitum for 7 d on phase 2 diets, whereafter total faecal and urine output were collected over a 4-d period and N digestibility and retention were calculated (12 pigs/treatment). Performance data were analysed for the effects of diet, enzyme, and their interaction. No diet by enzyme or enzyme effects were reported. HCP1.4 had greater ADG compared to LCP1.4 and LCP1.2 (0.30, 0.26, 0.23 kg/d respectively, diet $P < 0.01$). ADFI was not influenced by diet, and G:F was greater in the HCP1.4 compared to LCP1.4 and LCP1.2 (diet $P < 0.01$). Compared to the LCP1.4 and LCP1.2, N apparent total tract digestion (ATTD) was higher in HCP1.4 pigs ($P < 0.01$). Nitrogen intake was higher in HCP1.4 compared to LCP1.4 and LCP1.2 ($P < 0.01$). Total N excretion was higher in HCP1.4 compared to LCP1.4 and LCP1.2 (5.7, 3.4 and 4.0 g/d respectively $P < 0.01$). Nitrogen retained as a % of N intake was lower in LCP1.2 and HCP1.4 compared to LCP1.4 (63.4, 67.1, and 74.7% respectively $P = 0.015$). In conclusion, when accounting for SID Lys, low CP diets decreased nitrogen retention and pig performance.

P96 Nutritional effects of bovine or vegetable oils on plasma IGF-1 levels of intrauterine growth restricted piglets compared to normal piglets

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Artificial rearing of neonatal piglets may be relevant to ensure survival and growth of supernumerary piglets in large litters. It is unknown if the subset of piglets born intrauterine growth restricted (IUGR) have special dietary requirements relative to normal weight pigs. The aim of this study was to compare milk diets containing either bovine milk fat (closer to porcine milk) or vegetable oil (cheaper but different in structure) on piglets classified as IUGR or normal weight piglets in a 2x2 study design. We hypothesized that growth and plasma IGF-1 levels in IUGR and normal piglets would be influenced by the nature of dietary fat. To test this hypothesis, piglets (18 IUGR and 18 normal) were removed from the sow at day 2 and fed either milk replacers with either bovine fat (FAT) or vegetable fat (VEG). At day 9 there was a tendency for an interaction between treatment and body weight class ($P = 0.07$) on plasma IGF-1 levels. Here, normal piglets on the VEG diet had increased levels of plasma IGF-1 compared to normal piglets on the FAT diet (62.6 vs 37.1; SEM 8.5; $P = 0.04$) and normal piglets on VEG diet had higher levels than IUGR piglets on VEG diet (62.6 vs 34.1; SEM 8.5; $P = 0.03$). At the end of the trial IUGR piglets had IGF-1 levels of 95.7 ± 5.8 ng/mL versus 116.7 ± 5.8 ng/mL in normal pigs ($P < 0.02$). The FAT piglets had an increased amount of triglycerides in their blood compared to VEG with no differences between body weight classes. However, for most other parameters body weight classification overrode differences in diet. In conclusion, IUGR and normal weight pigs display similar response to dietary fat. Bovine fat provides higher plasma triglyceride levels, but all other parameters were independent of fat type.

P97. Differences in faecal parameters from sows fed dried hemp plants or apple pomace intact or ground

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