Comparative Study of Efficacy of Fenbendazole and Ivermectin against Haemonchus contortus in Goats of Jammu region

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ABSTRACT
Parasitic disease constitutes 60-70% diseases affecting the animals and has serious economic implication in livestock entrepreneurship by direct and indirect production loss. Indiscriminate use of anthelmintic drugs has made the situation even more precarious. A similar problem was encountered in goat farm of SKUAST-Jammu, where goats with constant complain of diarrhoea and loss of body condition was reported despite of routine deworming. The present study was therefore conducted with the objective of determining the efficacy of conventional dewormer used and its comparison with some unexploited antiparasitic drug for the same reason. Twenty seven goats with above said problem were divided into three groups after qualitative examination Group I was treated with ivermectin at dose rate of 0.2 mg per kg body weight orally. Group II was treated with fenbendazole @5 mg/kg body weight orally and Group III goats were kept as untreated control. Quantitative examination for EPG was conducted on day 0, 7 and 14 by Stoll’s technique. FECRT percentage revealed 100% efficacy of ivermectin @ 0.2mg/kg b.wt. whereas FECRT percentage in fenbendazole treated group was found to be 57.44% on day 7 and 70.87% on day 14 post treatment. Coproculture revealed presence of only Haemonchus contortus larvae, post treatment. The study revealed low efficacy of fenbendazole and hence ivermectin is the better drug than fenbendazole to control GIT nematodes.

Keywords: FECRT, Fenbendazole, Haemonchus contortus, Ivermectin, Goats

Helminth parasites are a major cause of economic loss in ruminants throughout the world. It accounts for 5-10% mortality and 10-20% morbidity losses in ruminants (Herlich, 1978). Extensive use of anthelmintics that too in inadequate dose has resulted in emergence of antihelmintic resistant strains of parasites (Silvestre et al., 2002 Wolstenholme et al., 2004). There are numerous reports of antihelmintic resistance from various parts of India (Ram et al., 2007; Buttler et al., 2012; Rialch et al., 2013). Khajuria (2010) has also reported the benzimidazole resistance in sheep and goats of Jammu. The objective of present study was to find out the comparative efficacy of fenbendazole and ivermectin against Haemonchus contortus in goats, maintained at Sher-e-Kashmir University of Agriculture Sciences and Technology-Jammu (SKUAST-J) farm based on faecal egg count reduction test (FECRT).

MATERIALS AND METHODS
Twenty seven goats of either sex weighing in a range of 20-25 kg body weight and age group between 5-6 years were presented to the Division of Veterinary Parasitology, SKUAST-J with symptoms of diarrhoea, poor body weight gain, anorexia and anaemia. These goats were bought to the farm at the age of six month to one year and since then they were treated with fenbendazole after every two month interval as their grazing area is heavily contaminated with nematode infection. Qualitative examination of faeces from all the goats revealed heavy presence of strongly eggs. The goats were randomly divided into three groups with nine goats each. Group I was treated with ivermectin (Hitek, Virbac animal health) at dose rate of 0.2 mg per kg body weight orally. Group II was treated with fenbendazole (Panacure, Intervet) @5 mg/kg body
weight orally and Group III goats were kept as untreated control. All the goats were kept under stall fed condition during study period. Faecal samples were collected per rectum on day 0, 7 and 14. The samples were examined quantitatively for EPG (egg per gram) by stoll’s technique (Soulsby, 1982). Faecal culturing of pre treatment and post treatment samples were done to determine the percent of different strongyle worm’s larvae. Faecal egg count reduction percentage was determined by using arithmetic mean count (Coles et al., 1992). Resistance will be considered if faecal egg count reduction is less than 95% and 95% confidence limit is less than 90%.

RESULTS AND DISCUSSION

Table 1. Efficacy of ivermectin and fenbendazole against natural strongyle infection in goats

<table>
<thead>
<tr>
<th>Drug</th>
<th>Day 0</th>
<th>Day 7</th>
<th>Day 14</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM</td>
<td>SE</td>
<td>R%</td>
</tr>
<tr>
<td>ivermectin</td>
<td>2008</td>
<td>213.2</td>
<td>-</td>
</tr>
<tr>
<td>(group I)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AM</td>
<td>SE</td>
<td>R%</td>
</tr>
<tr>
<td></td>
<td>1974.4</td>
<td>-</td>
<td>57.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fenbendazole</td>
<td>AM</td>
<td>SE</td>
<td>R%</td>
</tr>
<tr>
<td>(group II)</td>
<td>1913</td>
<td>69.74</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>control</td>
<td>AM</td>
<td>SE</td>
<td>R%</td>
</tr>
<tr>
<td>(group III)</td>
<td>69.74</td>
<td>53.77</td>
<td>-</td>
</tr>
</tbody>
</table>

AM = Arithmetic mean, SE=Standard error, R%= Reduction percent, LCL%= Lower confidence limit, UCL%= Upper confidence limit.

The detailed result of the study is depicted in table 1. The pre treatment copro culture studies revealed predominance of Haemonchous contortus (95.33%). Whereas in fenbendazole treated group, faecal culture revealed the presence of H. contortus larvae only. The ivermectin treated group revealed 100% reduction in faecal egg count. However, in fenbendazole treated group faecal egg count reduction percent was found to be 57.44% and 70.87% on day 7 and 14 post treatment respectively, suggesting the low efficacy of fenbendazole against strongyle worms. In fenbendazole treated group the results are in accordance with that of Hong et al., (1996); Saddiqui et al. (2006); Sissay et al. (2006); Khajuria, (2010) and Rialch et al. (2013) which reported higher resistance of H. contortus to benzimidazole groups than other GIT nematodes. The low efficacy of fenbendazole has already been reported by Bogan et al. (1987); Yadav, (1990); Singh et al. (2002) and Waruiru et al. (2003). Fenbendazole resistance in goats could be due to its extensive and indiscriminate use against nematodes for many years (Meenakshisundaram et al. 2014; Varadharajan and Vijayalakshmi, 2015).

Study concluded that use of fenbendazole for treatment of GIT nematodes should be discouraged and use of ivermectin should be advocated as it is highly effective and has not been exploited in Jammu region.

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REFERENCES


