

THE DIGESTION OF DIETS CONTAINING YEAST *SACCHAROMYCES CEREVISIAE*
IN THE STOMACH AND INTESTINES OF SHEEP

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Yeasts grown on agricultural by-products are an important potential source of animal feed. As part of our investigation of yeast production, a study has been made of the nutritional value of the cultured yeast *Saccharomyces cerevisiae*. Two groups of three fistulated wethers were each offered 800 g/d of chopped wheaten and lucerne hay (50:50) (R) alone or supplemented with 150 g/d yeast either untreated (Y) or treated with formaldehyde (FTY) at 1.5 g/100 g yeast crude protein. Digesta flow from the rumen and abomasum was measured by ^{51}Cr and ^{103}Ru marker techniques and the proportion of microbial protein in abomasal digesta by the ^{35}S technique as reviewed by Hogan (1981). Estimates were made of the digestion of organic matter (OM), nitrogen (N) and crude protein (CP) in the stomach and intestines.

Digestion of organic matter (OM), nitrogen (N) and crude protein (CP) in the stomach and intestines

	GROUP 1		GROUP 2	
	R diet	R+Y diet	R diet	R+FTY diet
OM intake (g/d)	642	692	642	692
OM digested in stomach (g/d)	354	363	364	350
OM digested in tract (DOM) (g/d)	447	511	452	497
OM digestibility (g/kg OM intake)	696	738	704	718
N intake (g/d)	19.6	23.6	19.6	23.8
NAN [†] leaving stomach (g/d)	13.4 *	17.2	12.9 *	17.5
Microbial N leaving stomach (g/d)	10.2 *	12.2	10.2 *	11.4
CP (NAN x 6.25) digested in intestines (DCP _i): g/d	49.0 *	71.9	47.1 *	71.8
g/kg CP leaving stomach	643	** 724	658	** 714
g/kg DOM	109.7 *	140.7	104.2 *	144.5

[†] N in form other than ammonia Significant: ** P < 0.01, * P < 0.05.

With the basal diet the digestibility of OM and the proportion of that digestion occurring in the stomach were higher than usual for this mixture of roughages. Neither variable was significantly affected by the addition of untreated or treated yeast. A net loss of 5-6g nitrogen per day during passage through the stomach of the roughage diet was also not altered by the addition of nitrogen in treated or untreated yeast. Microbial protein synthesis was significantly higher with Y and FTY than R diets, indicating at least some degradation of yeast protein in the stomach. However, nitrogen equivalent to that added in yeast passed from the stomach. Digestibility of CP in the intestines was significantly greater for the yeast than for the control; the favourable change in balance between amino acids and energy indicated by the DCP_i/DOM ratio indicates that yeast would be an effective source of supplementary protein for sheep.

HOGAN, J.P. (1981). 'Forage Evaluation Concepts and Techniques', eds J.L. Wheeler and R.D. Mochrie. (CSIRO: Melbourne).

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