

## CONTROL OF GLUCONEOGENESIS IN LACTATING SHEEP

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Whereas the hormonal control of gluconeogenesis in nonruminants has been broadly defined, the situation in ruminants remains largely unresolved (Bassett, 1978). A useful experimental model for examining the control of gluconeogenesis in the ruminant is the lactating ewe deprived of food. Under these conditions the animal must mobilise body reserves in order to meet the requirement for glucose imposed by lactation. The data reported here were obtained during a study of the hormonal control of gluconeogenesis in the lactating ewe.

Ewes accustomed to handling and which had been milked by hand from the day of parturition were housed in metabolism cages. They were fed either good quality lucerne chaff *ad libitum* or pelleted lucerne chaff/barley in sufficient quantity to meet calculated requirements for maintenance plus milk production. Each ewe was submitted to a period of food restriction of 4 days during which food intake was reduced by 80%. Thereafter feed intake was restored to the level prior to restriction. Milk yields were recorded daily and body weight changes were measured. Blood samples collected from indwelling venous cannula were assayed for blood amino acids and plasma glucose, free fatty acids, insulin, glucagon, thyroxine and growth hormone. Glucose biokinetics were measured by isotope dilution.

In response to food restriction, milk yield and body weight decreased. Blood amino acids, plasma glucose, glucose pool size, glucose irreversible loss, insulin, glucagon, thyroxine and the insulin:glucagon ratio decreased. In contrast, plasma free fatty acids and growth hormone increased. These changes were similar in both groups of ewes and were reversed when food intake was restored.

The results suggest that the hormonal control of gluconeogenesis in the ruminant is similar to that in the nonruminant.

BASSETT, J.M. (1978). Endocrine factors in the control of nutrient utilization: ruminant. Proc. Nutr. Soc. 37, 273-280.

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