

EFFECT OF CONDENSED TANNINS ON THE EFFICIENCY  
OF FORAGE LEGUME PROTEIN USE IN SHEEP

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Condensed tannins in some leguminous forages, such as Lotus species, sainfoin and crowsfoot, may protect protein from degradation by ruminal microbes. Barry and Blaney (1987) reported increased weight gains in sheep when proportions of tanniferous legumes increased in the diets. Sainfoin shows more rapid initial growth than alfalfa on the Loess Plateau of China during the spring and could be a useful component of a legume-based pasture. The purpose of the experiment was to compare sainfoin hay and alfalfa hay mixtures with each legume alone as supplements to sheep fed crop residues. In particular the effects of each supplement on efficiency of feed utilisation, weight gain and wool growth were measured.

Thirty female Merino lambs were assigned at random to five treatment groups. After 15 days of adjustment, data were collected over 8 weeks. Four sheep fitted with rumen cannulas and fed diet 5 were used to measure the rumen degradability of the DM and protein of the feeds.

Mixing tannin-containing sainfoin with alfalfa as a supplement to a 2% urea ensiled wheat straw chaff basal diet fed to sheep generally improved total intake, live-weight gain and wool growth of lambs compared to equivalent amounts of sainfoin or alfalfa ( $P < 0.05$ ). The degradation in the rumen of protein was more rapid with alfalfa than with sainfoin up to 8 hours incubation. The results are presented in the table.

Table 1 Total intake, liveweight changes, wool growth and rumen ammonia of lambs fed legume supplements on straw basal diets

Group	Diet	Total intake (g/d)	Wool growth (mg/100cm <sup>2</sup> /d)	Live-weight change (g/d)	Rumen fluid NH <sub>3</sub> -N (mg/l)
1	(20% Alfalfa)	790	17.1	-54	182
2	(40% Alfalfa)	898	45.7	- 9	210
3	(20% Sainfoin)	813	28.9	-63	205
4	(40% Sainfoin)	937	43.6	+ 5	227
5	(20% Alf+20% Sain)	936	52.9	+27	254
LSD	( $P < 0.05$ )	63.8	2.14	36.0	NS

The results indicate that a number of tanniferous and non-tanniferous legumes added to a basal diet of straw increased intake, efficiency of feed utilisation for liveweight gain and wool growth. The results suggest that tanniferous plants can provide protection from microbial degradation in the rumen of protein of non-tanniferous legumes when fed together. A combination of two legumes when supplemented to a wheat straw-based diet improved productivity greater than either legume alone.

BARRY, T.N. & BLANEY, B.J. (1987). In: "The Nutrition of Herbivores". pp. 91-97 Eds J.B. Hacker & J.H. Ternouth. Academic Press, Sydney.

The authors wish to acknowledge the IFS for a Grant supported.

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