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A FIELD EVALUATION OF STRONGLINJECT L AGAINST GASTRO-INTESTINAL NEMATODES IN RUMINANTS

By

ABDEL RAHMAN, M.S.; OMAR, H.M. and RAMADAN, E.I.

Dept. of Parasitology, Fac. Vet. Med. Cairo Univ.

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INTRODUCTION

Although in the recent decades many anthelmintics have been developed to control gastro-intestinal nematode infections in ruminants; chemoresistance and reduction of budget for control caused the problem to increase worldwide. Looking for a drug without fastness development and that improving the health of treated animals became undeniable and necessary in the "Struggle against parasites". Stronglinject L is a new compound of levamisole hydrochlorid combined with other agents that potentiates its anthelmintic action.

The present study has been conducted to assess the efficacy of Strong inject L against the gastro-intestinal round worms in naturally infected ruminants particularly in buffalo calves and camels.

MATERIAL AND METHODS

One hundred and seven private animals belonging to four species of ruminants (32 sheep, 35 goats, 28 buffalo calves and 12 camels) were proved to be naturally infected with gastro-intestinal nematodes. These animals were intramuscularly injected with

Stronglinject L (Levamisole hydrochloride, Diethylcarbamazine and Diprophylline) at a rate of 1 ml/10 kg body weight.

Two days pre and 15 days post-treatment, individual faecal samples were collected in plastic bags, marked and the whole bulk of faeces was inspected for any shed worms or other observations.

Eggs per gram (EPG) faeces was directly estimated for each animal using McMaster modified technique (Roberts and O'Sullivans, 1950). Faecal cultures were performed and the third larval stages were harvested and generically identified according to Burger and Stoye (1968). The mean faecal egg count depression levels (FECD) after treatment was calculated according to Nilson et al. (1989).

The efficacy of Stronglinject L against each identified nematode parasite has been calculated after Rick and Keith (1957) and Benz and Ernst (1979). The general health condition of treated animals were daily observed for one month after treatment.

RESULTS

The coprogram of the examined faecal samples included eggs per gram and faecal cultures before and after administration of the drug. Faecal samples of 32 sheep 35 goats, 28 buffalo calves and 12 camels were examined. The mean EPG two days before treatment (M_1) and after treatment (M_2) on the 15th day as well as the frequency of each parasite encountered were depicted in table (1).

The faecal egg count levels (FECD) for *Haemonchus sp.* reached to Zero % in samples of medicated sheep and camels. Also, for *Nematodirus sp.* in sheep, goats and for *Bunostomum sp.* as well in buffalo calves. The FECD for *Haemonchus sp.* were to 14.9 % and 4.9 % in goats and buffalo calves respectively. For *Trichostrongylus sp.* FECD was to Zero % in samples of treated

Table(1): Coprogram of the examined faecal samples before and after treatment with Stronglinject L

Parasite	Frequency	2days pretreatment (M_1)	15 days post-treatment (M_2)	FECD
Sheep(n=32)				
Haemonchus	17	40.6	0	0
Nematodirus	11	19.1	0	0
Trichuris	5	10.2	8.8	85.3
Goats(n=35)				
Haemonchus	12	30.2	4.7	14.9
Nematodirus	17	29.3	0	0
Buffalo calves(n=28)				
Haemonchus	7	20.4	1.0	4.9
Bunostomum	3	15.3	0	0
Nematodirus	5	17.3	0	0
Cooperia	3	24.0	1.3	5.4
Trichostrongy.	13	13.1	0	0
T.vitulorum	10	79.5	6.6	8.3
Camels(n=12)				
Haemonchus	5	48.4	0	0
Nematodirus	9	22.7	1.3	5.7
Trichostrongy.	3	65.0	6	9.2
Trichuris	4	30.5	25.7	84.3

FECD= $M_2/M_1 \times 100$

n = Number of animals

Table(2): Efficacy rates of Stronglinject L against nematodes of ruminants

Nematodes	Sheep	Goats	Buffalo calves	camels
Haemonchus	100 %	85.1%	95.1%	100%
Bunostomum	--	--	100%	--
Nematodirus	100%	100%	100%	94.3%
Cooperia	--	--	94.6%	--
Trichostrongylus	--	--	100%	90.8%
T.vitulorun	--	--	91.7%	--
Trichuris	13.7%	--	--	15.7%

Efficacy rate = 100 - FECD

buffalo calves while to 9.2 % in samples of camels.

