

**OBSERVATIONS ON THE EFFICIENCY OF
THIABENDAZOLE, ALBENDAZOLE AND BROTIANIDE
AGAINST NATURAL DICROCOELIASIS IN SHEEP
AND GOATS IN IRAN.**

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SUMMARY

Thiabendazole at dose rates of 150 to 200 mg/Kg. has been used for treatment of dicrocoeliasis in Sheep and goats in Iran. The effect of Albendazole at dose rates of 15 and 20 mg/Kg. and Brotianide 5 to 22½ mg/Kg. in controled testes were compared with Thiabendazole activities in natrally infected animals with this small liver parasit. In treated field animals Alben-dazole showed a better result in comparism with Thiabendazole, and Brotianide did not have significant effect against Dicrocoelium in our experiment. The use of Albendazole for control of helminth parasites in Sheep and goats is discussed.

Introduction

According to Guilhone (1962), Maldenovic, Slavica, Sker-nan and others (1963) Thiabendazole has been used as a choce anthelmintic agaist dicrocoeliasis in sheep and goats in Iran. Subsequently, Albendazole has been reported by Theodorides et al (1976), VAN Schalkwyk, and others (1979), to be an effec-tive anthelmintic against gastro-intestinal nematodes, lungworms, apeworms and trematodes of Sheep. High activity of Alben-dazole against Dicrocoelium dendriticum in Sheep has been shown by Cordero-del-campillo et al (1979), Theodorides and Freeman (1980), Himonas and Liakos (1980).

According to the Russian workers; A.K. Lukin and V.I.Kho-

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doshin (1975), 10 mg/Kg. of Brotianide has been 96% effective against *Dicrocoelium* in Sheep.

The present study was carried out to evaluate the efficiency of Albendazole, Thiabendazole and Brotianide against *Dicrocoelium dendriticum* in naturally infested sheep and goats in Iran.

Materials and Methods

Experimental animals:

The trials were carried out on local races (Balouchy, Kor-dish and Shal) adult sheep and goats from 2 to 6 years old, which belonged to farmers, kept permanently on pasture at several localities of Iran. Experimental animals were selected from the naturally infected flocks on the basis of faecal egg counts prior to the beginning of trials. Animals were selected in the flock, eartagged individually for identification and were run along with the rest of the flock.

Faecal examination:

Faecal analysis were carried out at least 3 times in two weeks prior to the experiment and several times until 30 days after the treatment. Individual faecal samples were collected from the rectum, always in the morning before the animals sent to the pasture (between 7½ to 10 A.m.). Three grams from each sample in a flask containing 42 cc. of water and completely dispersed using an electric stirrer, filtered through nets of 100 (40/c). Fifteen cc. of the filtrate were collected in Clayton leyns centrifuge tube and centrifuged at 1500/2 minutes, the sediments were mixed with saturated Zinc solution (33.1% Zn So₄, 7 h₂O) and covered with 18 mm. cover slip and centrifuged for 2 minutes. Cover slips were examined for *Dicrocoelium* eggs.

Anthelmintic treatment:

Thiabendazole and Albendazole were administered in drench suspension in all the trials. Brotianide was used as 100 mg. tablets. The dosage was determined in each trial according to the animal body weight and administered by means of a stomach tube (oral route). The control animals received equivalent volumes of a solution of sugar and milk.

Experiments and Results

1st Experiment

This experiment was carried out in Daghestan Village, 15 Km. from Meshed, north east of Iran. The flock consisted of about 850 sheep and 150 goats, 2 to 6 years old of local breed (Balouchy).

According to their D.e.p.g.f., selected animals were divided into 3 groups A and B of 12 Sheep and 4 goats each, and group C of 5 sheep and 2 goats. Group A and B was treated with Thiabendazole 150 and 200 mg/Kg. respectively and group C was treated with the placebo as controls.

Faecal analyses were carried out every two days prior and after treatments, the results are shown in table I.

Table I

Group	No. of sheep	animals Goats	Treatment and dosage	Mean of Dictyoecium E.P.G.F. (days)		Effect .f
				-14 to 0	+14 to +30	
A	12	4	Thiabendazole 150 mg/Kg.	1030	4	99.27
B	12	4	Thiabendazole 200 mg/Kg.	747	2	99.50
C	5	2	Not treated Controls	798	520	0

Experiment II,

36 adult sheep, 2 to 4 years old were selected from a naturally infested flock of about 800 animals. The sheep were of local races (Shal and Balouchy) located in Malard, 12 Km. from Karaj. According to D.E.C. rate in faecal samples, these animals were divided into 4 groups and anthelmintics; Brotianide and Albendazole were administered as follows:

Group A received 15 mg/Kg. of Brotianide

Group B received $22\frac{1}{2}$ mg/Kg. of Brotianide

Group D received 20 mg/Kg. of Albendazole

Group C received placebo as controls

Faecal samples were taken from the rectum of the animals and examined as described in experiment I. The results of faecal analysis prior and after treatment is shown in table II.

