THE EFFECTS OF EARLY-SEASON TREATMENTS WITH DORAMECTIN ON SET-STOCKED CALVES NATURALLY EXPOSED TO TRICHOSTRONGYLES

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ABSTRACT


A study was carried out to evaluate the effects of strategic early-season treatments with doramectin on first-season grazing calves exposed to trichostrongylid infection on a naturally contaminated pasture. Two groups of cross-bred Limousine/Red Danish calves were turned out in early May on two plots that were similar with respect to size and herbage infectivity. They grazed separately until housing in early October. One of these groups was given doramectin at turnout and 10 weeks later, while the other group served as untreated controls. The results showed that the treatments significantly reduced trichostrongylid loads throughout the season, as evidenced by significant reductions in both their Ostertagia ostertagi burdens and serum pepsinogen levels compared with the controls. Furthermore, the results of herbage larval counts and post-mortem worm counts in tracer animals demonstrated that the treatment had successfully suppressed herbage infectivity on the ‘treated’ plot.

Keywords: anthelmintic, cattle, control, doramectin, Ostertagia ostertagi, trichostrongyle

INTRODUCTION

Early-season suppressive treatment of first-season grazing calves with repeated doses of anthelmintics, as first described by Pott and colleagues (1974), may significantly reduce the build-up of high pasture loads of trichostrongylid larvae from mid-summer onwards. In practice, an even greater effect may be accomplished by intraruminal sustained or pulse released bolus or by ivermectins having a highly persistent activity. Treatments with ivermectin at weeks 3, 8, and 13 after turnout is so far one of the most effective early-season strategies to prevent later acquisition of high worm burdens in first-season grazing calves (cf. Armour et al., 1987)

The recent development of a second generation of avermectins, which may have even longer persistence, may further improve the above control strategy by extending the antiparasitic efficacy and thereby lowering the required number of treatments. Doramectin is one of these second generation of anthelmintics of the avermectin type.

The present investigation was designed to evaluate the effects of only two early-season treatments with doramectin, given at turnout and 10 weeks later, to set-stocked calves on permanent pasture.
MATERIALS AND METHODS

Experimental design

The experiment was carried out from 6 May to 8 October 1991, in South East Zealand, Denmark. A permanent pasture of 4.5 ha, naturally contaminated with trichostrongyle larvae, was used.

Prior to turnout on 6 May, the pasture was divided into four equal plots. Two groups (C and T), each of 12 calves, were turned out on two of these plots. All the animals in group T were treated subcutaneously with doramectin (Dectomax, Pfizer Ltd) at a dose of 0.2 mg/kg body weight on the day of turnout and again 10 weeks later, while the animals in group C served as untreated controls (Table I). Treatment at turnout was chosen for practical reasons, for example, the farmer’s handling of individual animals in connection with their transfer to pasture. Treatment at 10 weeks was considered to be reasonable because faecal egg counts are expected to reach the early summer peak levels around that time (Nansen et al., 1987).

<table>
<thead>
<tr>
<th>Group</th>
<th>Grazing period</th>
<th>Anthelmintic treatment</th>
<th>Date of slaughter</th>
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</thead>
<tbody>
<tr>
<td>T</td>
<td>7 May – 8 Oct.</td>
<td>7 May (week 0)</td>
<td>22 Oct.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 July (week 10)</td>
<td></td>
</tr>
<tr>
<td>Tracers</td>
<td>13 Aug. – 27 Aug</td>
<td>None</td>
<td>10 Sept.</td>
</tr>
</tbody>
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Faecal and blood samples as well as herbage samples were taken fortnightly. On the same occasions, the animals were weighed and clinical inspections were performed.

In the second week of July, the grass on the remaining two plots was cut for hay and thereafter each of these plots was united with one of the originally grazed plots to compensate for the declining grass production, which normally occurs on Danish pastures in late summer. The animals were housed on 8 October, and 5 calves from each group were randomly selected to be slaughtered for post-mortem worm determination 2 weeks after housing.

The infectivity of the pasture was monitored on two occasions using parasite-naive ‘tracer’ calves. From weeks 14 and 20, i.e. 13 August and 24 September, respectively, groups of 3 calves each were allowed to graze for 2 weeks together with each of the experimental groups of animals. Subsequently they were housed for further two weeks and then slaughtered to determine their worm burdens.