EFFECT OF l,25(0H)$_2$VITAMIN D$_3$ ON PHOSPHORUS ABSORPTION IN SHEEP

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Absorption of phosphorus (P) from the intestine of sheep can follow a biphasic pattern (Schneider et al. 1985a), and the purpose of this work was to examine whether $1,25(OH)_2D_3$, which increases P absorption, altered this pattern. Sheep were fed 700 g/day 1:1 lucerne and oaten chaff during a control and treatment period of 5 days. Treatment consisted of daily sub-cutaneous injections of $1,25(OH)_2D_3$ (25 ng/kg/d) and absorption was measured on the last day of each period by simultaneous administration of ^{32}P into a jugular vein and ^{33}P into the abomasum. Tracer entry and exit from blood was monitored and absorption measured by a modelling procedure (Schneider et al. 1985a). Treatment increased absorption in the upper and lower intestine and although total absorption increased significantly the pattern of absorption was similar in controls and treated sheep although some individual deviation was observed. Since absorption of P in sheep is probably passive in the upper intestine but mainly sodium-dependent in the ileum (Schneider et al. 1985b), it is likely that $1,25(OH)_2D_3$ not only increases sodium-dependent transport but also alters the activity of sodium-independent P uptake in the upper intestine.

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LUPIN GRAIN EFFECT ON UTERINE INVOLUTION AND POST-PARTUM FERTILITY IN THE EWE

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The influence of nutrition on utero-ovarian function was studied in two experiments with 130 post partum (pp) and 14 non-pregnant (NP) grazing Corriedale ewes. Lupins were fed (500g/head/day) 30 days (d) before (HL), after (LH), or before and after parturition (HH). Unsupplemented (LL) and NP animals served as controls. In experiment 1 (El) 11 indices of uterine regression were measured post mortem in 52 ewes at the onset of seasonal anoestrus (July). Uterine involution was logarithmic with time (t), and for mean horn diameter (HD) the equation was: log (HD) = $-.0008 \pm .0009t + 1.3 \pm 1$. Involution was virtually complete ($P<.05$) as assessed by all indices by 40-50 days post-partum (dpp) but some residual hypertrophy was evident until 60-80 ddp. There were no significant or consistent effects of nutritional treatment on macroscopic involution, uterine necrosis, or ovarian activity. Peripheral plasma progesterone (PROG) levels were less than 1 ng/ml in the pp ewes from 10d to 25dpp but 5 of the 8 NP ewes had detectable levels of PROG (2.4 ng/ml). In experiment 2 (E2) measurements were obtained via laparoscopy on ewes lambing late in the breeding season (June). Involution was rapid (log (HD) = $-.009 \pm .001t + 1.5 \pm .0$) and complete ($P<.05$) for pp ewes 22-23 ddp (HD = 18.9 + 7mm) compared to NP ewes (HD = 16.0 ± 1.5mm). There was no treatment effect on anatomical uterine involution. Post-partum interval (ppi) to first heat was greater in LH (57.7 ± 2.2d, $P<.05$) and HH ewes (54.7 ± 3.6d, NS) compared to HL (40.0 ± 4.6d) and LL (41.3 ± 4.0d). Number of ewes expressing oestrus was significantly reduced ($P<.05$) in the HH group (36.8%) compared to LL (71%). Lupins given post-partum appear to have a negative effect on fertility.

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