Table II

The mean faecal *Dicrocoelium* egg counts prior and after treatment

Groups	No. of animals Sheep	Treatment and dose rate	Mean of D.E.C. Days :		Per cent effect
			-14 to 0 +14 to 30	
A	9	Brotianide 15 mg/Kg.	537	501	4.27
B	9	Brotianide 22½ mg/Kg.	705	498	27.30
D	9	Albendazole 20 mg/kg.	609	12	97.6
C	9	Not treated controls	726	512	—

Experiment III,

This experiment was carried out at Nazar-abad village on sheep and goats of a local breed naturally infested with *Dicrocoelium dendriticum*, The flock consisted of 410 animals. 33, 18 ewes and 15 goats, 2 to 3 years old were selected on the basis of faecal egg counts and according to D. E. P. G. F. rate sheep were divided in 3 groups of 11 animals each and treated with Albendazole as follows:

Group A treated with 15 mg/Kg.

Group B treated with 20 mg/Kg.

Group C given placebo, as controls

Results are summarised in table III:

Table III

Mean faecal egg counts of *Dicrocoelium dendriticum* from sheep treated with Albendazole 15 and 20 mg/Kg. once and from control group

Table III

Group	No. of animals		Albendazole dose	Mean of Dicrocoelium			E.P.G. Days		& Effect
	Sheep	Goats		-14 to 0	+7	+15	+22	+29	
A	6	5	15 mg/Kg.	589	662	238	189	186	89.15
B	6	5	20 mg/Kg.	541	137	23	24	44	97.74
C	6	5	Placebo-Control	585	636	670	1445	1520	—

Discussion

It was not possible to sacrifice the experimental animals for worm counts at the end of these experiments, but according to previous workers on the effect of Albendazole against *Dicrocoelium* infection in sheep, Theodorides et al (1980), Cordero (1979), Himonas et Liakos (1980), and others, there is no doubt that, by comparison with the control group the reduction of *Dicrocoelium* egg count in the faecal samples of infected animals after treatment with Albendazole corresponds to the reduction of *Dicrocoelium* worm burdens in liver of the animals.

As it is shown in table I, the role Thiabendazole, the first being of benzimidazole discovered, still keeps its position in the treatment of *Dicrocoelium* infection in the ruminant. This anthelmintic has been used particularly against *Dicrocoelium dendriticum* in sheep and goats with the dose rates of 150 to 200 mg/Kg. and with 99% effectivity in Iran since 1963.

Brotianide which is an effective anthelmintic against fascioliasis in ruminant, with 5, 10, 15 and 22½ mg/Kg. used in several treatments did not show any significant effect against *Dicrocoelium* infection in sheep and goats in our trials (table II).

The results recorded in table II and III, indicate that Albendazole with a dose rate of mg/Kg. is highly effective against *Dicrocoelium dendriticum* in sheep and goats (97.94%), and it is comparable to Thiabendazole at a dose rate of 200 mg/Kg. body weight of the animals.

With bearing in mind that. "the ideal anthelmintic for ruminant should be safe and easy to handle, possessing at one small dose level, orally or paratrally, a broad spectrum of activity against all immature and mature forms of nematodes, cestodes, and trematodes commonly occurring in the liver, lungs and gastro-intestinal tract of cattle, sheep and goats," Albendazole with a wide spectrum of activity against gastro-intestinal round-

worms, lungworms, tapeworms and distomatosis of the ruminants particularly when administrated at a low dosage (20mg/Kg.), is the drug of choice at the present time.

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References:

- Cordero del Campilo et al, (1979). Com. II Congr. Nac. Parasitol. Leon, 1-4 oct. Pag. 154.
- Guilhane, J. (1962). Bull. Acad. Vet. France. 35, 49.
- Himonas, C. A. and Liakos, V. (1980). Vet. Rec. 107, 288-289.
- Lukin, A. K. and Khudoshin, V. I. (1975). Veterinaria, No. 5, 80-81.
- Skerman, K. D., Shahlapour, A.A. and Eslami, E. (1964). Vet. Rec: 76: 48, 1402-1403.
- Shahlapour, A. A., Eslami, E. and Elyazian, M. (1970). Trop Anim. Hith. Prod. 2, 223-234.
- Theodorides, V. J. and Freeman, J. F. (1980). Vet. Rec. 106, 78:
- Tharaldsen, J, and Aage Wethe, J. (1980). Mord. Vet. Med. 32, 308-312.
- Theodorides, V. J. & Cyurik, R.J., Kingsury, W. D. & Parish, R. C: (1976): Experimentia 32, 702.
- Van Schalkwyk, P. C. Geyser, T.L., Margarida Recio & Erasmus, F. P. C. (1979). Jour. of South Af. 50, No. 31.