

PRIOR EXPOSURE TO GRAIN AFFECTS THE ABILITY OF UREA TO RESTRICT GRAIN INTAKE

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The effects of adding urea/ammonium sulfate (U/AS) to grain on the intake of supplements of barley and lupin offered *ad libitum* to dairy steers were quantified by Hough *et al.* (1992). Supplement intakes were 14-56% greater than predicted based on previous studies with cereal grains offered to beef cattle (May *et al.* 1989). Dairy steers were exposed to grain immediately prior to being offered the supplement whereas beef steers had no previous exposure to grain. This study examined the effects of prior exposure to grain on the intake of a supplement containing 8% urea offered *ad libitum* to dairy steers.

Thirty-three steers were allocated to one of the following treatments (see Table 1): no prior exposure to grain (Nil); pre-weaning exposure only (NPW); pre- and post-weaning exposure with grain restricted post-weaning (RPW); pre- and post-weaning exposure with grain offered *ad libitum* post-weaning (APW). At about 12 weeks of age and weighing about 100 kg, steers were penned individually and a supplement of barley and pasture hay was offered *ad libitum* for 98 days. The supplement initially contained 2% urea and 5% ammonium sulfate which was altered over a period of 12 days to give a final supplement containing 90% barley, 8% urea, 1.5% limestone and 0.5% salt.

Table 1. The effect of prior exposure to grain on the intake (g DM/day.kg LW) of steers

Treatment	Nil	NPW	RPW	APW	s.e.d. (n=9)	Signif.
No. of steers	9	6	9	9		
Supplement intake	10	10	13	15	1.4	**
Hay intake	23	23	20	13	1.1	***
Total intake	34	33	33	29	0.7	***
** P<0.01; *** P<0.001.						

The intake of supplement by steers was affected by previous exposure to grain with APW steers consuming 30–50% more supplement than Nil or NPW steers (see Table 1). The reduced supplement intake by Nil and NPW steers was compensated by an increase in hay intake.

High levels of urea/ammonium sulfate (Hough *et al.* 1992) or urea are required to restrict grain intake by dairy cattle which have had prior exposure to grain hence diammonium phosphate (DAP) may be a more appropriate additive to restrict grain intake as it is more effective than urea at restricting grain intake, and at nitrogen equivalent doses is less toxic than urea (Oltjen *et al.* 1963). The potential of DAP to restrict grain intake will be investigated in future experiments.

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