EFFECT OF A VITAMIN D METABOLITE ON BLOOD AND FAECAL CALCIUM IN DAIRY COWS

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Vitamin D₃ and its metabolites can elevate plasma calcium and prevent milk fever in dairy cows (Sansom 1978). High doses have sometimes proved toxic or failed to elevate plasma calcium (Allsop and Pauli 1985).

In this experiment, ten lactating cows received physiological doses (25 ng/kg s.c.) of the dihydroxylated vitamin 1,25(OH)₂D₃. Large increases in plasma calcium were observed. This was probably due to an increase in intestinal calcium absorption since faecal calcium was decreased (Table 1).

Table 1 Effect of 1,25(OH)₂D₃ on plasma and faecal calcium.

<table>
<thead>
<tr>
<th>Item</th>
<th>Control</th>
<th>1,25(OH)₂D₃</th>
<th>L.S.D. (P=0.05)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plasma calcium (m M/l)</td>
<td>2.59</td>
<td>2.94</td>
<td>0.09</td>
</tr>
<tr>
<td>Faecal calcium (g/kg)</td>
<td>18.6</td>
<td>15.6</td>
<td>2.2</td>
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</table>

The potency of 1,25(OH)₂D₃ is indicated by its effectiveness at a low dose rate. Vitamin 1,25(OH)₂D₃ may have an important role in the prevention of milk fever in dairy cows.


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TOTAL TESTICLE VOLUME, SPERM CONCENTRATION OF EJACULATE AND SPERM SWIMMING SPEED OF ROMNEY RAMS FROM LINES SELECTED FOR HIGH AND LOW EWE PROLIFICACY

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Moore and Whyman (1980) found that semen from rams from a high prolificacy Romney selection line (HP) was more successful in fertilising randomly allocated ewes by artificial insemination than semen from a low prolificacy selection line (LP). The object of the present study was to find out if there are line differences in sperm swimming speed or concentration that might explain these fertilisation differences, and to examine the relationship between testicle size and sperm concentration in the lines at different ages.

Seven rams from each of the HP and LP lines were ejaculated up to 7 times and testicle volumes measured at 9, 21 and 33 months of age. Ejaculates were diluted with caprogen and sperm swimming speed assayed by twin-beam laser velocimetry (Wilson and Harvey 1983) at 9 and 33 months.

There were no line differences in sperm swimming speed. The testicle volumes at 9 months were 311 and 196, at 21 months 423 and 276, and at 33 months 426 and 330 ml for HP and LP lines respectively. The means for sperm concentration were 2440 and 1440, 2520 and 2100, and 2730 and 2100 million sperm/ml. The correlations between these two traits were 0.65*, 0.34 and 0.46 for HP and 0.70, 0.62* and 0.46 for the LP rams at the 3 ages suggesting that testicle size limited sperm concentration in both lines at 9 months, in the LP line at 21 months, and in neither line at 33 months.


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