THE EFFECTS OF SUPPLEMENTS OF PROTEIN CONCENTRATES ON THE MILK PRODUCTION OF COWS GRAZING HIGH QUALITY PASTURES

G.L. ROGERS,* and P.J. MOATE*

Yields of milk and milk protein from cows fed freshly cut white clover-perennial ryegrass herbage were increased by abomasal infusions of sodium caseinate (Rogers et al. 1979) or supplements of formaldehyde-treated casein (Rogers et al. 1980). This suggests that the amount and/or quali'ty of protein entering the duodenum was limiting milk synthesis despite the high protein content of the herbage.

In this study, Friesian-Jersey crossbred cows in mid lactationgrazed high quality pasture (18 MJ and 33 g N/kg DM). Supplements given werewhole lupin grain (48 g N/kg DM), or a mixture of crushed heated lupins and oats; or a mixture of soyabean'meal (SBM) and sunflower seed meal (SSM) (72 g N/kg DM). In each of these three experiments control cows were given no supplement or an isocaloric amount of crushed oats (14 g N/kg DM). ,

The protein sypplements increased yields of milk and milk protein, but the response was not significantly different from that obtained with oats. The results (Table 1) suggest that differences in the quality and/or quantity of protein absorbed from the small intestine resulting from the supplements of protein or oats was small.

TABLE 1 . Effect of protein and energy supplements on milk yield and, . composition

Treatment	Milk yield (ℓ/d)	Milk fat (g/kg)	Milk fat (g/d)	Milk protein (g/kg)	Milk protein (g/d)
Experiment 1 (n=21)					
Pasture	15.3	41.4	606	33.9	505
Pasture + oats (2.2 kg/d)	16.2	39.5	622	33.9	540
Pasture + whole lupins (2 kg/d)	16.1	40.7	651	33.9	540
(P=0.07)	0.9	1.8	47	1.0	28
Experiment 2 (n=32)					
Pasture	13.5	44.9	614	29.1	394
Pasture + oats (2.2 kg/d)	15.8	42.8	664	29.7	462
Pasture + oats (4.4 kg/d)	16.7	39.2	642	31.5	527
Pasture + oats (2.2 kg/d) + crushed lupins (2 kg/d)	16.7	39.6	671	29.9	496
(P=0.05)	1.5	3.2	63	2.0	57
Experiment 3 (n=33)					
Pasture	10.7	40.9	429	31.9	341
Pasture + oats (2.2 kg/d)	11.7	41.5	478	32.5	378
Pasture + SBM (1.4 kg/d) + SSM (0.6 kg/d)	12.0	39.8	474	32.7	392
(P=0.05)	0.9	1.8	44	0.6	32

ROGERS, G.L., BRYANT, A.M. and McLEAY, L.M. (1979). N.Z. Jl Agric. Res. 22: 533.

ROGERS, G.L., PORTER, R.H.D., CLARKE, T. and STEWART, J.A. (1980); Aust J. Agric, Res. 31: 1147.

* Dairy Research Institute, Ellinbank, Via Warragul, Vic. 3820.