

# Potential of $\beta$ -glucan-depleted flour in grower pigs compared to their parent grain

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The nutritional value of  $\beta$  (beta)-glucan-depleted barley and oat starch flour for swine is unknown. During a patented process, oat and barley undergo semi-aqueous enzymatic  $\beta$ -glucan purification. The remaining co-products are crude starch flour, crude protein (CP), and a blend of hydrolyzed protein and starch, that together comprise up to 65% of the weight of the parent grain; each co-product might be a valuable feedstuff. The process thus has two benefits for agriculture: (1) value-added processing of grain into fractions for food, and (2) production of co-products as swine feedstuffs. The crude starch flours contained 84.6% starch and 3.1% CP for barley, and 68.7% starch and 11.5% CP for oat. The amino acid profile of tested ingredients were (%): Lysine, 0.33, 0.16, 0.51, 0.42; Threonine, 0.33, 0.14, 0.44, 0.42; Methionine, 0.20, 0.08, 0.28, 0.2; for barley, barley flour, oat, and oat flour, respectively. Eight barrows (initial body weight = 45 kg) were fitted with an ileal T-cannula. Following recovery, pigs were randomly assigned in five subsequent 10-day periods to one of five experimental diets: a standard grower pig diet (89% dry matter (DM), 19% CP), or this diet mixed with 50% of each test ingredient: barley, barley flour, oat, and oat flour. Diets were similar in DM (91%) and CP (barley 16%, barley starch 12%, oat 16%, and oat starch 15%). Feed allowance (3 x maintenance requirement) was based on average pig weight. Remaining feed was collected and weighed to determine achieved feed intake (FI). The majority of pigs consumed all feed provided and feed refusals related to diet were not observed. Therefore, the starch flours did not adversely affect FI. Fecal and ileal digesta samples were each collected for 2 days of each period. Using forthcoming nutrient digestibility data, performance of swine fed these ingredients in diets that are formulated to be nutritionally sound and economically advantageous will be evaluated.

## **Implications:**

Pigs readily ate diets containing 50% of  $\beta$ -glucan-depleted starch flours, suggesting that these flours might be a worthwhile feedstuff for swine. Funded by AVAC and Alberta Barley Commission.