

## EFFECTS OF GROWTH HORMONE ON WOOL GROWTH AND NITROGEN BALANCE IN EWES

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A group of Merino ewes of similar fleece characteristics were fed a pelleted ration either to calculated maintenance requirement (6 ewes - low plane, LP) or to 1.6 x maintenance (6 ewes - high plane, HP). The ewes were housed in a constant environment room ( $23 \pm 1^\circ\text{C}$ ), with a 24 h day length, and 10 mg purified ovine growth hormone (GH) was administered intramuscularly daily for 28 days to 3 ewes in each group, the remaining animals serving as controls. Circulating levels of GH, somatomedin (Sm), insulin (In), thyroxine ( $\text{T}_4$ ) and tri-iodothyronine ( $\text{T}_3$ ), and of glucose, plasma free fatty acids (FFA) and urea were measured daily. Total collections of faeces and urine were made at 2 day intervals. Wool growth was measured by the patch technique, and changes in fibre length and diameter were assessed by radioautography.

As shown earlier by Wheatley, Wallace and Bassett (1966) wool growth in both groups of ewes was reduced during GH administration and increased to above basal levels in the twelve week period after treatment had ceased. Radioautoradiographic data showed that in both groups, fibre length was unchanged during GH treatment, but fibre diameter was reduced; in the period following GH administration, fibre diameter rose to the pre-treatment level and fibre length increased. Nitrogen retention during the GH treatment period was increased only in the HP group whereas in both groups of ewes it fell below control values after GH injections had ceased.

Plasma GH levels rose sharply in the LP group during GH administration, but the increase, although significant, was less marked in the HP group. Plasma In rose significantly during the same period, but the levels in the HP group were much higher than those in the LP group. Sm levels, assayed by labelled sulphate incorporation into weanling rat cartilage (Stuart, Lazarus, Moore and Smythe, 1976) rose sharply during GH treatment in both groups. Plasma  $\text{T}_3$  and  $\text{T}_4$  levels were unchanged.

In both groups of ewes, circulating levels of glucose rose during GH treatment, but plasma FFA levels were unaffected. Blood urea rose during GH administration and fell below the pre-treatment levels immediately after GH treatment in both groups.

The data are consistent with the view that the effects of GH on wool growth are indirect, and reflect increased protein deposition in tissues other than wool during treatment with GH and increased mobilisation of tissues in the period immediately after treatment.

STUART, M.C., LAZARUS, L., MOORE, S.S. and SMYTHE, G.H. (1976)

*Horm. Met. Res.* **8**, 442.

WHEATLEY, I.S., WALLACE, A.L.C. and BASSETT, J.M. (1966)

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