TREATMENT OF FASCIOLE GIGANTICA IN SHEEP

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SUMMARY

Two anthelmintic field trials were carried out with rafoxanide, oxyclozanide and hexachlorophene against Fasciola gigantica in naturally infected sheep. Judged by faecal egg counts two or three weeks after treatment the best results (98.8-99.9 percent efficacy) were obtained with rafoxanide, and good results were obtained with oxyclozanide and a high dose of hexachlorophene.

INTRODUCTION

Among the fasciolicidal drugs currently used for both the long-term strategic and the short-term tactical control of fasciolosis a number of new anthelmintics have been found to be highly effective against mature and immature Fasciola hepatica in sheep (Happich, Boray & Healey 1967, Boray, Happich & Andrews 1967, Armour & Corba 1970).

Several workers have shown rafoxanide* to be effective against mature and immature forms of F. hepatica (Boray 1969, Campbell, Ostihind & Yakstis 1970 and Ross 1970).

This paper records the results of administering rafoxanide to sheep naturally infected with Fasciola gigantica and compares the results with those obtained from sheep treated with oxyclozanide** and hexachlorophene*** under similar conditions.

MATERIALS AND METHODS

Two flocks of sheep naturally infected with F. gigantica were selected near the Abu Ghraib area. The sheep were of various ages of both sexes and of the local breed. Many of the sheep in one flock showed clinical symptoms of fasciolosis. Autopsy of one sheep revealed both mature and immature liver flukes with the typical lesions of acute fasciolosis: the history of the second flock suggested moderate infection with F. gigantica although no apparent clinical manifestations were present. Many of the ewes were pregnant.

Random samples of faeces from each flock were examined for fluke eggs before dosing. Almost all the samples were positive for fluke eggs and showed a varying degree of infection.

For the determination of the fluke egg counts per gram of faeces (epg) the sedimentation technique of Boray & Pearson (1960) was used.

Two experiments were carried out in two divided flocks of 90 and 120 randomly selected sheep, respectively. Each flock was divided into four groups. Three groups were treated with rafoxanide, oxyclozanide and hexachlorophene whilst the fourth group was left without treatment as a control group. All sheep were weighed and received individual doses according to their body weight.

The tested drugs were formulated and given as follows:—

* "Ranide", Merck Sharp and Dohme Ltd.
** "Zanil", Imperial Chemical Industries.
*** "Fascol Super", Cooper, McDougall & Robertson Ltd.
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(a) Rafoxanide was given orally as a 3 per cent suspension at a dose rate of 7.5 mg/kg body weight.

(b) Oxyclozanide was given orally as a 3.4 per cent suspension at a dose rate of 15 mg/kg body weight.

(c) Hexachlorophene was also administered orally. One part of hexachlorophene solution of 35.3 per cent w/w in miscible oil was diluted before use in 15 parts of water. The dose rate was 11 mg/kg in Experiment I as recommended by the manufacturer. In view of its low efficacy the dose of hexachlorophene was increased to 22 mg/kg in Experiment II.

RESULTS

Experiment I. Details of Experiment I are shown in Table 1. Two weeks after treatment rafoxanide showed the highest activity against *Fasciola gigantica* with 98.8 per cent efficacy whilst oxyclozanide showed an efficacy of 97 per cent. A lower efficacy of only 29 per cent was observed with hexachlorophene at a dose rate of 11 mg/kg as recommended by the manufacturer.

Results from egg counts obtained from the second faecal collection four weeks after treatment showed rafoxanide to have a continuing outstanding activity as had oxyclozanide but hexachlorophene caused only 4.3 per cent reduction in egg counts (Table 1).

Experiment II. It is seen from Table 2 that three weeks after treatment there was a marked reduction in the egg counts in all treated groups. Six weeks after treatment rafoxanide showed 99.8 per cent efficacy, whilst hexachlorophene and oxyclozanide caused a 86.2 and 85.1 per cent reduction, respectively.

In both experiments the control groups showed a gradual increase in faecal egg counts during the experiment probably because of the maturation of some flukes as indicated by the presence of immature flukes in the sheep autopsied before the commencement of the trial.

No deaths occurred in the treated and control groups during the experiment, none of the pregnant ewes aborted and no symptoms of toxicity were observed. The only side effect observed was with oxyclozanide where the faeces were noticeably softened, together with an increase in the frequency of defaecation, but this lasted for only a short time after dosing.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Number of animals examined Before Treatment</th>
<th>Group mean EPG Two weeks after Treatment</th>
<th>Percent reduction Two weeks after Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rafoxanide 7.5 mg/kg</td>
<td>24 23 24</td>
<td>16.50 0.21 0.16</td>
<td>98.8 99.0</td>
</tr>
<tr>
<td>Oxyclozanide 15 mg/kg</td>
<td>23 18 16</td>
<td>13.00 0.33 0.18</td>
<td>97.0 98.0</td>
</tr>
<tr>
<td>Hexachlorophene 11 mg/kg</td>
<td>25 22 20</td>
<td>11.80 8.37 11.30</td>
<td>29.0 4.3</td>
</tr>
<tr>
<td>Control</td>
<td>18 16 15</td>
<td>11.90 20.90 23.70</td>
<td>no reduction</td>
</tr>
</tbody>
</table>