

Effect of Different Types of Milk on the Growth Rate and Health of Goat Kids from Birth to Weaning.

P.J. Murray^A, J.N. Nyamasyo^B, R.K. Englebright^A and E.A. Qualishefski^A

^ASchool of Animal Studies, The University of Queensland Gatton 4343.

^BPO Box 24371, Karen, 00502, Kenya

Sustainability of any goat enterprise depends upon the successful raising of kids for replacement stock. However, a profitable goat dairy depends on minimising the amount of goat milk offered to kids to maximize the volume of marketable milk. This can be done through utilization of milk replacers or other milk sources such as cows milk especially in situations where cows milk is available and cheaper than goat milk (Lu and Potchoiba 1988). After the kid has suckled colostrum from its mother, it can be fed with milk from other sources. There are limited milk replacer products for rearing kids with most products designed for calves.

The study involved 46 male and female kids (21 Boer and 25 crossbred) allocated, with equivalent numbers of twins and triplets of different genotypes, into 5 treatments that compared kids fed whole cows' milk, Palastat high energy lamb and kid milk replacer (25% fat, 24% protein, 40% lactose DM basis), Palastat high energy calf milk replacer (21% fat, 28% protein, 42% lactose; Probiotec Nutritionals NSW), whole goat milk, and 7 pairs of kids suckling their mothers. Goat and cow milks were individually bottle fed according to Anon. (2004) and the Palastat milk replacers as per manufacturer's recommendations. Digestive or respiratory problems were recorded during the experiment and kids were weighed at birth then at 3 day intervals until weaning at 84 days of age. Kids in the Palastat replacer treatments experienced scours and bloat in the first 4 weeks, with 2 kids in both of these treatments dying from bloat. These 2 treatments were then terminated and these kids fed cows milk.

Kid growth rates in the goat milk treatment were significantly higher ($P < 0.05$) than the growth rates of kids in all other treatments in the 1st and 2nd month of the experiment (Table 1). There were no significant differences ($P > 0.05$) in growth rates for females and males (151 and 155 g/day, respectively) and for Boer and Cross-bred kids (157 and 149 g/day, respectively). Conversion of milk into live weight for kids in the goat milk treatment was significantly higher ($P < 0.05$) than for kids in the other treatments during the first month when the main feed consumed was milk. The total milk consumed to reach 15 kg live weight, which is the typical capretto meat market weight, was calculated. Only kids artificially reared in the cow and goat milk treatments attained 15 kg live weight (92.6 and 83.4 L, respectively) during the pre-weaning period and these means were not significantly different ($P > 0.05$). Mean live weight at weaning for the kids in goats milk treatment was significantly higher ($P < 0.05$) than the mean for the kids in the other treatments. None of the kids in the cow milk, goat milk and naturally reared kid treatments had bloat while there were cases in the Palastat milk replacer treatments. Kids in the cow milk, goat milk and naturally reared kid treatments had scours lasting for 1-3 days while scours in the Palastat milk replacer treatments persisted in several cases for up to 15 days despite treatment.

Table 1. Growth rates, weight gain for milk consumed in the first 30 days, milk consumed per kilogram liveweight gain, age required for kids to reach 15 kg, and liveweight at weaning for bottle fed and naturally reared kids.

Parameter	Doe reared	Milk treatment		Milk replacer	
		Goat	Cow	Calf	Kid
Growth 1 st month (g/day)	183 ^b	225 ^c	198 ^{bc}	98 ^a	108 ^a
Growth 2 nd month (g/day)	140 ^{abc}	195 ^d	166 ^{ad}	131 ^{bc}	115 ^b
Mean growth rate to weaning (g/day)	146 ^c	194 ^d	173 ^a	120 ^b	115
Weight gain (kg) /Litre of milk	-	0.15 ^c	0.13 ^a	0.11 ^b	0.12 ^{ab}
Milk consumed L/kg liveweight gain	-	7.1 ^b	7.8 ^{ab}	8.3 ^a	8.2 ^a
Age (days) kid achieved 15 kg liveweight	75 ^a	58 ^b	68 ^{ab}	-	-
Live weight (kg) at weaning	16.0 ^a	18.7 ^c	17.3 ^{ac}	13.3 ^b	12.8 ^b

We conclude on the basis of both growth rates and health, cow milk can successfully replace goat milk in artificially rearing goat kids in areas where cow's milk is available and cheaper than goat's milk. However, unless the composition of calf milk replacer and kid milk replacer is changed, they can not successfully replace goats' milk to rear kids artificially because of lower growth rates, increased mortality and increased veterinary expenses.

Lu, C.C. and Potchoiba, M.J. (1988). *Small Rum. Res.* **1**: 105.

Anom. (2004). Artificial methods of rearing goats. Agfact A7.5.4 (3rd edition).

Email: peter.murray@uq.edu.au