ANTHELMINTIC EFFICACY OF DORAMECTIN, ALBENDAZOLE AND LEVAMISOLE AGAINST NEMATODES OF SHEEP

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ABSTRACT

Comparative anthelmintic efficacy of doramectin, albendazole and levamisole was evaluated in 40 sheep naturally parasitized with Haemonchus, Trichostrongylus, Oesophagostomum and Ostertagia species. Doramectin, albendazole and levamisole were found 100, 97.88 and 99.83% effective, respectively in reducing egg per gram of feces. The animal treated with these anthelmintics gained more weight gain as compared to untreated control. It was recommended that doramectin can be used as a drug of choice against nematodes of sheep followed by levamisole and albendasole .

Key Words; Anthelmintic, Nematodes, Sheep.

INTRODUCTION

Nematodes of sheep not only cause heavy economic losses due to poor weight gain and lowered wool production but also delay maturity, decrease the quantity and quality of mutton and even result in death of animals (Alicata, 1961). The incidence of gastrointestinal nematodes in sheep is very high in the Asian environments (Dhar et al., 1982). Development of resistance and tolerance against various anthelmintics has created difficulties in making the choice of the best drug (Edward et al., 1985). Periodic evaluation of different anthelmintics in different field conditions is, therefore, essential for devising an effective parasite control program. This paper describes the efficacy of Doramectin, Albendazole and Levamisole against nematodes of sheep.

MATERIALS AND METHODS

For this trial, forty Lohi sheep were randomly allocated to treatment groups based on initial fecal egg count (FEC), which was done to insure that each group had relatively equal parasite burdens. FEC was determined using the modified McMaster technique (Whitlock,1948). The treatment groups were as follow:

Group A = Doramectin (Duramectin^{R}, Pfizer, UK) 200 µg kg-1 body weight subcutaneously

Group B = Albendazole (Zoben 25^{R} Prix Pharmaceutica, Pakiatan) 1mL/20 kg body weight orally

Group C = Levamisole (Nilworm, ICI, Pakistan)1 mL/3 kg body weight orally

Group D = Infected un-treated control.

Instructions of manufacturers for dose of each anthelmintic were followed. Fecal culture, from feces collected weekly throughout the trial, determined that the predominant gastrointestinal parasite were of *Haemonchus, Oesophagostomum, Trichostrongylus* and *Ostertagia* species. The efficacy of anthelmintics was evaluated on the basis of % reduction in eggs per gram (EPG) of faeces. The reduction for FEC (%) were calculated as:

[(control mean – treated mean) ÷ control mean] × 100 (Chartier et al. 2000 and Knox 2002) and weight of all animals was recorded on day 0, 7, 14 and 21 post-treatment (PT) and % weight gain in treated animals compared with un-treated ones (Utley et al. 1974). The data on EPG and weight gain were analysed statistically by using analysis of variance and Duncan's Multiple Range Test (Steel et al., 1997).

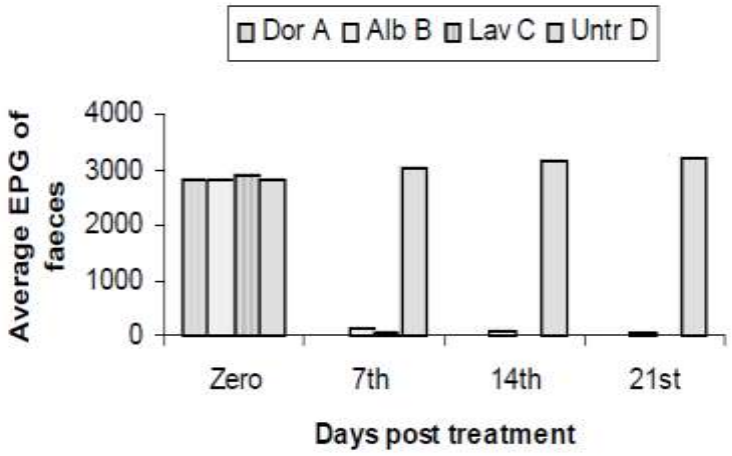
RESULTS AND DISCUSSION

Effect of anthelmintics on EPG

It is evident from the results that no nematode eggs were recovered from animals treated with Doramectin at the end of trial (day 21 post-treatment) indicating its 100% efficacy followed by levamisole (99.83%) and albendazole (97.88%). An increase in EPG of faeces from day zero to 21 post-treatment was noted in infected un-treated group. This increase may be attributed to the development of infective larvae and immature worms to maturity and laying of eggs by them. Significant difference was observed in mean EPG of faeces among groups of animals on different treatments when compared to infected un-treated group (Fig. 1).

However, no statistical difference was observed in reduction in EPG of faeces between groups of animals treated with different anthelmintics. The results of present study are almost comparable with those of Dorchies et al. (2001) and Tinar et al. (1998) for Doramectin (100% effective), Sakhawat *et al.*(1997) and Dzakula *et al* (1982) for albendazole (98.82 -100% effective), Alam and Samad (1997) and Sissay et al 2006 *et al* for levamisole (99.5 - 100% effective). The variation in the efficacy of different anthelmintics can be attributed to environmental factors, species susceptibility and difference in the level of their exposure in different areas (Sissay et al, 2007)

Fig. 1. Average egg per gram (EPG) of faeces at different days and in groups of animals

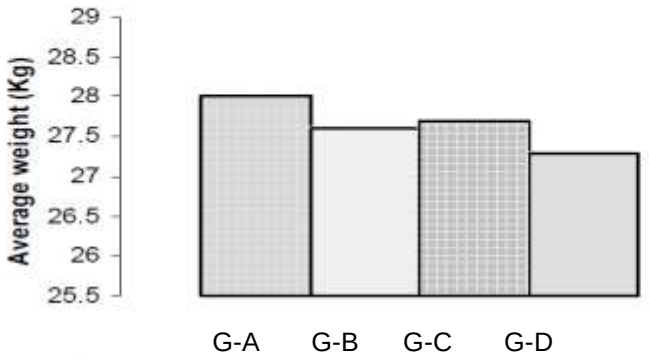


Effect of anthelmintics on body weight

It is evident from the results (Fig. 2) that the best percent weight gain was achieved in animals treated with Doramectin followed by levamisole and Albendazole.

Non-significant difference was observed in mean weight at the end of experiment among groups of animals on different treatment when compared to infected un-treated group. Mean weight was nonsignificantly higher in Doramectin treated group compared with that of levamisole and Albendazole treated group. However, no difference was observed in % weight gain among groups of animals treated with albendazole and levamisole. This increase may be due to the growing age of the animals' in-spite of increasing worm burden.

Fig-2 Average body weight in different groups treated with three treatment regimes of animals



Group A = Doramectin, 200 µg kg-1 body weight subcutaneously

Group B = Albendazole , 1mL/20 kg body weight orally

Group C = Levamisole,1 mL/3 kg body weight orally

Group D = Infected un-treated control.

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