RESPONSE TO BYPASS PROTEIN AND STARCH IN MERINO SHEEP AND ANGORA GOATS

J.C. THROCKMORTON*, D. FFOULKES*, R.A. LENG*, and J.V. EVANS**

Gallagher and Shelton (1972) claimed that Angora goats were much more efficient than Rambouillet sheep at the conversion of feed to fibre. This study was designed to compare Australian Angoras with Merinos. Merino (24) and Angora (23) wethers, initially weighing 19 kg, were offered one of three diets for a period of 133 days. Diet 1, the basal diet, consisted of 35% oat chaff, 25% cornflour, 15% each molasses and sugar, 5% barley, 4.5% urea, 0.5% vitamin-mineral and 8 litres of water/100 kg feed. Diet 1 was formulated to be rapidly fermented in the rumen and to contain a minimum of 'bypass' nutrients. Diet 2 consisted of the basal diet supplemented with 5% (w/w) of formaldehyde treated casein. Diet 3 consisted of the basal diet supplemented with 5% formaldehyde treated casein and 10% cracked polished rice. All animals were adapted to Diet 1 for 30 days. Diets were individually once-daily fed to appetite based on daily refusals. Wool growth was measured on 8 x 8 cm midside patches for 105 and 43 days, and live weight gain (by regression) and fibre production were determined over the 133 day period. Rumen degradability of supplements was measured with nylon bags and in both species, formal-casein was 99% undegraded in the rumen and rice only 50% degraded after 20 hours. The rate of rumen turnover was measured in both species using [51-Cr] EDTA as marker (Downes and McDonald 1964).

Overall, sheep consumed 17% more feed and gained 50% faster ($P < 0.05$) than goats with feed conversion tending to favour sheep (Table 1).

TABLE 1 The interaction of diet and species on performance

	Diet 1		Diet 2		Diet 3		
	Goats	Sheep	Goats	Sheep	Goats	Sheep	LSD (5%)
Daily gain, g	31.5	45.3	68.2	107.4	81.4	119.3	27.5
Patch weight, mg/cm^2/d							
43 days	0.52	0.76	0.90	1.20	0.77	1.05	0.25
105 days	0.54	0.74	0.82	1.27	0.76	1.11	0.24
Feed intakes, g/d	465	538	604	755	664	736	116
Feed conversion							
intake/gain	14.8	11.9	8.9	7.0	8.2	6.2	5.9
intake fibre prod.	91.5	33.1	72.3	26.1	77.6	27.9	29.6
Rumen turnover, ($t_{½}$) h	16.1	14.1	8.6	9.0	12.1	12.7	7.3

In both species, the most marked response was to addition of formal-casein only; addition of rice did not further increase dry matter intake or fibre production but tended to improve live weight gain. Rumen turnover rates were not significantly different between species but responded to formal-casein supplementation. The response to bypass protein was greater in Merinos than Angoras.

DOWNES, A.M., and McDONALD, I.W. (1964). Br. J. Nutr. 18:153.
GALLAGHER, J.R., and SHELTON, M. (1972). J. Anim. Sci. 34:319.

* Department of Biochemistry and Nutrition, University of New England, Armidale, N.S.W. 2350.
**Department of Physiology, University of New England, Armidale, N.S.W. 2350.