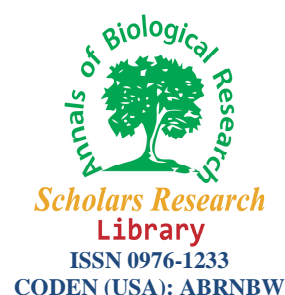




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Annals of Biological Research, 2011, 2 (6) : 69-74
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Efficacy of Closantel 5% against sheep gastrointestinal parasites in East-azerbaijan province Iran

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ABSTRACT

There are several anthelmintic classes based on chemical structure that are in use, but, during the last 20 years, it has been increasingly noted that the target parasites have become resistant, the incidence varying with geographical location and mode of use. In this study, 90 apparently healthy sheep under the same management conditions of the experiment, feces (EPG) were examined. sheeps divided to 3 groups(30=control, 30=treated with closantel 5% Damloran, 30=treated with closantel 5% Jamedat-afag) then treated sheeps received 1 mg/kg B.W closantel 5% orally and After treatment the sheep, faecal samples from each of 3 groups were examined in days 1-7-21-28 after treatment by wet-mount and willis-methods and MC-master slid used for egg counte. Therefore Closantel 5% drugs that manufactured by drug Damloran and Jamedat-afag company if used orally by dosage 1 ml/10kg B.W in sheep against Fasciola hepatica, and Haemonchus contortus, Oesophagostomum columbianum been quite effective (average percentage of drug effect = 91%) and used for control and prevention of parasitic infections in sheep is recommended.

Key words: Closantel 5%, sheep, gastrointestinal parasites, East-azerbaijan, Iran.

INTRODUCTION

In Iran, little information is available on infection rate, diversity and intensity of helminthes as cause of diarrhoea in small ruminants. Moreover, there are a few studies regarding efficacy and resistance against the common dewormers being used in the field as prophylactic and therapeutic agents[4,5,6]. Anthelmintics are used extensively to control helminth parasites in animals, and are especially useful in domestic farm livestock and those species that graze on pasture and inevitably ingest the infective stages of the parasites. There are several anthelmintic classes

based on chemical structure that are in use, but, during the last 20 years, it has been increasingly noted that the target parasites have become resistant, the incidence varying with geographical location and mode of use. One proposed method of delaying the development of resistance is to combine two drugs with similar spectra of activity but with different modes of action [1-3]. In addition, combinations of drugs can sometimes be used in conjunction with the knowledge of local epidemiology of parasites to reduce the frequency of treatment and further reduce exposure of the worms to the anthelmintics. It has been shown that the clinical effectiveness of anthelmintics is closely related to their pharmacokinetic profiles [5,6,7,34,35]. Plasma availability can be affected by the formulation and route of administration. Lanusse et al. (1997) noted that slight modifications to plasma concentration can have a large effect on the persistence and availability of avermectins such as ivermectin. Ivermectin affects nematodes, whereas closantel, a salicylanilide, affects both blood-feeding nematodes and trematodes. The pharmacokinetics of ivermectin have been extensively reported in ruminants [8,9], as have those of closantel [10-13]. Recently a novel product combining closantel and ivermectin in a single formulation has been developed and licensed for use in cattle. In order to ensure that the product can be expected to possess the same efficacy against sensitive helminths as those products licensed in single constituent formulations, it is necessary to establish that the pharmacokinetic profiles of ivermectin and closantel are not altered in the formulated dual component product [14-18]. In this study we decided to show Efficacy of Closantel 5% against sheep gastrointestinal parasites in East-azerbaijan province of Iran .

MATERIALS AND METHODS

This survey is one cross-sectional study and from May 2010 to Sep 2010 in East Azerbaijan province of Iran was done. In this study, 90 apparently healthy sheep under the same management conditions of the experiment, feces (EPG) were examined. After determining the contamination of the animals after 3 stages feces samples examination they were randomly divided into 3 categories, 30 were immovable. The first group (control) 30 head and did not receive any drug as only two other times in the stool were tested and the control group with normal saline for oral dosage form were studied simultaneously. The second group are the treatment group and 30 head of livestock were studied by the drug company Damloran closantel 5% were treated with oral doses 1 ml/10kg B.W conceived and third treated group, which also included 30 other top The animals were studied by the drug company jamedat-afag closantel 5% solids horizons were treated with oral doses 1 ml/10kg B.W conceived. After treatment the sheep, faecal samples from each of 3 groups were examined in days 1-7-21-28 after treatment. For fecal samples examination the wet method (Wet-mount) and Willis (willis-method) and for egg counts of Nematoda (EPG) the Mc-Master slide (MC-master method) was used. According to the formula of 5% closantel effects on different days after treatment were evaluated:

$$\text{Effects of Drug} = \frac{100 \times R (\text{mean number of eggs per gram of feces in the treated group}) - P (\text{mean number of eggs per gram of feces in control group})}{P (\text{mean number of eggs per gram of feces in the control group})}$$

RESULTS

Closantel 5% drugs that manufactured by drug Damloran and Jamedat-afag company if used orally by dosage 1 ml/10kg B.W in sheep against *Fasciola hepatica*, and *Haemonchus contortus*, *Oesophagostomum columbianum* been quite effective (average percentage of drug effect = 91%). Results of this study are set based on the 1 to 5 tables:

Table 1- Mean number of eggs per gram of feces in case and control groups before treatment and groups divided.

