

# Canola Meal as a Protein Source for Growing Pigs

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New cultivars of Canola seed with low erucic acid and glucosinolate levels have resulted in Canadian pig producers replacing up to 75% (grower) and 100% (finisher) of soyabean meal with Canola meal (CM) in their diets. While there has been some suggestion of reductions in feed intake, no significant loss of performance and carcass quality has been noted (Bell, 1993). With Australia's increasing production of Canola and an anticipated reduction in its price, the suitability of CM as a substitute for one of our major protein sources for pigs, Lupins (L), is worth investigating. This experiment tested the hypothesis that CM can be successfully substituted for L in diets for growing and finishing pigs without detriment to performance or carcass quality.

Sixty pigs (Large White Landrace) with an initial liveweight (LW) of  $20 \pm 0.19$  kg were assigned to diets (6 entire males & 6 females/diet) containing varying proportions of CM:L (0:25, 5:20, 10:15, 15:10 & 20:5%). Protein adequate diets for growers and finishers were formulated to be isocaloric (14 and 13.5 MJ DE/kg respectively) and isonitrogenous (0.65 and 0.55 Av Lys/MJ DE respectively). Pigs were fed at three times their maintenance requirement (i.e.  $M = 0.46W^{0.75}$  MJ ME/day) and accommodated in single-spaced, fully-slatted pens. Pigs were slaughtered at 90 kg LW and measurements of carcass weight, depth of backfat, eye muscle area and thyroid weight (g) made.

The proportion of CM in the diet had no significant effect on either average daily gain (ADG), feed:gain, dressing %, depth of backfat or eye muscle area. Despite a trend for ADG to decrease and backfat to increase (793 vs 763 g/d and 13.6 vs 14.4 mm, respectively) when diets contained any amount of CM, these differences were non significant. There were no sex treatment effects but entire males grew faster, had a lower feed:gain and lower dressing % than their female counterparts ( $P < 0.05$ ). The thyroid glands of pigs fed the higher levels of CM were larger than those fed diets containing 10% or less CM ( $P < 0.05$ ) and this was attributed to the 15:10 and 20:5 diets containing 2.3 and 3.0  $\mu$ M/g of glucosinolates, respectively.

Canola meal can successfully replace Lupins in grower and finisher diets at inclusion levels up to 20% without any significant effects on either performance or carcass quality, but the potential deleterious effects of glucosinolates when pigs are fed *ad libitum* warrants further investigation.

## Reference

Bell, J.M. (1993). Factors affecting the nutritional value of canola meal. *Canadian Journal of Animal Science*, 73: 679-697.

**Table 1** The influence of inclusion level (%) of CM and L on the performance and car-case characteristics of pigs from 20 to 90 kg LW

Characteristic	Treatment (CM:L)					Sex	
	0:25	5:20	10:15	15:10	20:5	male	female
Average daily gain (g)	793	766	767	761	757	820 <sup>a</sup>	718 <sup>b</sup>
Feed : gain	2.65	2.74	2.69	2.72	2.75	2.56 <sup>a</sup>	2.87 <sup>b</sup>
Dressing %	67.3	68.4	68.4	69.7	68.5	67.4 <sup>a</sup>	69.4 <sup>b</sup>
Depth of backfat (mm)	13.6	14.4	14.2	14.9	14.1	14.0	14.5
Eye muscle area (cm <sup>2</sup> )	34.3	33.5	36.2	34.6	34.8	34.3	35.0
Thyroid/LW (%)	5.04 <sup>a</sup>	7.13 <sup>a</sup>	6.55 <sup>a</sup>	8.26 <sup>b</sup>	8.21 <sup>b</sup>	-	-

within rows, means not followed by common superscripts differ significantly ( $P < 0.05$ ).