SYNERGISTIC EFFECTS OF CONTINUOUS MELATONIN TREATMENT & IMMUNIZATION AGAINST ANDROSTENEDION FECUNDITY OF BLxM EWES JOINED PRIOR TO THE SUMMER SOLSTICE

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Immunization against androstenedione, Fecundin Glaxo Aust Ltd), will increase ovulation rates but does not influence the onset of the breeding season. A controlled delivery subcutaneous implant form of melatonin has been developed (Regulin, Gene Link Aust Ltd) which induces ewes to show an Autumn peak of reproductive performance at the time of joining in Spring. Potential exists for these two products to be used in a complementary way. In this study conducted at Struan, SA, groups of mature BLxM ewes received either no treatment (Control, n=85), a Regulin implant at 4 weeks before joining (Regulin, n=82), injections of Fecundin at 6 & 2 weeks before joining (Fecundin, n=83), or combined treatment with both Regulin and Fecundin (Combined, n=83). All ewes were grazed together and were joined to 3% fertile Dorset rams on the 18th Dec. for 8 weeks. Ovulation rate was determined by laparoscopy at 12-14 days after mating, foetal numbers were determined by mid-pregnancy sonography and lambs were counted at lambing. Each group of ewes responded to introduction of the rams. Mean mating and conception dates did not differ between the groups.

Table 1 Ovulation rates (OR), distribution of litter size, fertility & fecundity after treatment with Regulin, Fecundin or a combination of both.

<table>
<thead>
<tr>
<th>Group</th>
<th>No. of ewes</th>
<th>Foetus per ewe</th>
<th>ewe preg</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>1.60ab</td>
<td>1.53ab</td>
<td>1.61ab</td>
<td>3ab</td>
<td>35b</td>
<td>42ab</td>
<td>3ab</td>
<td>0</td>
</tr>
<tr>
<td>Regulin</td>
<td>1.71ab</td>
<td>1.67ab</td>
<td>1.76ab</td>
<td>6ab</td>
<td>22ab</td>
<td>52ab</td>
<td>2a</td>
<td>0</td>
</tr>
<tr>
<td>Fecundin</td>
<td>2.22ab</td>
<td>1.55ab</td>
<td>1.85ab</td>
<td>15b</td>
<td>20a</td>
<td>37a</td>
<td>10b</td>
<td>1</td>
</tr>
<tr>
<td>Combined</td>
<td>2.18ab</td>
<td>1.95ab</td>
<td>2.00ab</td>
<td>3a</td>
<td>20ab</td>
<td>35a</td>
<td>24a</td>
<td>1</td>
</tr>
</tbody>
</table>

Within a column. P<0.05. Chi square on quantitative contingency tables.

The relatively high control ovulation rate for Dec was increased significantly by all treatments, particularly in the Fecundin and Combined groups. The number of foetuses per ewe pregnant was also higher in groups treated with Regulin or Fecundin, but in the Fecundin group, some of the potential gain was offset by a higher proportion of non-pregnant ewes. Combination of Regulin with Fecundin in this highly fecund flock further increased the expected and actual lambing percentages due to both a significant decrease (P<0.05) in the proportion of ewes non-pregnant and to an increase (P<0.05) in the occurrence of triplets (Table 1).

The synergistic effect on fecundity of combined treatment is not related to an enhanced immune response to Fecundin since previous studies (Cox & Dunstan, unpublished) have shown that antibody titres in immunized ewes are not significantly affected by melatonin treatment. It is possible that the synergistic effects are related to an effect of melatonin on conception or foetal survival, following Fecundin treatment.

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