EFFECT OF MONENSIN ON MILK PRODUCTION OF DAIRY COWS IN QUEENSLAND

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Monensin is an ionophore that affects ruminant energy metabolism and rumen efficiency (Bergen and Bates 1984). Moate *et al.* (1990) showed monensin released into the rumen from anti-bloat capsules increased milk production of dairy cows by 4.6%. In this paper we report on 2 experiments carried out at Kairi Research Station between November 1990 and October 1991 to determine the effect of feeding monensin in a grain-based supplement on milk yield and composition of dairy cows in summer, when grazing tropical pasture species, and in winter, when grazing both irrigated temperate pastures and tropical pastures. All cows grazed as a single herd in each experiment. Summer pastures were predominantly guinea grass and Tinaroo glycine at a stocking rate of 1.3 cows/ha. Winter pastures consisted of irrigated nitrogen-fertilised ryegrass oversown into a kikuyu-dominant pasture at a stocking rate of 7.5 cows/ha grazed at night, and tropical pastures grazed during the day.

Two groups of 30 Holstein Friesian cows and heifers were used in each experiment. After all animals had calved, a 4-week covariate period was used to block animals for milk yield. Following calving and during the covariate period, cows were each fed 3 kg/day of dairy meal in the bails at milking. During the trial feeding period of 12 weeks, 3 levels of monensin were fed, either nil, 200 or 300 mg/cow.day. A pre-weighed amount of monensin contained in Rumensin feedlot premix (10% active ingredient) was fed with each cow's meal once a day after the morning milking in individual feed stalls. Milk yield was recorded on 2 consecutive milkings each week, while a composite milk sample was analysed for milk fat, true protein and lactose per cent. Data was analysed by analysis of variance using the 4 week period prior to the start of each experiment as a covariate, Table 1.

Table 1. Covariate adjusted milk yield and composition as affected by level of monensin in summer and winter

	Summer Monensin (mg/cow.day)			Winter Monensin (mg/cow.day)		
	Nil	200	300	Nil	200	300
Milk (L/cow.day)	13.3	14.0	13.8	18.1[a]	19.9[b]	19.4[ab]
Milk fat (%)	3.88	3.86	3.71	3.71[a]	3.46[b]	3.40[b]
Protein (%)	3.11[b]	3.20[a]	3.13[ab]	2.99	2.96	2.93
Lactose (%)	4.74[a]	4.74[b]	4.75[b]	4.83	4.78	4.80
Milk fat (kg)	35.1	37.3	35.0	46.5	47.7	46.0
Protein (kg)	28.3[a]	30.8[b]	29.6[ab]	37.7[a]	41.1[b]	39.6[b]
Lactose (kg)	43.6	47.5	45.1	61.0	66.7	64.8

Within each trial means followed by different letters are significantly different ($P<0.05$).

In summer feeding monensin had no significant effect on milk yield, but protein per cent and protein yield were increased when 200 mg/day monensin was fed. In winter, feeding 200 mg monensin significantly increased yields of milk, lactose and protein, but reduced yield of milk fat. In both seasons, feeding 200 mg/day of monensin gave maximum yields. Feeding 200 mg/cow.day of monensin would increase milk returns only on farms where the milk payment system was based on the litres of milk and/or the kilograms of protein produced. This work was supported by Elanco.

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