FIELD EVALUATION OF ANTHELMINTIC EFFICACY OF LEVAMISOLE, ALBENDAZOLE, IVERMECTIN AND MORANTEL TARTRATE AGAINST GASTROINTESTINAL NEMATODES OF SHEEP

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ABSTRACT

Anthelmintic efficacy of levamisole, albendazole, ivermectin and morantel tartrate was evaluated in 75 sheep naturally parasitized with *Haemonchus, Trichostrongylus, Oesophagostomum* and *Ostertagia* spp. Results revealed that levamisole, albendazole, ivermectin and morantel tartrate were 100, 98.82, 97.02 and 76.50 per cent effective, respectively in reducing the eggs per gram of faeces. The animals treated with these anthelmintics gained more weight compared with untreated animals. It was recommended that levamisole be used as a drug of choice in local conditions against nematodes of sheep followed by albendazole and ivermectin in the order of their efficacy.

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 the animals (Alicata, 1961). The incidence of gastrointestinal nematodes in sheep is very high in the Asian environments (Durrani *et al.*, 1964; Dhar *et al.*, 1982).

Development of resistance and tolerance against various anthelmintics has created difficulties in making the choice of the best drug (Edwards *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 levamisole[1], albendazole[2], ivermectin[3] and morantel tartrate[4] against nematodes of sheep.

MATERIALS AND METHODS

Seventy five Lohi sheep naturally infected with *Haemonchus, Oesophagostomum, Trichostrongylus* and *Ostertagia* species as confirmed by their faecal examination (Anonymous, 1979) were selected for the study. The animals were divided into five equal groups and treated as follows:

Group A = Ivermectin 200 ug/kg body weight subcutaneously.

Group B = Levamisole 2 ml/15 kg body weight subcutaneously.

Group C = Albendazole 3.8 mg/kg body weight orally.

Group D = Morantel tartrate 10 mg/kg body weight orally.

Group E = Served as infected untreated control.

The efficacy of anthelmintics was evaluated on the basis of per cent reduction in eggs per gram (EPG; Coles, 1967) of faeces and per cent weight gain in treated animals compared with untreated ones at the start and by the end of experiment. EPG of faeces and weight of all animals was recorded on day 0, 1, 3, 7 and 15 post-treatment (PT). The data on EPG and weight gain were analysed statistically by using analysis of variance and Duncan's Multiple Range Test (Steel & Torrie, 1960).

RESULTS AND DISCUSSION

Effect of anthelmintics on EPG

It is evident from the results (Fig. 1) that no nematode eggs were recovered from animals treated with levamisole at the end of trial indicating its 100 per cent efficacy followed by albendazole (98.82 %), ivermectin (97.02 %) and morantel tartrate (76. 5 %). An increase in EPG of faeces (6.31 %) from day zero to 15 PT was noted in infected untreated 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

[1]Anthelmin injection, Hilton Aims, Lahore. [2]Valbazen, SK&F, Karachi. [3]Ivomec, MSD, Karachi. [4]Banminth-II, Pfizer Laboratories (Pak.) Ltd., Karachi.

observed in mean EPG of faeces among groups of animals on different treatments when compared to infected untreated group (Fig. 2). However, no statistical difference was observed in reduction in EPG of faeces between groups of animals treated with different anthelmintics. The results of the present study are almost comparable with those of Cankovic *et al.* (1979) and Mendez *et al.*, (1981) for levamisole (97.7-100 % effective); of Dzakula *et al.*, (1982) and Shanta *et al.* (1980) for albendazole (100 % effective); of Wescott and Leamaster (1982) for ivermectin (96 % effective); and of Rao and Sivashanker (1984) for morantel tartrate (73 % 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.

Effect of anthelmintics on body weight

It is evident from the results (Fig. 3) that the best per cent weight gain was achieved in animals treated with levamisole (1.39 %) followed by ivermectin (1.18%). The untreated control animals also showed minute increase (0.38 %) in weight. Significant difference was observed in mean weight at the end of experiment among groups of animals on different treatments when compared to infected untreated group (Fig. 4). Mean weight was significantly higher in levamisole treated group compared with that of albendazole treated group. However, no statistical difference was observed in per cent weight gain among groups of animals treated with ivermectin, albendazole and morantel tartrate. This increase may be due to the growing age of the animals inspite of increasing worm burden. Increase in weight after anthelmintic treatment in sheep has also been reported previously (Ultey *et al.*, 1974).

%), albendazole (1.14 %) and morantel tartrate (0.93

It is concluded from the results of this study that levamisole is the anthelmintic of choice followed by ivermectin and albendazole for the treatment of gastrointestinal nematodes.

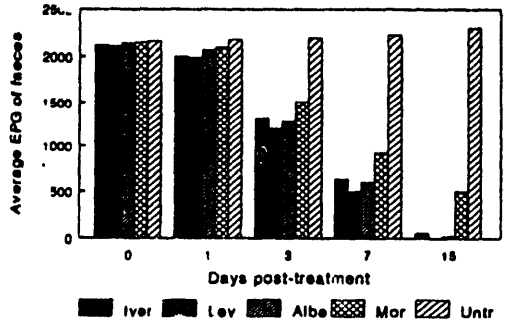

Fig. 1: Eggs per gram (EPG) of faeces at different days and in groups of animals.

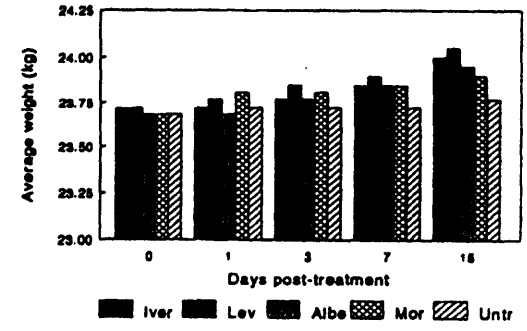

Fig. 3: Body weight at different days and in groups of animals.

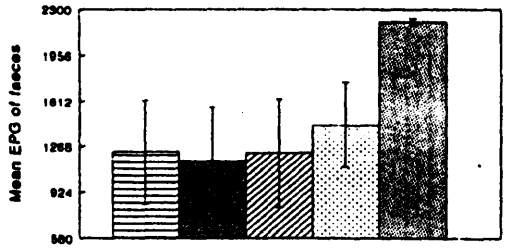

Fig. 2: Mean eggs per gram (EPG) of faeces in different groups of animals.

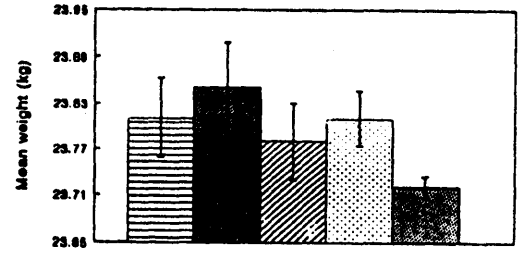

Fig. 4: Mean weight of different groups of animals

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