

Growth performance of weaned pigs fed raw or extruded canola meal with low to high extrusion intensity

C.M.E. Heyer¹, L.F. Wang¹, E. Beltranena² and R.T. Zijlstra^{1,3}

¹Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, Alberta T6G 2P5, Canada; ²Alberta Agriculture and Forestry, Edmonton, Alberta T6H 5T6, Canada; ³Email: ruurd.zijlstra@ualberta.ca

Hydrothermal processes with high shear force, such as extrusion cooking, may increase solubility of fiber and may inactivate heat-labile anti-nutritional factors in feedstuffs. The objective of this study was to determine the effect of extrusion of solvent-extracted *Brassica napus* canola meal (CM) on growth performance in weaned pigs. The CM was extruded using a single-screw extruder (X-115; Wenger, Sabetha, KS). Extruder intensity ranged from low to high by changing extruder speed (250, 350, 450 rpm). A total of 200 pigs (Duroc × Large White/Landrace F1; Hypor, Regina, SK, Canada) with an initial BW of 8.3 kg weaned at 21 d of age were divided within gender and BW using a randomized complete block design (4 pigs/pen). Then 14 d after weaning, pigs were fed 1 of 5 diets containing 20% soybean meal (SBM), raw CM, or CM extruded with low, medium, or high extruder intensity for 3 wk. Wheat based diets were formulated to provide 2.3 Mcal NE/kg and 5.1 g SID Lys/Mcal NE. On DM basis, raw CM and extruded CM with low, medium or high extruder intensity contained 5.31, 4.85, 4.51 and 4.78 μmol/g total glucosinolates respectively. The ADFI, ADG, and G:F ratio did not differ ($P > 0.05$) among the 5 diets. Pig final BW for SBM, raw CM, extruded CM with low, medium or high extruder intensity was 19.5, 19.4, 19.2, 19.8, and 19.8 kg respectively and did not differ ($P > 0.05$) among diets. In conclusion, extrusion reduced total glucosinolate content in CM, and medium intensity extrusion reduced total glucosinolates 15% compared to raw CM. Additional extrusion of solvent-extracted *Brassica napus* CM was expected to increase nutritive quality and palatability of CM. However, extrusion of solvent-extracted *Brassica napus* CM across a range of intensity using extruder speed and mechanical energy did not affect growth performance of weaned pigs fed diets with CM to replace 20% SBM.

Implications: Canola meal can be used as a cheaper alternative protein source to soybean meal in weaned pigs, providing energy and amino acids to formulate diets.