Feeding camelina cake to pigs on nursery-growout performance, carcass and safety

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Recent interest in camelina is due to the fatty acid profile of its seed oil (one-third C18:3) making it valuable as biofuel and for human nutrition. To create a market for leftover coproduct cake as animal feed, we studied feeding increasing dietary levels of camelina cake in nursery (0, 6, 12, 18%) and grow-finish (0, 5, 10, 15%) diets on hog growth performance, carcass traits and safety indicators. In total, 128 pigs (9.4 kg) were housed for 4 weeks in 2 nursery rooms with 16 pens each of 4 barrows or gilts, and were then moved to a grow-finish room with 16 pens of mixed sex. Pigs were fed over 4 growth phases (starter: d0-28, grower d28-56, developer d56-84, finisher d84-slaughter). Pen BW and feed disappearance (ADFI) were measured.

For the entire trial, ADFI, daily weight gain (ADG) and feed efficiency (G:F) linearly decreased (P<0.001) with increasing camelina cake inclusion. ADFI was 21% lower, ADG 32% lower and G:F 11% lower in hogs fed 18/15% camelina cake compared with controls. Increasing cake inclusion resulted in lower BW throughout the trial (P<0.001), linearly reduced ship weight (P<0.01), increased the proportion of hogs remaining in pens after the start of shipping for slaughter (P<0.001), and increased days to slaughter weight (P<0.001). Hogs fed 18/15% camelina cake took 28 days longer to reach slaughter weight than controls.

Increasing dietary camelina cake level linearly decreased carcass weight (P<0.001), dressing % (P<0.05), backfat depth (P<0.01) and revenue per hog (P<0.05), linearly increased lean yield (P<0.05), but did not affect loin depth and index. Gross pathological examination of necropsied pigs (16 on d28 and 16 on d105 of the trial) did not show abnormalities or signs of toxicity. However, liver weight linearly increased (P<0.001) and spleen weight linearly decreased (P<0.010), both as % of BW, suggesting greater metabolic burden in hogs fed increasing camelina cake inclusions. Heart, thyroid, kidney and pancreas weights were not affected by increasing cake level in the diet.

Implications: Feeding camelina cake to hogs up to 18/15% seemed safe, but hogs did not like to eat it resulting in decreased gain to market weight. Producers will be unlikely to stock camelina cake if it can only be fed at 5% in hog diets.