

THE EFFECTS OF VARYING BYPASS AMINO ACID AND GLUCOSE
AVAILABILITY ON LAMB GROWTH AND WOOL GROWTH

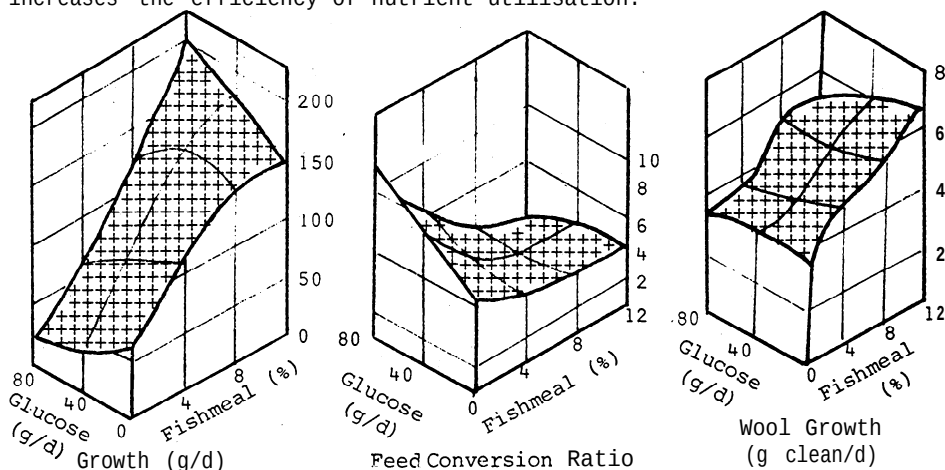
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Growing lambs given low-protein diets appear to have a requirement for extra glucose precursors and bypass amino acids. The effects of varying the availability of both bypass amino acids and glucose on the rate of growth of tissue and wool has not been ascertained.

In these studies suckling lambs were reared from birth on the-bottle to ensure that the oesophageal groove reflex was maintained. Lambs were allowed to consume *ad libitum* a low-protein basal diet of sugar and oaten chaff (50:50) plus 4% urea and minerals and vitamins. Groups of lambs on this diet were supplemented with one of four levels of fishmeal (a bypass protein). In addition, within each protein supplement group, sub-groups of 4 lambs were given 0, 40 or 80 g of glucose which bypass the rumen since it was given by suckling a bottle. The glucose solution or a water control was given in 6 feeds at 3-hourly intervals between 0800h and 2300h.

The effects of different availabilities of both bypass protein and glucose on growth rate, feed conversion ratio (FCR), and wool growth rate are shown (see Figure). Supplementation with bypass protein increased feed intake, rate of growth and wool production, and reduced the feed conversion ratio from 6:1 to 4:1. Provision of glucose at low levels of bypass protein supplementation depressed growth due to reduced feed intake (FCR 12:1). In animals in which the requirements for bypass amino acids had been apparently met (12% fishmeal), an additional growth response could be achieved by providing bypass glucose. Efficiency of feed utilisation (not considering the extra glucose) was also reduced to 2:1. Glucose supplementation had no effect on the rate of wool growth.

In the highly productive ruminant in which the requirement for bypass amino acids has been met, an additional response in production can be gained by increasing the supply of glucose, which apparently increases the efficiency of nutrient utilisation.



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