

Nutrient digestibility of extruded canola meal in grower pigs

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Canola meal (CM) contains less crude protein (CP) and more fiber and anti-nutritional factors (ANF) such as glucosinolates than soybean meal, and has consequently lower amino acid (AA) digestibility. Therefore, processing strategies that increase nutrient digestibility, and thereby increase the feeding value of CM, warrant study. This study assessed the effects of extrusion of *Brassica napus* CM on apparent ileal digestibility (AID) of AA and gross energy (GE), and apparent total tract digestibility (ATTD) of GE and digestible energy (DE) value. In a double 4 × 4 Latin square, 8 ileal-cannulated barrows (68.1 kg initial BW) were fed corn starch-based diets containing 50% CM, or extruded CM prepared using a single-screw extruder (X-115; Wenger, Sabetha, KS) by changing extruder speed (250, 350, 450 rpm) and related mechanical energy. On DM basis, CM, extruded CM with low, medium or high extruder intensity contained 8.87, 7.84, 7.30 and 7.86 µmol/g total glucosinolates respectively. The AID, ATTD, and hindgut fermentation (ATTD-AID) for DM and GE of CM was not affected ($P > 0.05$) by extrusion processing. Hindgut fermentation of CP for CM, extruded CM with low, medium or high extruder intensity was 5.72, 1.14, 3.78, 0.97% respectively and increased ($P < 0.10$) hindgut fermentation for CM compared with low and high extrusion intensity. Standardized ileal digestibility (SID) of Met was lower ($P < 0.001$) for CM compared with extruded CM. Finally, SID of Trp was lower ($P < 0.05$) for the raw CM compared with low and high speed extrusion intensity. In conclusion, extrusion of solvent-extracted CM increased SID of several AA, indicating that extruded CM can contribute more dietary AA to the pig than CM. However, increased extruder speed and related increased mechanical energy did not have an effect on SID of AA. In addition, extrusion reduced the glucosinolate content in CM; medium intensity reduced total glucosinolates by 18% compare with raw CM.

Implications: Canola meal contains a lower CP content, and reduced AA digestibility and anti-nutritional factors such as glucosinolates compared to soybean meal. Extrusion processing improved the nutritive value of canola meal.