

NUTRITIVE VALUE OF LUPIN HULLS

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The separation of lupin grain into kernels and hulls provides the opportunity to use the kernels as a source of high-protein low-fibre feed for monogastric animals (Godfrey and Payne, 1987) and humans, and the hulls as a fibre source in diets for humans (Feldheim and Wisker, 1986) or ruminants (Bailey and Mackintosh, 1986). The purpose of the experiment reported here was to measure the digestibility of a pelleted diet consisting principally of lupin hulls with added urea and minerals.

Five merino wethers (mean weight 41.3 kg, SE 0.7) were housed individually in metabolism cages and fed a pelleted diet consisting of: lupin hulls; urea; ammonium sulphate; and minerals (955: 13: 2: 30), at the rate of 1 kg/d for three weeks before making a total collection of faeces and urine voided over a period of 7 days. Feed and faecal samples were analysed for dry matter (DM) organic matter (OM), nitrogen (N), neutral detergent fibre (NDF), acid detergent fibre (ADF), acid detergent lignin and gross energy. Intake of dry matter during the collection period was 907 g/d (\pm 3.7). Results are summarized in Table 1.

Table 1. Diet composition and apparent digestion of the dietary components.

Component	Diet composition (/kg DM)	Apparent digestibility (%)	
		Mean	SE
OM (g)	942	61.9	1.2
Nitrogen (g)	13.2	62.0	1.8
NDF (g)	702	62.5	0.78
ADF (g)	593	62.1	0.81
Lignin (g)	9.4		
Gross Energy (MJ)	18.1	61.0	0.82

The unprocessed hulls (prior to addition of urea and ammonium sulphate and pelleting) had 4% crude protein compared to a mean of 3.6 reported by Harris and Jago (1985). This indicates that there was very little contamination of the feed with kernels. At the level of feeding used in this experiment the digestible energy of the hulls was 11.6 (\pm 0.15) MJ/kg DM. This compares with estimates of around 14 to 15.5 MJ/kg DM for oats fed at approximately the same level (Margan et al. 1987). It is clear that both ADF and NDF were extensively digested, probably due to the low concentration of lignin in the diet. This relatively efficient use of the fibre by sheep indicates that separation of lupin grain into hull and kernel fractions may optimize the use of both fractions for monogastric and ruminant feeding.

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