EVALUATION OF LUPINS AS FEED FOR HORSES

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Horses in work are fed rations based largely on cereal grains. High levels of starchy grains in horse rations are believed to be associated with digestive disturbances leading to lowering of pH and release of microbial endotoxins in the caecum causing laminitis. Lupins and other grain legumes as substitutes for cereal grains have the advantage that their carbohydrate reserve is B-galactan rather than starch. In addition, their higher protein content means that they are good sources or both energy and protein. However, there is no published information on the nutritive value of lupins for horses. This paper reports part of the results of a study on the value of grain legumes as substitute for cereals in horse feeding.

Eight standardbred yearling horses, four colts and four fillies, average liveweight 296kg, housed in individual stalls with concrete floor and having access to an exercise yard were used in the feeding trial. Two colts and two fillies were allocated to each of two treatments, Control (C) and Lupins (L). The diet C contained (g/kg feed) 500 oats, 180 soyabean meal, 300 wheaten chaff, 16 limestone and 4 salt; diet L contained (g/kg) 300 oats, 380 lupins, 300 wheaten chaff, 16 limestone and 4 salt. The lupins replaced all the soyabean meal and 40% of the oats in diet C. The diets were formulated to meet the nutrient requirements of horses according to the NRC (1978) to provide 16.6 MJ/kg digestible energy and 160g/kg crude protein. After 3 weeks on their respective treatments, the horses were allocated to the reverse treatment groups for a further 3 weeks. All horses received their ration of 7kg in two meals at 0800 and 1600 hours. During the last 5d of each period, the horses were confined to pens and the total faecal output was collected from the floor. The mean apparent digestibility of different components of the diets are shown below.

	C	L	SED
Feed intake kg DM/d	6.32	6.33	
Apparent digestibility %			
Dry matter	63.4	66.6	1.16
Organic matter	67.5	69.9	0.99
Nitrogen	73.7	83.5	7.85
Neutral detergent fibre	27.7	35.5	2.25

The horses consumed the cracked lupins quite readily. Digestibilities of both C and L were generally low because of the low quality of the wheaten chaff included in the ration. However, the significantly higher digestibility of fibre in diet L compared to diet C ($P<0.01$), indicates a more favourable environment in the caecum for digestion of fibre in lupin-fed animals. Work is in progress to measure endotoxin production under these conditions. It is concluded that lupins can be safely included in horse rations as a substitute for oat grain.

NRC (1978) "Nutrient Requirements of Horses" 4th edn (National Academy of Sciences: Washington D.C.)

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