

## THE EFFECTS OF YEAST SUPPLEMENT ON DIGESTIBILITY OF LOW-QUALITY ROUGHAGE FED TO SHEEP

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Considerable effort has been directed to manipulating the rumen environment with the aim of improving ruminant production. It has been reported that yeast culture supplement (*Saccharomyces cerevisiae*) to ruminants increased the concentration of cellulolytic bacteria in the rumen (Harrison *et al.* 1988; Dawson *et al.* 1990).

This study evaluated the effects of yeast culture (YC) supplement on rumen ammonia and on digestibility of low quality roughage fed to sheep.

Six mature merino sheep were fed an oat chaff based ration with (treatment) or without (control) YC (5 g/hd.day) in a 34 day cross-over trial. The ration consisted of 92% chaffed oat hay, 3.8% chaffed lucerne hay and 4.2% oat grain and was fed at the rate of 1 110 g dry matter (DM)/hd.day. *In vivo* digestibility was determined by means of a 10 day preliminary period followed by 7 days of total collection of faeces. On days 17 and 34 rumen fluid was collected, prior to feeding, to determine *in vitro* digestibility by 4 replicates with or without 10 mg YC in each tube. Rumen ammonia was also determined.

It is shown in Table 1 that there were no significant differences between control and treatment in *in vivo* digestibility of DM, acid detergent fibre (ADF), nitrogen (N) or *in vitro* DM digestibility. This contrasts with the report of Wiedmeier *et al.* 1987 that improved digestibility of protein and hemicellulose was observed when a 75% roughage diet was supplemented with YC and fed to dairy cattle. This might be due to difference in the readily fermentable carbohydrate of the 2 diets with 25% concentrate in the dairy diet and 4.2% in the sheep diet. The sheep diet contained 29.62% ADF and 9.5 MJ/kg digestible energy. Low ammonia concentration in the rumen (54.3 and 49.7 mg/L) was associated with low nitrogen content of the feed (0.97% N) and was at a level which Rogers *et al.* (1986) suggested would be inadequate for microbial growth and protein synthesis.

**Table 1. Effect of yeast culture (treatment) on rumen ammonia and digestibility of a low-quality roughage diet**

	Control		Treatment	
	mean	s.c.m.	mean	s.c.m.
<i>In vivo</i> digestibility				
Dry matter (g/g)	0.577	0.005	0.589	0.009
Nitrogen (g/g)	0.536	0.01	0.544	0.01
Acid detergent fibre (g/g)	0.468	0.01	0.468	0.02
<i>In vitro</i> DM digestibility (g/g)	0.542	0.011	0.554	0.018
Rumen ammonia (mg/L)	54.3	4.0	49.7	5.9

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