

THE EFFICACY OF FENBENDAZOLE* IN THE TREATMENT OF NATURAL INFECTIONS OF FASCIOLA GIGANTICA AND FASCIOLA HEPATICA IN SHEEP

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Summary: *The efficacy of fenbendazole against natural infections of F.gigantica and F.hepatica was evaluated. Dose levels of 5 mg./kg. b.w. and 7.5 mg./kg. b.w. removed 23 % and 92 % of F.gigantica burdens respectively. 28 % of the F.hepatica burden was removed at the higher dose level.*

Özet: *Bu araştırmada F.gigantica ve F.hepatica ile doğal enfekte koyunlarda fenbendazole'un etkisi denenmiştir. 5 mg./kg. ve 7.5 mg./kg. hesabedilerek verilen bu ilacın koyunlardaki F.gigantica enfeksiyonlarına etkisi sırasıyla % 23 ve % 92 olmuştur. Son dozda kullanılan fenbendazole'un ise F.hepatica'ya % 28 yöresinde etki ettiği saptanmıştır.*

Fascioliasis caused by F.gigantica and F.hepatica produces significant economic loss in Turkey. Infections tend to be seasonal and affect all ruminant species. With increasing irrigation being practiced, the disease appears to be spreading. Available information indicates F.gigantica to be more important economically than F.hepatica (5). In the course of an outbreak of the former infection in 1946,85 % of a mixed flock of sheep and goats died (6).

Bajagin (3) found 5 mg./kg. fenbendazole to be highly effective in Karakul sheep infected with F.gigantica. Antonov (2) confirmed these findings in sheep naturally infected with Fasciola spp., 7.5 mg./kg. fenbendazole eliminating flukes from the liver and faecal egg excretion within 6-10 days of treatment.

* Fenbendazole: Panacur^R, Hoechst AG, Fed. Rep. of Germany.

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It was thus of interest to determine the efficacy of similar dose levels of fenbendazole in the treatment of sheep, naturally infected with Fasciola spp. in Turkey.

Materials and methods

Animals: 15 Merino ewes, aged 5-6 years, in the weight range of 26-51 kg. and confirmed to be excreting fluke eggs in the faeces, were purchased from the Marmara Sea region of Turkey.

The animals were transported to the laboratory, where they were housed for the duration of the experiment, being maintained on a diet of commercial pellets and hay.

Treatment Schedule: The animals were divided into three groups of five on the basis of weight and faecal egg count.

Group A received 5 mg. fenbendazole/kg. body weight and Group B, 7.5 mg fenbendazole/kg. body weight, administered *per os* as a 2.5 % suspension. The remaining five animals (Group C) were kept as untreated controls.

Control animals were slaughtered initially to confirm the presence of *F.gigantica*, immediately following which, treatments were applied to Groups A and B.

All the treated animals were slaughtered 10-12 days post treatment and their livers examined for the presence of liver flukes.

Results

There was no evidence of drug associated toxicity in either of the treated groups.

The numbers of mature and immature *Fasciola spp.* recovered at slaughter of the three groups of animals, are summarised in Table I.

A dose level of 7.5 mg./kg. appeared to reduce numbers of *F.gigantica* by 92 %. Dose levels of 5 mg./kg. or 7.5 mg./kg. fenbendazole had no significant effect on *F.hepatica* or *D.dendriticum* infections.

Discussion

The results of this study did not confirm the same extent those of Bajagin (3), who found 5 mg./kg. fenbendazole to be highly effec-

Table 1: The efficacy of fenbendazole on *Fasciola gigantica* and *F. hepatica* in naturally infected sheep.

Group	Dose (mg./kg.)	No. of living <i>F. gigantica</i> at necropsy	% efficacy	No. of living <i>F. hepatica</i> at necropsy	% efficacy	No. of living immature <i>Fasciola spp.</i> at necrop-	% efficacy
A	5.0	20		22		4	
	5.0	0		1		3	
	5.0	0		2		9	
	5.0	0		9		2	
	5.0	0		6		8	
av.		4	23.1	8	0	5.2	0
B	7.5	2		5		1	
	7.5	0		11		2	
	7.5	0		6		1	
	7.5	0		3		2	
	7.5	0		4		3	
av.		0.4	92.3	5.8	27.5	1.8	43.7
C	-	12		14		0	
	-	2		4		8	
	-	2		7		6	
	-	6		10		0	
	-	4		5		2	
av.		5.2	-	8	-	3.2	-

Note: All livers and gall bladders were found infected with *Dicrocoelium dendriticum*, Group A: 202-928, Group B: 11-1401, and Group C: 224-784 specimens respectively.

tive against *F. gigantica*. It should be noted, however, that in four of the five sheep treated at this dose level in the present study, *F. gigantica* infection was eliminated, low efficacy resulting from an anomalous high recovery of *F. gigantica* from the remaining animal.

Although Antonov (2) found 7.5 mg./kg. fenbendazole to possess high efficiency against fluke in sheep, he did not indicate which *Fasciola spp.* was infecting the animals.

The results of this study would suggest fenbendazole to be significantly more effective against *F. gigantica* than against *F. hepatica* or *D. dendriticum*, at a dose level of 7.5 mg./kg. The reasons for this observation are inexplicable at present, but may be associated with differing physiology of the species.

The dimensions of fluke eggs recovered from the faeces of sheep in this study prior to treatment were assessed. It is of interest to record that *F.gigantica* and *F.hepatica* eggs recovered were essentially of similar dimensions (*F.gigantica*: 126–186 × 73–106 μm; *F.hepatica*: 130–185 × 67–143 μm). In our previous work (5) the diameter of *F.gigantica* was found to be 158 × 88.4 μm on average. Alicata (1) reported measurements of 156–197 × 90–104 μm for *F.gigantica* eggs which were recovered from gall bladders of infected cattle in Hawaii. On the other hand Düwel (4) observed unusually large eggs of a *F.hepatica* strain from Northwest-Germany measuring 143–180 × 75–102 μm. Starting from these reports, it seems that in areas where both infections occur, specific diagnosis on the basis of faecal examinations, may thus be unreliable.

References

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