

# Effect of extrusion on energy digestibility and DE content in combinations of flax and pea for growing pigs

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Flax can increase pork omega-3 fatty acid content; however, energy digestibility and DE content of flax products, including a 50:50 combination of flax and pea, has not been well described. Five barrows (32 kg initial BW) fitted with a T-cannula at the distal ileum were fed five diets according to a 5x5 Latin square design: a wheat and soybean meal control diet and four diets containing 30% raw or co-extruded flax and pea plus 70% control diet. The four extrusion treatments included: 1) E0, ground, non-extruded; 2) E1, single screw extruded; 3) E2, twin screw extruded with low intensity [screw speed 120 rpm; die temperature 110 °C; water input 4 kg/h]; and 4) E3, twin screw extruded with high intensity [300 rpm; 125 °C; 10 kg/h]. The ADF content was 14.9, 12.0, 12.8 and 15.8% DM in E0, E1, E2 and E4, respectively. Diets were fed at 2.5 × ME maintenance requirement. Energy digestibility in the test ingredients was calculated using the difference method.

The apparent total tract digestibility (ATTD) of DM did not differ among the four ingredients and ranged from 89.0 to 94.9%. The ATTD of OM was higher in E2 than in E1 and E3 (P<0.05). Energy ATTD was higher in E2 than E0 (P<0.05) and did not differ among the three extruded samples, and ranged from 70.8 to 79.9%. The DE content of E2 was higher than E0 and E3 (P<0.05). Ileal digested energy contents of E0, E1, E2 and E3 were 3.62, 3.67, 4.24, and 3.96 Mcal/kg DM, respectively. The DE content (Mcal/kg DM) of E0, E1, E2 and E3 were 3.76, 4.18, 4.39 and 4.06, respectively. Overall, energy digestibility was improved by extrusion but not maximized at the highest intensity, suggesting that co-extrusion of flax and pea should be carefully controlled.

## Implications:

In conclusion, co-extrusion increased energy digestibility of flax and peas and should be considered optimize feeding programs for omega-3 enriched pork.