Feeding *B. juncea* or *B. napus* canola meal at increasing dietary inclusions to growing-finishing gilts and barrows

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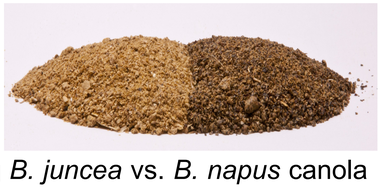
Background

Conventional dark-seeded canola meal (*Brassica [B.] napus*) is high in fibre, which limits its inclusion in growing-finishing pig diets. Reducing the fibre content of canola meal (CM) would permit feeding greater inclusions, in combination with relatively high inclusions of other high-fibre feed ingredients like DDGS, to reduce feed cost. *Brassica juncea* (yellow-seeded) CM contains less fibre than *B. napus* CM, but has greater glucosinolate content. The advantage of reduced fibre content may be compromised by decreased palatability of *B. juncea* CM.



Our objective

To evaluate the effects of feeding *B. juncea* vs. *B. napus* canola meal CM at increasing dietary inclusions on growth performance, dressing, and carcass characteristics of growing-finishing barrows and gilts in a commercial-scale farm study.

What we did

- We conducted the trial at a commercial contract pig grower farm set up as a test facility (Drumloche, Lougheed, AB).
- 528 barrows and 528 gilts (~30 kg BW) were housed in 48 pens (22 pigs/pen) by sex.
- Pigs were fed either *B. napus* or *B. juncea* at increasing inclusions (10, 20, 30%) with high DDGS inclusion over 5 growth phases (16 replicate pens per inclusion, 24 per species).
- Canola meal replaced wheat and crystal amino acids.
- Pigs were group-weighed at d 0, 23, 44, 60, 72, weekly thereafter and at shipping for slaughter (~120 kg).
- Feed added to each pen twas racked by a robotic feeding system throughout the experiment.
- Pigs were slaughtered at Britco Pork Inc. (Langley, BC). Individual warm carcasses were weighed and graded (Destron).

What we observed

Canola meals

B. juncea CM had greater crude protein and lower fibre content than *B. napus* CM, but glucosinolate content was 2.7 times greater than in *B. napus* CM (Table 1).

Effects of canola species

For the entire trial (d 0-72), weight gain (ADG) was not affected by canola species. Feed disappearance (ADFI) was 45 g/d lower (P=0.06) and feed efficiency (G:F) was 0.007 units greater (P<0.05) for pigs fed *B. juncea* compared with *B. napus* CM (Figure 1). Carcass dressing was 0.2 %-points lower (P<0.05) for pigs fed *B. juncea* than *B. napus* CM. Carcass traits were not affected by canola species (Figure 2).

Table 1. Analyzed nutrient (%) and glucosinolate (µmol/g) content of B. napus and B. juncea CM (standardized to 12% moisture)

	Napus	Juncea
Crude protein	40.3	43.5
Crude fat	3.3	2.0
Crude fibre	9.1	8.6
ADF	21.4	12.8
NDF	30.7	21.6
Total dietary fibre	32.7	28.4
Ash	8.7	8.4
Ca	0.7	0.8
Total P	1.3	1.4
Glucosinolates	4.3	11.8

Effects of dietary inclusion level of canola meal

For the entire trial (d 0-72), increasing dietary CM inclusion from 10 to 30% decreased ADFI (P<0.001) by 184 g/d, increased feed efficiency (G:F; P<0.001) by 0.014 units, and decreased ADG by 32 g/d (P<0.05; Figure 1). ADG did not differ between pigs fed 10 or 20% CM. Dietary CM inclusion level did not affect farm ship weight, carcass backfat, lean yield, or index. Carcass weight was 0.91 kg lower (P<0.05), dressing was 0.9 %-points lower (P<0.001), loin depth was 1.3 mm lower (P<0.01) and days to slaughter was 2.3 days greater (P<0.01) for pigs fed 30 vs. 10% CM. Pigs fed 20% CM were intermediate (Figure 2).

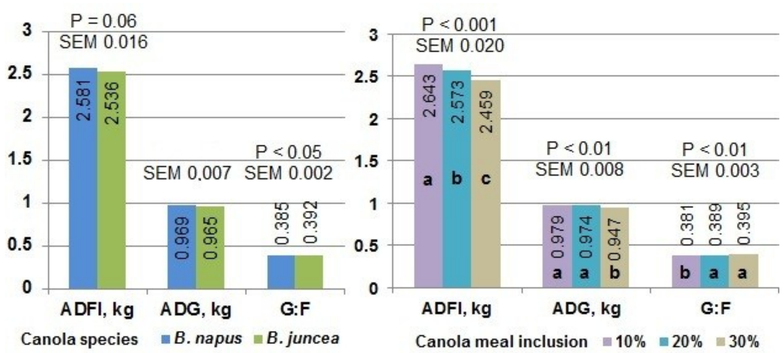


Figure 1. Effect of canola species and inclusion level on growth performance

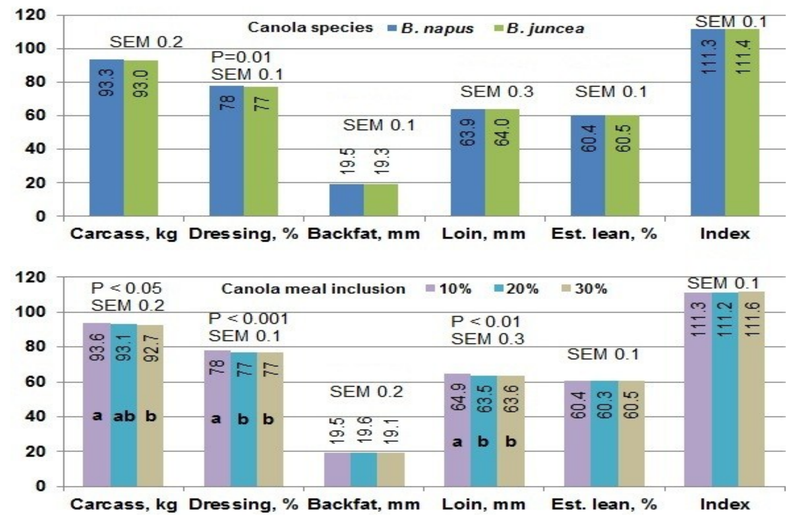


Figure 2. Effect of canola species and inclusion level on carcass traits

Take home message

Grower-finisher barrows and gilts can be fed diets including *B. juncea* CM in the same manner as conventional *B. napus* CM, without a reduction in growth performance or carcass traits. Growing-finishing pigs can be fed diets with up to 20% CM without a reduction in growth performance, an increase in feed efficiency and a minor decrease in carcass quality, while diets with 30% CM resulted in slightly decreased growth rate and more days to market.

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