

THE INFLUENCE OF ACTH IMMUNIZATION ON THE FEEDING
BEHAVIOUR OF LAMBS IN A FEEDLOT

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A factor that is likely to compromise the productivity of either sheep or cattle in a feedlot is their status within the social hierarchy of a flock or herd. This is magnified in the feedlot by the high stocking rates used, since animals are unable to physically separate. We have observed previously that active immunization of animals against ACTH results in a dramatic stimulation in plasma β endorphin levels by up to 10-fold due to the loss of negative feedback. Assessments of the cognitive behaviour and temperament of these immune animals have demonstrated that they are more docile and less fearful. Endorphins have also been associated previously with altered feeding behaviour and feed intake. The present study reports the influence of ACTH immunization on the frequency and pattern of feeding of animals subjected to psychosocial stress in a feedlot.

Groups of animals (n=16) were immunized against ACTH 1-24:HSA (1:1; Gps. 2 and 3), ACTH 1-24:OA (1:2; Gp. 4), ACTH 22-39:HSA (1:2; Gp. 5) or a combination of vaccines 4 and 5 in Gp. 6 in Freund's adjuvants. Gp. 1 served as the control and received adjuvant only. Animals were immunized on days 58, 86, 114 and 142. The animals were allocated equally to 4 groups of 24 and fed a pelleted concentrate ration *ad libitum*. Individuals within groups were interchanged frequently to disrupt the social hierarchy of groups. On the day prior to observations the feed offered was restricted to 70% *ad libitum* (study 1, day 1 and study 2), 95% (study 1, day 2) and to 50% in study 3.. The feeding space was restricted so that only 6 animals would gain access simultaneously and the identity of animals feeding at 5 min intervals for 6 h post feeding recorded. Data for 2 pens were collected on each of 2 consecutive days (study 1 and 2) and 4 pens simultaneously for study 3.

Group	A/b titre (1/dilx10 ⁻³) mean±SEM	β Endorphin (pg/ml)	Feeding frequency (mean number 5 min per pen)				Study 3
			Study 1		Study 2		
			Day 1	Day 2	Day 1	Day 2	
1		158±50	.55±.06	1.30±.08	.79±.07	.68±.06	.67±.04
2	27.3±7.7	449±98	.82±.07	1.36±.11	.64±.05	1.0±.07	.67±.05
3	50.5±19.3	391±84	.82±.07	1.39±.09	.82±.06	.84±.05	.76±.05
4	22.3±3.6	427±100	.81±.06	1.24±.08	.73±.06	.75±.06	.64±.04
5	6.3±1.5	199±51	.62±.06	1.23±.08	.79±.06	.79±.07	.58±.04
6	12.0±4.0	245±45	.81±.07	1.37±.1	.78±.07	.72±.06	.72±.05

The results show that on some days ACTH 1-24 immune groups fed more frequently, while on other days this effect was not apparent. The pattern of feeding of ACTH immune animals over the 6 h period was more even than in control groups which were more aggressive and generally fed more frequently in the first hour of observation. The variability in the data suggest that endorphins do not have overriding control of feeding behaviour in ruminants and are likely to be one of many regulatory factors involved in its control. Therefore ACTH immunization may influence feeding patterns and modulate- aggressive behaviour in feedlot animals and therefore improve the efficiency of feedlot enterprises.

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