

# EXOGENOUS GROWTH HORMONE RELEASING FACTORS IMPROVE GROWTH PERFORMANCE, FEED CONVERSION EFFICIENCY AND CARCASS QUALITY IN LAMBS FED ROUGHAGE DIETS

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The effect of diet in modifying the action of somatotropin has not been well documented. In studies where diets high in starch were fed, Beerman *et al.* (1990) showed that administration of exogenous growth hormone releasing factors (GRF) improved growth performance and lean tissue gain. In the present study we measured the responses of young sheep fed roughage-based diets to GRF treatments designed to elevate somatotropin status over a period of 28 days.

Forty-eight lambs [Dorset × (Border Leicester × Merino)] weighing approximately 38 kg were blocked for liveweight (LW) and randomly allocated to 1 of 6 treatment groups in a 2 × 3 factorial design. Treatments consisted of chaffed lucerne hay fed *ad libitum*, with and without a supplement of cottonseed meal (CSM) and hormone treatments of excipient only (Control, C; phosphate buffered saline), recombinant human GRF (rGRF) or a similar quantity of synthetic GRF (sGRF). Excipient or GRF doses (30 µg/kg LW/day) were administered in equal volumes (1 mL) by subcutaneous injection at 0600 and 1800 hours. Lucerne chaff was offered in approximately equal amounts at 0800 and 1500 hours. CSM (300 g air dry/day) was fed in separate containers after the morning allocation of chaff. Feed intake was recorded daily and lambs weighed weekly. Doses of rGRF and sGRF were adjusted weekly for increasing liveweight.

**Table 1. Effects of cottonseed meal (CSM) and exogenous growth hormone releasing factors (GRF; human GRF, rGRF, and synthetic GRF, sGRF) on intake, feed:gain ratio and some carcass characteristics in young sheep (8 lambs/treatment) offered lucerne chaff *ad libitum***

LD, longissimus dorsi; CSM × GRF interactions were not significant ( $P > 0.1$ )

	C	Lucerne rGRF	sGRF	C	Lucerne + CSM rGRF	sGRF	Significance s.e.d.	CSM	GRF
Feed intake (kg DM/day) <sup>A</sup>									
Chaff	1.34	1.40	1.36	1.18	1.25	1.26	0.086	***	n.s.
Total	1.34	1.40	1.36	1.46	1.53	1.54	0.086	***	n.s.
Liveweight gain (kg/28 days) <sup>A</sup>	4.09	6.93	5.63	5.42	7.67	6.87	0.034	**	***
Fat depth (GR site, mm)	12.0	9.8	9.5	11.2	9.2	9.3	1.33	n.s.	*
LD muscle area (mm <sup>2</sup> )	1210	1440	1420	1380	1400	1440	55	n.s.	*
Feed:gain ratio	10.3	5.9	7.1	7.7	5.7	6.7	0.49	n.s.	**
* $P < 0.05$ , ** $P < 0.01$ , *** $P < 0.001$ . <sup>A</sup> Initial weight as covariate, mean = 38.0 kg.									

Recombinant and synthetic GRF increased LW gain by 52% and 32% respectively over control values. Supplementation with CSM enhanced liveweight gains of control, rGRF and sGRF treatments by 32%, 12% and 23%, respectively. Treatment with GRF reduced fat depth at the GR site (19%) and increased the cross-sectional area of the LD muscle (10%) relative to the control. Feed intake was not significantly affected by GRF treatment. Cumulative feed:gain ratios were improved by treatment with rGRF and sGRF by 34% and 23%, respectively over control values. Addition of cottonseed meal to the diet did not significantly ( $P > 0.1$ ) affect feed:gain ratio, LD area or fat depth at the GR site. We conclude that GRF can improve liveweight gain, carcass quality and feed conversion in lambs fed roughage diets.

BEERMAN, D. H., HOGUE, D. E., FISHELL, V. K., ARONICA, S., DICKSON, H. W. and SCHRICKER, B. R. (1990). *J. Anim. Sci.* 68: 4122-33.