Ileal amino acid digestibility in canola meals from yellow- and black-seeded Brassica napus and Brassica juncea fed to growing pigs.

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Source

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Abstract

Twelve ileal cannulated pigs (30.9 ± 2.7 kg) were used to determine the apparent (AID) and standardized (SID) ileal digestibility of protein and AA in canola meals (CM) derived from black- (BNB) and yellow-seeded (BNY) Brassica napus canola and yellow-seeded Brassica juncea (BJY). The meals were produced using either the conventional pre-press solvent extraction process (regular meal) or a new, vacuum-assisted cold process of meal de-solventization (white flakes) to provide 6 different meals. Six cornstarch-based diets containing 35% canola meal as the sole source of protein in a 3 (variety) × 2 (processing) factorial arrangement were randomly allotted to pigs in a 6 × 7 incomplete Latin square design to have 6 replicates per diet. A 5% casein diet was fed to estimate endogenous AA losses. Canola variety and processing method interacted for the AID of DM (P = 0.048), N (P = 0.010), and all AA (P < 0.05), except for Arg, Lys, Phe, Asp, Glu, and Pro. Canola variety affected or tended to affect the AID of most AA but had no effect on the AID of Lys, Met, Val, Cys, and Pro, whereas processing method had an effect on only Lys and Asp and tended to affect the AID of Thr, Gly and Ser. The effects of canola variety, processing method, and their interaction on the SID values for N and AA followed a similar pattern as for AID values. For the white flakes, SID of N in BJY (74.2%) was lower than in BNY and BNB, whose values averaged 78.5%; however, among the regular meals, BJY had a greater SID value for N than BNY and BNB (variety × processing, P = 0.015). For the white flakes, the SID of Ile (86.4%), Leu (87.6%), Lys (88.9%), Thr (87.6%) and Val (84.2%) in BNB were greater than BNY and BJY. Opposite results were observed for the regular processing, with SID of Lys (84.1%), Met (89.5%), Thr (84.1%), and Val (83.6%) being greater in BJY, followed by BNB and BNY(variety × processing, P < 0.057). The SID of Met was greatest for the white flakes (90.2%) but least for the regular processing (83.0%) in BNY (variety × processing, P < 0.057). It was concluded that the AID and SID of N and AA of the CM tested varied according to canola variety and the processing method used. Overall, the SID values for Ile, Leu, Lys, Met, Thr, and Val averaged across CM types and processing methods were 81.8, 82.6, 83.4, 85.9, 80.8, and 78.4%, respectively.