

CHEMOTHERAPY OF GASTRO-INTESTINAL NEMATODES IN COMMON PEA FOWL (*PAVO CRISTATUS*)

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ABSTRACT

The present study was undertaken to find out the prevalence of gastro-intestinal nematodes in common peafowl (*Pavo cristatus*) at Lahore Zoo and to evaluate the comparative efficacy of albendazole, levamisole HCl and oxfendazole. Fifty-two faecal samples of the birds were examined in Medicine Laboratory, College of Veterinary Sciences, Lahore, with direct smear method for the identification of nematode ova. Forty two samples out of 52 were found positive (80.77%) for single or mixed infection of *Capillaria* spp., *Ascaridia galli* and *Heterakis gallinae*, the individual percentages being 59.62, 38.46 and 13.46 respectively. Out of 42 infected birds 40 were chosen for medication and divided into four groups, each consisting of 10 birds (A= treated with albendazole, B= treated with levamisole, C = treated with oxfendazole and group D = untreated control). Faecal samples of experimental birds were examined for counting of eggs per gram of faeces on day '0' (pre-medication). Faecal egg counts were again carried out on day 5 and 10 post-medication and percentage reduction of EPG was calculated. Oxfendazole was found to be the most effective (98.88%) among the three anthelmintics, followed by levamisole (97.3%) and albendazole (95.60%).

Keywords: chemotherapy, gastro-intestinal, nematodes, peafowl

INTRODUCTION

Like all gallinaceous birds, peafowls are susceptible to enteric parasites, notably the protozoa namely *Histomonas meleagridis* that causes the disease known as black head. This is transmitted from bird to bird by an intestinal nematode worm *Heterakis gallinae*, which lives in the caeca (Harper, 1986). Ever since the discovery of this peculiar association in 1920 between nematode and protozoan, most of the research on *H. gallinarum* has been devoted to elucidating the relationship between these two parasites (Paul, 1975).

Infection of *Ascaridia galli* causes weight loss in the host and intestinal blockage can occur in severe cases (Reid et al., 1973). Chickens infected with ascarids suffer from loss of blood, reduced blood sugar contents, retarded growth and high mortality rate (Ikeme, 1971). A number of anthelmintics have been used against helminth parasites of poultry in different climatic areas. An ideal anthelmintic shows widest therapeutic index, wide safety margin and shortest residual period in the tissues (Anderson and Dobson, 1975).

Levamisole hydrochloride is relatively safe but highly efficacious broad spectrum anthelmintic. It has been used effectively against most of the nematode infections (Clarkson and Beg, 1970). Presently levamisole, albendazole and oxfendazole are being

widely used against ascaridiosis in fowls. Encouraging results have been reported in favour of these drugs for eradication of ascarids (Margaret and Patrak, 1982).

The present study was undertaken to find out the prevalence of gastro-intestinal nematodes in common peafowl at Lahore Zoo and to determine the comparative efficacy of albendazole (Farbenda; Farvet), levamisole HCl (Nilverm, ICI) and oxfendazole (Systemax, ICI). This will help to select the most effective and the safest drug against nematode infection in common peafowl.

MATERIALS AND METHODS

This project was designed to observe the prevalence of gastro-intestinal nematodes in common peafowl at Lahore Zoo and to evaluate the comparative efficacy of three anthelmintics at recommended dose rates under field conditions. For this purpose, faecal samples were collected from 52 peafowls (male and female) in clean polythene bags to prevent loss of moisture. The birds were tagged for the identification. Any change in the consistency of faecal samples was noted. The care was taken to collect specific faecal samples free of dust, stones and other material. The samples thus collected were subjected to coprological examination at Medicine Diagnostic Laboratory, College of Veterinary Sciences, Lahore.

The specimens were examined for the presence of eggs of nematodes by qualitative and quantitative faecal examination. Macroscopic examination was done with the naked eye. The faecal samples were examined for colour, presence of blood, consistency, mucous, odour, and adult parasites. For microscopic examination, direct smear method was used to identify the nematode eggs (Soulsby, 1982).

Forty peafowls found infected with nematodes were selected randomly to study the comparative efficacy of three anthelmintics. These birds were divided randomly into four groups i.e., A, B, C and D, comprising of 10 birds each. Group A was treated with albendazole, Group B was treated with levamisole, Group C was treated with oxfendazole, whereas Group D served as untreated control.

Three commercially available anthelmintics i.e., albendazole (Farbenda; Farvet) @ 10 mg/Kg, levamisole HCl (Nilverm; ICI) @ 30 mg/Kg and oxfendazole (Systemax; ICI) @ 7.5 mg/Kg once orally were used in this project.

The faecal samples were collected at day 0 (pre-treatment), day 5 and day 10 (post-treatment). The samples found positive for nematode infection were subjected to McMaster technique (Soulsby, 1982) for counting eggs per gram of faeces. The data thus obtained were statistically analyzed by using analysis of variance (ANOVA) technique (Steel and Torrie, 1982).

RESULTS AND DISCUSSION

Keeping in view the problem of parasitic resistance against antiparasitic drugs, the present study has been conducted to investigate the prevalence of gastro-intestinal nematodes in common peafowl (*Pavo cristatus*) at Lahore Zoo and medication of infected peafowl with commercially available anthelmintics to find out the comparative efficacy of drugs (albendazole, levamisole HCl and oxfendazole). During the study three different species of gastro-intestinal nematodes were identified through examination of 52 faecal samples which revealed the nematode infection in 42 birds, with overall prevalence of 80.77%. The relative prevalence of 59.62, 38.46 and 13.46% of *Capillaria* spp., *Ascaridia galli* and *Heterakis gallinae*, was noted, respectively. The overall prevalence of gastro-intestinal nematode (80.77%) recorded in the present study is closely correlated with the results of Norton (1964), Bonage (1968), Pal and Ahmad (1985) and Ullah (1999). These workers reported the prevalence of gastro-intestinal nematodes as 80.9, 80.0 and 78.89%, respectively.

Efficacy of albendazole (10 mg/Kg) against nematode infection in common peafowl indicated that its efficacy was 83.15 and 95.6% on day 5 and 10 of medication, respectively. These findings are in close agreement with the results of Ullah (1999) and Ali (1998), who observed 83.16, and 60.80% and 95.79 and 96.70% efficacy on day 7 and 14 of medication, respectively. The results of this study do not correlate with the findings of Jiang and Li (1985), Padmaga and Sathianesan (1993) and Varga *et al.* (1998). Their results indicated 100 percent efficacy. In the present findings lower efficacy might be due to the drug resistance development, as has been reported by Malakhov (1981), who observed the development of drug resistance in *A. galli* against albendazole.

Several investigators have demonstrated the anthelmintic effect of levamisole HCl against nematode infection in poultry and fowls. Results of the present study reveal that levamisole HCl (30 mg/Kg) eliminated 88.65 and 97.93% of the nematodes on the day 5 and 10, respectively. These findings agree with those of Altaif (1972), who reported 99% reduction in faecal egg count by using levamisole at 40 mg/Kg body weight in chickens.

The comparative efficacy of oxfendazole (7.5 mg/Kg) was found to be 98.88% against gastro-intestinal nematodes in common peafowls. These findings are supported by Maqbool *et al.* (1995) and Maqbool *et al.* (1998), who claimed that oxfendazole at the dose rate of 7.5 mg/Kg was 93% effective against mature worms and 85% against immature worms.

From this study it can be concluded that common peafowls do harbour gastro-intestinal nematodes and treatment with these anthelmintics will be beneficial for their health status and production.

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