Faecal samples from buffalo calves after being treated showed that FECD levels reached to 5.4 % and 8.3 % for *Cooperia sp.* and *Toxocara vitulorum* respectively. The FECD were to 86.3 % and 84.3 % in the examined samples from treated sheep and camels against *Trichuris sp.* respectively.

The efficacy rates of Stronglinject L against each nematode were given in table (2). The drug proved to be extremely effective against all the ascarid and trichostrongyl nematodes in the treated animals. For *Trichuris sp.* it was ineffective as the efficacy was calculated to be 13.7 % and 15.7 % in sheep and camels respectively.

During and after the injection of the drug, all the treated animals showed no any untoward effect. The owners and our observations for one month after treatment, revealed that animals were in a surprisingly good general health conditions and having also a good appetite.

DISCUSSION

In the present study the anthelmintic activity of Stronglinject L (Levamisole hydrochloride, Virbac) against round worms in the field infected ruminants has been evaluated. The high anthelmintic action of tetramisole was contributed to its Laevo isomer (Forsyth 1968) which after that used as Levamisole. Its activity against immature and mature forms of trichostrongyl worms has been also demonstrated by Shone and Philip (1967).

As the faecal egg count depression (FECD) levels reached to 0-14.9 % in samples from animals treated and that were infected with trichostrongyl sp. and with *Toxocara vitulorum* ; Stronglinject L could be evaluated

as extremely effective (Rick and Keith, 1957). This findings against trichostrongyl and ascarid nematode are closely coincident with those recovered by Ciordia and Baird (1969) and Tongson and Aragon (1972).

On the other hand, the drug caused slight depression in the faecal egg count of *Trichuris sp.* where it reached only to 86.3 % and 84.3 % in sheep and camels respectively. Consequently the drug was considered as ineffective.

The significant anthelmintic activity of Stronglinject L due to its content of levamisole which has a strong stimulant effect on the nematode ganglion leading to neuro-muscular paralysis (Fraser et al.,1985). This mode of action should be somewhat unique for trichostrongyl nematodes than the other species like trichurid ones.

Recovery of larvae from the faecal cultures after treatment confirms the findings of Tongson and Aragon (1972) that the drug is not ovicidal. In spite of that, the sharp drop in faecal egg count is important from the stand point of epidemiology as the lower the numbers of eggs excreted in the faeces, the lesser are the chances of reinfection.

Improvement in the general health of treated animals should be due to the immuno-stimulant effect of Levamisole (Laurence and Bennett, 1987). It enhances lymphocyte blastogenesis, interferon production and increases the activity of macrophages (Tizard, 1987). These effects should reflect on the animal resistance against the other infections and accordingly improve the health perhaps more than it is usual for these animals.

The increased appetite of medicated animals could be solely contributed to the cholinergic stimulation of the salivary glands by Levamisole and consequently increases the gastro-intestinal and digestion activities.

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SUMMARY

One hundred and seven ruminant animals were found to harbour trichostrongyl, ascarid and trichurid nematodes. They were I/M injected with Stronglinject L (Levamisole hydrochloride, Virbac) at a dose of 1 ml/ 10 Kg B.W. The drug caused a markedly significant drop in the mean feacal egg count particularly that of trichostrongyl worms. The efficacy rates were 85-100 % against *Haemonchus sp.*, *Bunostomum sp.*, *Cooperia sp.*, *Nematodirus sp.* and *Trichostrongylus sp.*, While Stronglinject L proved to be highly effective against *Toxocara vitulorum* in buffalo calves (91.7%) it was ineffective against *Trichuris sp.*, in sheep or camels where the efficacy rates were 13.7 % and 15.7% respectively. The drug was non ovicidal and there was no any untoward effect on the treated animals but unexpected improvement in the health conditions has been noticed.

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