

Roasting lupins and narbon beans does not improve lamb growth.

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Reduction of the fermentability of legume protein is expected to increase the supply of amino acids (AAs) for absorption in the small intestine. If the diet is balanced for other nutrients, growth should be maximised, unless roasting is associated with reduction of nutritive value due to a decline in small intestinal digestion, absorption or intermediary metabolism of products of roasting. From the array of treatments in the preceding paper (1), we chose roasting at 130C for 45 minutes, suspecting that hotter or longer treatments which produced the steeper response might be doing so through a qualitatively different reaction associated with deleterious effects on nutritive value. Lupin (L) and narbon beans (NB) were roasted in a laboratory oven and fed in a 2 (grain legumes) x 2 (raw vs roasted) experiment in isonitrogenous rations of 70% concentrate (raw or roasted legume + barley) and 30% roughage (lucerne + oaten chaff). Groups of six lambs (Polled Dorset x (Border Leicester x Merino)) per ration, 5 months old, average weight 33.4 kg were penned individually and fed 90% ad libitum for 9 weeks before slaughter. Despite slow introduction of diets, initial growth was poor due to ruminal acidosis. Feed intake and growth during the final five weeks, carcass weight, fat thickness and feed conversion ratio are reported.

Performance of lambs during the final five weeks

	Diet ¹				SEM ²
	NB	RNB	L	RL	
Weight at week five(kg)	33.90	34.02	31.98	33.07	1.22
Final weight (kg)	41.87	40.83	42.28	41.15	1.19
Daily weight gain (kg day ⁻¹)	0.23 ^{ab}	0.19 ^a	0.29 ^b	0.23 ^{ab}	0.01
Dry matter intake (kg day ⁻¹)	1.22	1.11	1.09	1.00	0.04
Feed Conversion Ratio (Feed:Gain)	5.63 ^a	5.81 ^a	3.83 ^b	4.89 ^b	0.27
Cold carcass weight (kg)	20.35	19.58	20.03	19.55	0.67
Fat thickness (mm)	15.33	13.50	10.50	12.67	1.02

¹NB = raw, RNB = roasted narbon; L = raw, RL = roasted lupin ²SEM = standard error of the mean
Means in the same row with different letter superscripts differ (P<0.05).

Roasting L and NB did not improve animal performance. Possible explanations include unpalatability of roasted L and NB, over-protection of protein resulting in either low digestibility in the small intestine (2), or of one limiting AA, producing an imbalance (3).

- 1 Baiden, R. Y., Leury, B. J. and Holmes, J. H. G. (1997) Roasting lupins and narbon beans lowers protein solubility and fermentation. Proc. Nutr. Soc. of Aust. 21.
- 2 Hendriks, W. H., Moughan, P. J., Boer, H. and van der Poel, A. F. B. (1994) Effects of extrusion on the dye-binding, fluorodinitrobenzine-reactive and total lysine content of soyabean meal and peas. Anim. Feed Sci. Technol. 48 : 99-109.
- 3 Demjanec, M., Merchen, N. R., Cremin, J. D., Aldrich, C. G. and Berger, L. L. (1995) Effect of roasting on site and extent of digestion of soybean meal by sheep. 1 Digestion of nitrogen and amino acids. J. Anim. Sci. 73 : 824-834.