EFFECTS OF CALCIUM AND PHOSPHORUS DEPLETION AND REPLETION IN LAMBS

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Supplementation of lambs on a low Ca low P diet with P but not Ca resulted in increased dry matter (DM) intake and digestibility (Sevilla and Ternouth 1980). In lambs fed a low P diet; Young et al. (1966) found that P supplementation increased absorption of P but not Ca. Our study was conducted to determine the effects of Ca and/or P repletion after a period of Ca and P depletion.

Twenty 4-month old Corriedale wethers were randomly allotted to 5 treatment groups and kept in metabolism cages for an 18 week experiment. One group (control) was fed a high (H) Ca-HP diet and another group fed a low (L) Ca-LP diet during the entire experiment. The other three groups were fed the LCaLP diet for 12 weeks and then repletion diets - LCaHP, HCaLP or HCaHP. The basal (LCaLP) diet of 55% barley straw, 36% sugar, 6.8% gluten, 1.4% urea and 0.7% mineral-vitamin mix, was fed ad lib. The basal diet contained 1.25g Ca and 0.656g P/kg DM and CaCO3 and Na2HP04 were added to achieve the H dietary levels of 5.0g Ca and 4.5g P/kg DM.

During the depletion period, the depleted lambs had significantly lower live-weight gains (16.5 v. 102.4g/d), daily DM intake (57.4~. 64.6g/kg .75) and digestibility (63.2 v. 69.2%) and plasma P (3.48 v. 6.94mg%) than the control lambs.

During the repletion period, the lambs fed diet HCaLP had liveweight gains and DM intakes similar to the control group. The sheep fed the HP diets ate more food than those fed the LP diets. The liveweight changes were in the same order as the DM intakes (i.e. HCaLP < LCaLP < LCaHP < HCaHP). The HCaLP diet was digested least well. Ca and P repletion generally increased the plasma Ca and P levels although when diets LCaHP and HCaLP were fed, the changes in plasma levels were exaggerated. When repletion occurred, the ribs had increased concentration of Ca and P.

The results show that after a period of Ca and P depletion, both minerals have to be resupplied to enable completely normal growth to occur as a result of higher food intakes and digestibility. A HCaLP diet seems to be particularly disadvantageous.


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