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POTATO FEED FOR LACTATING GOATS

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A potato-processing factory in Victoria creates annually 25,000 tonnes of potato feed, a starchy by-product enriched with malt combings, with 2.3% nitrogen (N), 77.2% in vitro organic matter digestibility. This product was evaluated as a major feed component for milk and milk-fat production. Sixteen dairy does, each suckling twins, were allocated to 4 groups; 2 groups received oaten chaff and lucerne 1:1 as roughage, 2 received cut grass of declining quality as the season progressed. Within each roughage source, 1 group received virginiamycin to modify ruminal fermentation. Does in each group received potato feed dry matter (DM) at 0%, 0.8%, 1.6% and 2.4% of liveweight for 4 periods of 4 weeks according to a latin square design. Slow-release chromic oxide capsules were used to estimate DM intake and digestibility. In week 4 of each period, milk volume and composition were determined on 2 days, over a 4-hour interval after oxytocin injection. In periods 2 and 3, ruminal contents were sampled 3-4 hours after feeding and volatile fatty acid (VFA), ammonia and pH were measured. Does were weighed weekly.

Liveweight changes were insignificant throughout. "Captec" capsules gave low levels of faecal chromic oxide leading to impossibly high estimates of faecal output (2-55 kg/day) in 12 of 64 cases so roughage intakes were not calculated. Potato feed increased milk yield, milk protein content and ruminal propionate while acetate was reduced. The reduction in milk fat content was not significant. However, a 3-way interaction, fat content x protein content x potato intake, showed that fat content fell and protein content rose as potato feed intake increased. Virginiamycin had no effect on VFA, fat content or yield but increased the protein content across all dietary treatments from 3.10% to 3.24%.

Table 1. Effect of potato feed and roughage source on milk yield and composition of dairy goats

Roughage		Level of potato feed (% of liveweight)			
		0.0	0.8	1.6	2.4
Chaff	Milk yield (L/day)	2.80^{a}	2.85^{a}	3.26^{b}	3.42^{c}
	Protein (%)	3.03^{ab}	2.93^{a}	3.08^{ab}	3.12^{b}
	Fat (%)	3.2	3.3	3.2	3.2
Grass	Milk yield (L/day)	1.80^{a}	2.55^{c}	2.38^{b}	2.65^{c}
	Protein (%)	3.27^{a}	3.28^{a}	3.38^{ab}	3.40^{b}
	Fat (%)	3.5	3.5	3.2	3.1

Means with different superscripts are significantly different ($P < 0.05$).

We conclude that potato feed, fed at up to 2.4% of liveweight to lactating goats, results in increases in milk production and milk protein content, with a reduction of milk fat content. Inclusion of virginiamycin in the ration increased milk protein content.