

INCREASING THE SAFETY OF A FREE-ACCESS GRAIN FEEDING REGIME TO CATTLE

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Virginiamycin (VM) protects cattle from **rumen** acidosis by controlling the build up of lactic acid associated with rapid carbohydrate fermentation (Nagaraja *et al.* 1987). The safe sudden introduction of cattle to a complete mixed diet (90:7:3 ground wheat grain:hay:minerals) plus VM has been demonstrated (Zorrilla-Rios *et al.* 1991), although a low feed intake was observed during the first 14 days of the feeding period with a concomitant reduction in liveweight gains. In the present study 2 introduction feeding regimes to grain and 2 physical diet formulations were investigated. The aim was to reduce the apparent initial negative effect of VM on voluntary feed intake (VFI) and average daily gain (ADG).

Forty Hereford yearling steers in individual pens were used to test 5 treatments: Mixed (78% ground barley, 20% chopped hay and 2% minerals) or Choice (grain fed separately from long hay, both *ad libitum*), with 2 introduction schemes: *ad libitum* from day 1 or 2-step regime (concentrate offered at a 1.5% of initial body weight for the first week and *ad libitum* thereafter). These 4-treatment combination diets contained VM at 20 g/t total feed. A control treatment (5) consisted of a mixed diet without VM, with gradual introduction of grain, over a 14-day period. Daily feed intake was measured over 114 days and liveweight at fortnightly intervals.

Behaviour, clinical condition of animals and visual inspection of liver and **rumen** epithelium at slaughter were considered normal in all cases. Total intake during the first 2 weeks on feed was reduced by the 2-step regime under either mixed or choice diets. Nevertheless, overall animal performance at 114 days was not statistically different between treatments. Average daily gain (kg), daily feed intake (kg) and feed conversion ratios (kg feed/kg gain) for treatments control, sudden mixed, 2-step mixed, sudden choice and 2-step choice were respectively: 1.15, 1.24, 1.12, 1.09 and 1.09 (s.e.d. 0.103); 8.29, 8.66, 7.58, 7.9 and 7.83 (s.e.d. 0.484); 7.41, 7.06, 6.8, 7.36 and 7.18 (s.e.d. 0.399).

Limit feeding during the introductory stage did not overcome the negative effect of VM on feed intake. The safe sudden introduction of cattle to high grain diets plus VM was confirmed. A choice feeding regime plus VM may be an economic alternative if the saving in feed preparation more than compensates for the reduction in animal performance.

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