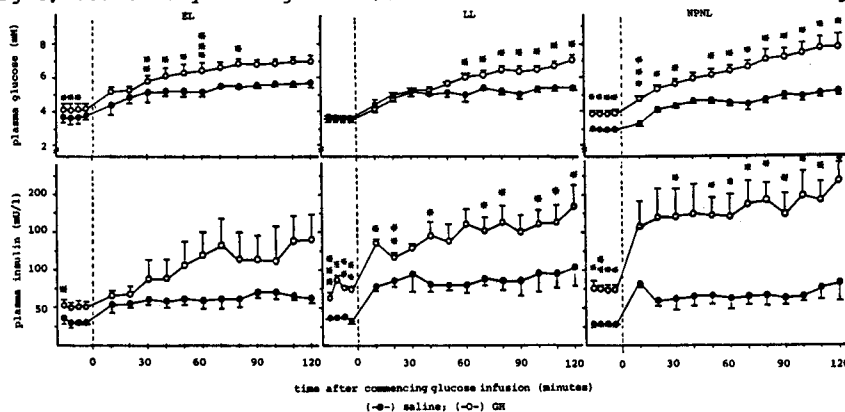


DIABETOGENIC EFFECTS OF EXOGENOUS GROWTH HORMONE DEMONSTRATED IN VIVO IN SHEEP

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Although the galactopoietic effects of growth hormone (GH) in ruminants are well known (see McCutcheon and Bauman 1985; Johnsson and Hart 1986), the mechanisms responsible for this effect are not fully understood. There is now some evidence that GH alters nutrient partition/utilisation in the body (McDowell et al. 1987) and that GH exerts diabetogenic effects (see Hart 1983; Leenanuruksa and McDowell 1986). The present study was conducted to further test for diabetogenic effects of GH.

Groups of three ewes which were either non-pregnant and non-lactating (NPNL), in early lactation (EL, c. 20 d post partum) or in late lactation (LL, c. 60 d post partum) were kept in metabolism cages and fed continuously a mixed ration (50:50, commercial dairy pellets: chopped lucerne) to meet requirements for metabolisable energy. All ewes were fitted with catheters in each external jugular vein. Responses to intravenous infusions of glucose (2 mg/kg liveweight/min) over periods of two hours were measured when ewes were given subcutaneous control (CON) injections of excipient or GH (0.1 mg/kg liveweight, fourth day of injection). Results are summarised in the Figure.



It is apparent that basal plasma glucose and insulin were higher, for each group of ewes, during GH than CON injections. In response to intravenous glucose, plasma concentrations of both glucose and insulin increased with concentrations increasing much more during GH than CON injections.

The results confirm that GH exerts diabetogenic effects in ruminants as indicated by results of previous studies with intact goats (Hart 1983) and alloxanised sheep (Leenanuruksa and McDowell 1986). It is suggested that GH reduces the responsiveness of body tissues to insulin and that the body's homeostatic mechanisms induce the pancreas to increase insulin secretion.

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