

Effect of Enzyme Supplementation to Wheat-Canola Meal Diets on Performance and Nitrogen Balance of Grower Pigs

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Effects of enzyme supplementation and canola meal sample on performance and N-balance were investigated in a 4 x 2 factorial arrangement, with four enzyme treatments (control; β -glucanase + xylanase (1077 & 400 U/kg diet), CHO; protease (5,764 U/kg diet), PRO; and CHO+PRO) and two canola meal samples (A and B). Diets (27% canola meal, 63% wheat) were limiting in either DE (3180 kcal/kg; Exp. 1 and 3) or digestible lysine (0.65 g/kg; Exp. 2 and 4). In Exp. 1 and 2, pigs (PIC, N=72) were allowed free access to 1 of 8 diets for 28 d. In Exp. 3 and 4, barrows (N=40) were housed in metabolism pens to collect feces and urine. **In Exp. 1**, ADFI was 11% higher for A vs. B control diet (2.06 vs. 1.86 kg/d; d 1 to 28; P < 0.05), resulting in an 11% increase in ADG (941 vs. 848 g/d; P < 0.10). For A diet, CHO increased ADFI 11% (2.31 vs. 2.08 kg/d; d 14 to 28; P < 0.10) and ADG 15% (914 vs. 797 g/d; d 1 to 14; P < 0.10), but CHO did not affect B diet (P > 0.10). For A diet, PRO increased ADFI 10% (P < 0.10), but PRO reduced ADFI 10% and ADG 9% for B diet (P < 0.10). **In Exp. 2**, ADFI and ADG did not differ (P > 0.10) among diets. **In Exp. 3**, N-digestibility was 1.7% higher for B vs. A diets (83.9 vs. 82.2%; P < 0.01) resulting in 10% higher urinary N-excretion (15.5 vs. 14.1 g/d; P < 0.01). For A diet, CHO increased N-retention 10% (22.7 vs. 20.7 g/d; P < 0.10) and PRO reduced E-digestibility 2.4% (78.0 vs. 80.4%; P < 0.05), but CHO or PRO did not affect B diet (P > 0.10). **In Exp. 4** CHO increased N-digestibility 1.4% (82.9 vs. 81.5%; P < 0.05) and E-digestibility 1.1% (80.6 vs. 79.5%; P < 0.05) for A diet, but did not affect B diet (P > 0.10). For B diet, PRO reduced N-digestibility 1.7% (78.9 vs. 80.6%; P < 0.01).

Implication:

Nutritional value of canola meal for grower pigs is limited by fibrous and protein components. The nutritional value among canola meal samples is different and effects of enzyme supplementation depend on specific canola meal samples included in the diet. Thus, enzyme supplementation should be integrated with ingredient evaluation to maximize benefits of enzyme supplementation.