Total	EPG(egg per gram of feces)			
	<i>Oesophagostomum Columbianum</i>	<i>Haemonchus Contortus</i>	<i>Fasciola Hepatica</i>	
1593	391	482	720	Frequency
100	24/5	30/3	45/2	percent

Table 2- Compares the number of eggs per gram of feces in different parasites one-day after treatment, according to study groups.

p	χ^2	Total	EPG (egg per gram of feces)			One-day after treatment		
			<i>Oesophagostomum Columbianum</i>	<i>Haemonchus Contortus</i>	<i>Fasciola Hepatica</i>			
0/000	52/01	1054	302	212	540	Frequency	Treated with closantel 5% Damloran	Group
		100	28/7	20/1	51/2	percent		
		1653	421	491	741	Frequency	Control	
		100	25/5	29/7	44/8	percent		
		1266	341	413	512	Frequency	Treated with closantel 5% Jamedat-afag	
		100	26/9	32/6	40/4	percent		
		3973	1064	1116	1793	Frequency	Total	
		100	26/8	28/1	45/1	percent		

Table 3- Compares the number of eggs per gram of feces in different parasites 7-day after treatment, according to study groups.

p	χ^2	Total	EPG (egg per gram of feces)			7-day after treatment		
			<i>Oesophagostomum Columbianum</i>	<i>Haemonchus Contortus</i>	<i>Fasciola Hepatica</i>			
0/08	8/34	734	195	198	341	Frequency	Treated with closantel 5% Damloran	Group
		100	26/6	27	46/5	percent		
		1668	484	502	682	Frequency	Control	
		100	29	30/1	40/9	percent		
		1077	284	310	483	Frequency	Treated with closantel 5% Jamedat-afag	
		100	26/4	28/8	44/8	percent		
		3479	963	1010	1506	Frequency	Total	
		100	27/7	29	43/3	percent		

Table 4- Compares the number of eggs per gram of feces in different parasites 21-day after treatment, according to study groups.

p	χ^2	Total	EPG (egg per gram of feces)			21-day after treatment		
			<i>Oesophagostomum Columbianum</i>	<i>Haemonchus Contortus</i>	<i>Fasciola Hepatica</i>			
0/000	82/67	446	72	94	280	Frequency	Treated with closantel 5% Damloran	Group
		100	16/1	21/1	62/8	percent		
		1755	401	604	750	Frequency	Control	
		100	22/8	34/4	42/7	percent		
		511	91	119	301	Frequency	Treated with closantel 5% Jamedat-afag	
		100	17/8	23/3	58/9	percent		
		2712	564	817	1331	Frequency	Total	
		100	20/8	30/1	49/1	percent		

Table 5- Compares the number of eggs per gram of feces in different parasites 28-day after treatment, according to study groups.

p	χ^2	Total	EPG (egg per gram of feces)			28-day after treatment		
			<i>Oesophagostomum Columbianum</i>	<i>Haemonchus Contortus</i>	<i>Fasciola Hepatica</i>			
0/008	13/92	66	14	31	21	Frequency	Treated with closantel 5% Damloran	Group
		100	21/2	47	31/8	percent		
		1701	425	593	683	Frequency	Control	
		100	25	34/9	40/2	percent		
		256	56	72	128	Frequency	Treated with closantel 5% Jamedat-afag	
		100	21/9	28/1	50	percent		
		2023	495	696	832	Frequency	Total	
		100	24/5	34/4	41/1	percent		

DISCUSSION

According to the chi-square test and the test results based on the difference between the two communities can be seen that the efficacy percentage of control and test groups except *haemonchus contortus* parasite control (First day after treatment) is not significant ($P > 0/05$). But the efficacy of oral drugs closantel 5% solids Damloran horizons and control of parasites in the days before and after treatment than the control group is quite significant ($P < 0/001$) indicate that this positive effect on drug control and The test is in control of parasitic eggs. Uppal and et al. efficacy of closantel on *haemonchus contortus* 100% have been reported in India, which is partially consistent with the results of this study [19,20,21]. Mooney and et al. (2009) efficacy of closantel on sheeps *Fasciola hepatica* in Ireland in 14 days after treatment by counting eggs per gram of sheep feces (EPG) have reported up to 100% which is consistent with the results of this study [22,23]. Mwamachi and et al. (1999) in Kenya efficacy of closantel on *oesophagostomum* 48% in sheep and goats have reported that no consistent with the results of this study and efficacy of closantel on sheeps *oesophagostomum* in iran is higher [24,25]. Al-Qudah and et al. (1999) in Jordan the efficacy of albendazole + closantel on *Haemonchus* 100% and *Fasciola hepatica* 77% have been reported in camels [26,27,28,29]. Stromberg et al (1985) in sheeps that

infected with the *Fascioloides* efficacy rate of oral closantel 95-98 percent have been reported [30,31,32,33].

CONCLUSION

Closantel 5% drugs that manufactured by drug Damloran and Jamedat-afag company if used orally by dosage 1 ml/10kg B.W in sheep against *Fasciola hepatica*, and *Haemonchus contortus*, *Oesophagostomum columbianum* been quite effective (average percentage of drug effect = 91%) and used for control and prevention of parasitic infections in sheep is recommended.

Acknowledgement

The authors highly appreciate to Damloran and Jamedat-afag companies for their whole hearted cooperation and financial supports for the present study. The authors declare that they have no conflict of interests.

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