

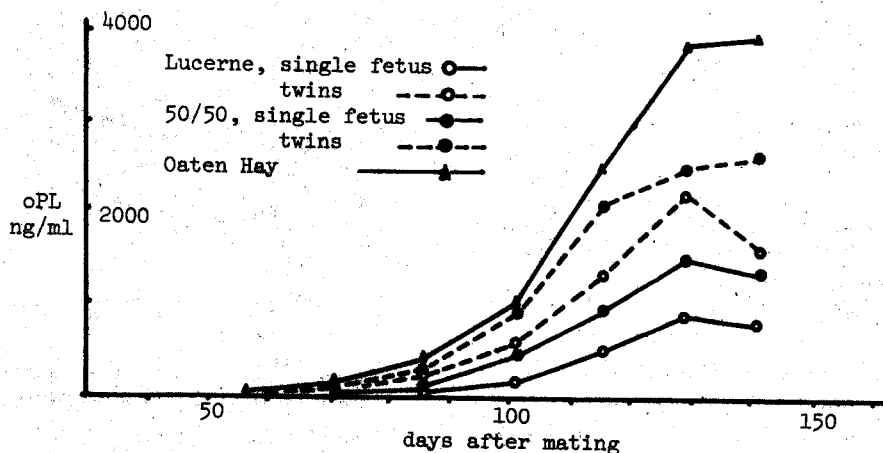
DIET AND FETAL NUMBER INFLUENCE OVINE PLACENTAL LACTOGEN CONCENTRATION

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Unlike human placental lactogen, which is thought to act to spare glucose for fetal metabolism and growth, the role played by ovine placental lactogen (oPL) is uncertain. This report outlines the changes in oPL concentration that occur throughout pregnancy, in sheep eating diets vastly different in nutrient supply.

21 pregnant Merino ewes 4-5 years old were offered one of three rations from before mating to after lambing. Five ewes bearing a single fetus ate chaffed oat hay (mean intake 6.1 MJ ME, 8.4 g N/day); 9 ewes, 5 with 1 fetus, 4 with twins, ate lucerne chaff (mean intake 13.5 MJ ME, 51.8 g N/day) and 7 ewes, 3 with 1 fetus, 4 with twins, ate a 50/50 mixture of oat hay and lucerne chaff (50/50 mean intake 10.6 MJ ME, 28.3 g N/day). Pre-feeding blood samples were obtained fortnightly throughout pregnancy. Plasma oPL concentration was determined by radioimmunoassay.

The diets resulted in maternal weight changes from mating to lambing. Those ewes eating oat hay lost 0.6 kg whereas ewes eating 50/50 gained 7.5 kg (single fetus), 6.5 kg (twins) and ewes eating lucerne gained 11.9 kg (single fetus), and 9.7 kg (twins). Single lamb birth weights were not influenced by diet, being 3.7, 4.1, 3.9 \pm 0.2 kg for oat hay, 50/50, and lucerne respectively. Total twin birth weights were 6.1 and 7.2 \pm 0.5 kg for 50/50 and lucerne respectively. The plasma oPL concentrations are shown in the Figure. Maternal oPL concentration was significantly affected by diet by 85 days from mating ($P < 0.01$) and, by 100 days from mating, ewes bearing twins had significantly more oPL than those bearing singles and eating the same diet ($P < 0.01$).



Given the nature of the changes in oPL observed, and the maintenance of birth weight with widely differing maternal intake and liveweight changes, it would be attractive to suggest that oPL does play a role in redirecting nutrients from mother to fetus, however, direct evidence is lacking.

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