

A NUTRITIONAL EVALUATION OF CHOPPED HAY FOR EQUINES

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SUMMARY

Long hay that has been chopped into chaff has traditionally been considered an essential component of the rations of equines. However chopped hay is more expensive than long hay and the aim of the present digestibility study was to determine if there was any nutritional advantage from feeding the more expensive form of Timothy hay to ponies kept for recreation. Chopping did not influence the digestibility of organic matter, nitrogen, energy or acid detergent fibre. Although ponies consumed greater quantities of chopped hay there were no differences in the retention of nitrogen, calcium or phosphorus that could be attributed to feeding chopped hay. It was concluded that pony owners currently feeding chopped hay should consider long hay as a more economical ration.

INTRODUCTION

Hay chopped into chaff has traditionally been considered an essential component of equine rations in Australia. When Clydesdale horses were used for harvesting cereals in South Australia, Perkins (1915) noted that they depended entirely on a wheaten chaff diet. More recently Caple et al. (1982) reported that the traditional diet of Victorian thoroughbred racehorses consisted of eighty per cent concentrates and twenty per cent chaff.

Since hay that is chopped is considerably more expensive than long hay, what are the advantages associated with feeding the processed hay? Harper (1925) studied the feeding habits and performance of mature Percheron working horses on rations that comprised grain mixed with chaff or grain and long hay fed separately. The advantages in favour of the chopped hay were that the horses ate less ravenously were less prone to digestive upset and excelled long hay fed horses in live weight, spirit and endurance. Bourke (1968) suggests that the feeding of chaff/concentrate diets to racehorses assist trainers to gradually reduce the proportions of roughage and increase the proportions of concentrates as horses approached peak fitness. However ponies used in recreation do not fall into this category because they only receive light exercise and when kept in stables are fed hay or chaff and rarely any grain (Gollan 1983). Thus it was the aim of this study to determine whether there was any nutritional advantage to be gained from the feeding of the more expensive form of hay to ponies kept for recreation.

MATERIALS AND METHODS

This study was designed to study the effect of physical form of Timothy hay (Phleum pratense) on intake, digestibility and utilisation of nutrients by stabled Shetlands. Six mature ponies (average weight 191kg) were fed ad libitum with long or chopped hay (average length 3.5cm) from the same source. A reversal trial involving two, four week feeding periods was used. Each period consisted of three weeks preliminary feeding in stables followed by a seven day collection of faeces and urine. The ponies were restrained in metabolism crates. During the preliminary feeding only, the ponies were allowed to exercise in yards for two hours daily. The hay, faeces and urine were analysed for nitrogen by the Kjeldahl procedure; energy by bomb calorimetry; calcium by atomic absorption spectrophotometry; phosphorus by

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stannous chloride - hydrazine reduction of phosphomolybdic acid. The procedure of Goering and Van Soest (1970) was used to determine the percentage of acid detergent fibre in feed and faeces.

RESULTS AND DISCUSSION

It is shown in Table 1 that chopping did not influence the composition or digestibility of organic matter, acid detergent fibre or energy.

Table 1 The organic matter (Om), acid detergent fibre (Adf) and energy (E) composition and digestibility of long and chopped Timothy hay diets

<u>Composition</u>	Om (%)		Adf (%)		E (MJ/kg)	
	Mean	SD	Mean	SD	Mean	SD
Long Hay	82.5	0.2	45.3	2.8	18.6	0.1
Chopped Hay	82.3	0.4	45.1	0.5	18.7	0.2
<u>Digestibility</u>						
Long Hay	56.5	2.5	49.6	3.2	54.9	4.1
Chopped Hay	57.1	1.1	49.3	1.7	54.3	1.1

The end products of fibre digestion are volatile fatty acids which are significant contributors to the energy needs of equines, and absence of differences in acid detergent fibre accompanying processing into chaff contrasts with 6% decline in the digestibility of fibre which was noted by Haenlein et al. (1966), when long hay was processed into pellets. They attributed the decline in digestibility to a faster rate of passage of the finely ground pellets. In the current study there was no evidence of wood chewing, a stable vice that Willard et al. (1977) observed in somehorses when solely fed pelleted rations. Hintz and Schryver (1978) attributed the wood chewing of pellet-fed horses to a relatively greater amount of propionate and less acetate produced as a consequence of processing long hay into pellets.

The importance of protein intake for the maintenance and activity of equines was stressed by Evans (1981). In the present study although the provision of chopped hay promoted the intake of nitrogen as shown in Table 2, there was no significant difference in nitrogen retention nor was there a significant difference between the two treatments in liveweight change. Liveweight changes were -60g/day on long hay versus +136g/day for ponies fed chopped hay. The trend towards positive liveweight changes on the chopped hay ration may have been associated with greater gut fill since ponies fed chopped hay had greater $P < 0.05$ daily dry matter intakes than those fed long hay, (1.87 v 1.66kg/100kg live weight).

Calcium and phosphorus are assential to sound bone structure and the requirement for maintenance is that amount needed to offset obligatory loss. The loss of calcium and phosphorus in equines is mainly endogenous faecal and estimates by Schryver et al. (1970, 1971 a, b) are shown in Table 2. Schryver and Hintz (1971) reported that 35-65% of dietary calcium and 25-50% of dietary phosphorus are absorbed from a variety of feeds. In order to balance the obligatory loss those authors suggest that equines on maintenance diets must be fed daily 35 to 60mg of calcium and 20 to 40mg of phosphorus per kg of live weight. The results in Table 2 indicate that greater intakes of calcium and phosphorus were obtained by feeding chopped hay. However the intake of calcium from long hay of 72mg/kg live weight

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