

THE EFFECT OF DIFFERENT LEVELS OF INTRAVENOUS GLUCOSE INFUSION
ON GLUCOSE ENTRY RATE AND NITROGEN RETENTION IN SHEEP

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As a source of energy for protein deposition, glucose and propionate have been found to be superior to acetate and butyrate (Eskeland et al. 1973, 1974). This study investigated the effect of different levels of intravenously infused glucose on glucose entry rate (GER) and nitrogen retention in sheep.

Four wethers, each prepared with chronic indwelling catheters in the left and right external jugular veins, were fed lucerne pellets, continuously, at calculated maintenance energy level. The sheep were infused continuously for five days with glucose at the calculated rate of either 0 (saline), 10, 20 or 30 mmol/h in a Latin Square design (4 infusion rates x 4 periods). Each 5-day infusion period was followed by a 5-day period without infusion.

Faeces and urine were collected daily during each infusion period and GER were measured on day 5 of the same period (see Mahyuddin and Teleni 1987). Mean values for GER and concentration, nitrogen retention and plasma urea concentration in animals infused intravenously with different levels of glucose are presented in the Table below.

	Glucose infusion rates				S.E.D	P
	0 Saline	10.5 mmol/h	21.1 mmol/h	31.9 mmol/h		
GER (mmol/h)	28.8 ± 2.04	48.3 ± 4.20	54.7 ± 6.47	86.1 ± 4.46	3.44	<0.05
Glucose (mM)	4.13 ± 0.22	4.8 ± 0.25	4.9 ± 0.20	5.1 ± 0.34	0.46	NS
Urea (mg/100 ml)	43.7 ± 3.67	43.7 ± 3.36	42.7 ± 2.59	40.6 ± 3.23	3.22	NS
N ret (g/day)	4.9 ± 0.36	7.8 ± 1.3	8.4 ± 1.2	11.6 ± 0.7	0.29	<0.05

Glucose entry rate increased as the level of glucose infused increased ($P < 0.05$). There was a large increase ($P < 0.05$) in endogenous glucose entry (GER - glucose infusion rate) with the highest level of glucose infusion rate, but the differences between means of the lower infusion rates were not significant. There were no statistically significant changes in both glucose and urea concentrations with infusion rate of glucose. Nitrogen retention increased with increasing level of glucose infused ($P < 0.05$) suggesting the importance of glucose in protein deposition.

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