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EFFICACY OF ORAL IVERMECTIN AGAINST TICK INFESTATION IN NELLORE BROWN SHEEP

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Abstract: A preliminary study was undertaken to compare the efficacy of various commercial preparations like Ivermectinand Closantel oral solutionsand Fenvalerate as dipping solution in 60 naturally tick infested Nellore brown sheep. Haemoglobin levels were determined before and after the treatment. On the basis of the present study it may be concluded that, oral Ivermectin solution @ 400µg/kg is effective in control of ovine acariasis. Sheep have shown an overall improvement of hemoglobinasthe drug is effective on both external and internal parasites.

Keywords: Acaricidal effect, Ivermectin, Closantel, Fenvalerate, Nellore brown sheep.

INTRODUCTION

Tick infestation is most common and important problem in ovines and need special attention to their control as sheep are vulnerable to both ecto and endoparasitic infections during grazing. Ticks are more common in tropical and subtropical countries. Ticks are harmful, obligate blood sucking ectoparasites of sheep causing direct and indirect losses to the sheep farmers. Direct losses are loss of blood, anaemia, weakness, decreased body weight and reduced growth rate, thereby causing great economic loss to the sheep farming community. Indirectly ticks transmitvarious disease causing pathogenic agents like viruses, rickettsia, protozoa and bacteria to man and animals. They have high vector potentiality and ranked second next to mosquitoes in terms of their public health and veterinary importance. Some of the tick-borne diseases like babesiosis, theileriosis and anaplasmosis are causing major losses to the livestock farming.

Treatment and control of tick infestation are very important to reduce tick burden as well as to prevent the tick transmitting diseases. Globally, tick control is achieved mainly by the application of chemical acaricides. However, their indiscriminate use has led to the development of acaricidal resistance. Drugs used for control of parasitic acarines are named

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Tick infestation inside ear and in between the hind limbs

as Acaricides (Bhatia and Pathak, 2010). A number of non - organophosphate classes of acaricides have been developed which are effective against arthropod pests, environmentally safe and less toxic to animals. Hence, in the present study comparison of acaricidal effects of three chemical acaricides was done at Livestock Research Station, Siddarampuram, Anantapur district of Andhra Pradesh.

OBJECTIVES OF THE PRESENT STUDY

❖ To compare the acaricidal effects of commercial preparations like oral Ivermectin, Closantel & Fenvalerate solutions.

❖ To study the blood pictures of tick infested Nellore Brown sheep before & after treatment with these acaricides.

❖ To observe tick fallen periods as well as tick re-infestation periods in Nellore Brown tick infested sheep.

MATERIALS AND METHODS

A total sixty numbers of naturally tick infested stunted Nellore brown sheep naturally infested with ticks at Livestock Research Station, Siddarampuram were selected and divided into five groups of twelve sheep each. All the animals are dewormed for internal parasites and fecal sedimentation confirmed no parasitic ova detected. Group I and II were orally treated with Ivermectin (Hitek) @ 200 and 400 µg/kg Body weight respectively. Group III and IV were treated with closantel@ 1ml/10 kg Body weight (oral) and 4% fenvalerate (dip) respectively. Group V was kept as untreated control.

Group I: - Treated with Oral Ivermectin (Hitek) @ 200 µg/kg Body weight.

Group II: - Treated with Oral Ivermectin (Hitek) @ 400 µg/kg Body weight.

Group III: - Treated with Virclos (Closentel) @ 1ml/10 kg Body weight.

Group IV: - Subjected for dipping with Fenvalerate (Prestanal) solution @ 4ml/Ltr.

Control group (V):- No treatment.

General clinical examination was carried out on the entire experimental animals daily. The sheep are maintained under semi intensive method of rearing. However, the condition of conjunctival mucus membrane was recorded for comparison. Hemoglobin levels were determined before and after treatment as shown in Table- I.

Group – I & II

Ivermectin @ 200 µ/kg body weight Ivermectin @ 400 µ/kg body weight

Group III& IV

Closantel (Virclos) 1 ml/10Kg b.wt Fenvalerate dipping solution @ 1200 ppm

RESULTS AND DISCUSSION

Table: Hemoglobin values days required for ticks to fallen & reappearance and cost of treatment

Groups	Hemoglobin values in gm%		Ticks fallen after treatment (in days)	Cost of treatment/ Dose (In Rs.)	Re-appearance of Ticks (in days)
	Before Treatment	After 7 days of Treatment			
I	7.60 + 0.23	8.68 + 0.24	5	8	15
II	8.20 + 0.27	9.48 + 0.33	3	12	20
III	8.00 + 0.37	9.2 + 0.34	7	17	12
IV	7.01 + 0.24	7.50+ 0.17	1	6	5
V	7.45+0.31	7.33+0.28	-	-	-

Collected the blood from these experimental which are naturally infested with ticks animals before and a week after treatment and estimated Haemoglobin values in grams percent. Observed an average improved hemoglobin from 7.6 to 8.68 in the group – I sheep treated with oral Ivermectin @ 200µg/kg body weight. Improved haemoglobin levels also noticed in group – II animals from 8.20 to 9.48 grams percentage which is in agreement with the findings of Sharma *et al.,* (1990). Moderate levels of improvement in haemoglobin values noticed in group –III animals from 8.00 to 9.2gm% treated with Closantel oral solution. Less improvement in Hemoglobin values were noticed in group – IV animals treated with Fenvalerate dipping solution. i.e., from7.01 to 7.5. Ticks started falling down from 5th day onwards in case of group – I animals whereas from next day onwards in group – IV animals but from 3rd day onwards in group-II animals.

Hence, effective reduction of ticks was noticed with oral ivermectin @ 400µ/kg body weight in group-II treated animals as a single remedy in accordance with Udupa *et al*., (2002). Ticks have started falling and engorgement of the ticks stopped after 7 days of treatment with Closantelin group-III sheep which is in agreement with Ram Prabhu *et al*., (1999) and Butler (1986), who reported apparent reduction of lice seven days after treatment and effective reduction of sarcoptic mange in sheep, respectively.

It is observed that cost of the treatment per animal is cheaper with Fenvalerate dipping solution when compared to other treated groups but it is highest with Closantel oral solution

and it is moderate within group-II animals treated with Ivermectin 400 µg/kg body weight. The cost of treatment with Fenvalerate is cheaper than Closantel and Ivermectin which is in agreement with findings of Sanwan *et al* (1995).

Re occurrence of ticks is very early i.e., in between 5 days in group – IV sheep that treated with Fenvalerate when compared to other groups because reduction of adult ticks only in which dipping of sheep was done with Fenvalerate solution. But, recurrence of ticks was very late in group – II animals treated with Ivermectin oral solution 400µg/kg body weight which is 20 days. In the present study the animals treated with double dose of Ivermectin (400 µg/kg body weight) recovered quite fast and regained health in comparison to the group treated with 200µg/kg as indicated in table – I. Treatment methods such as Pour – on, bolus and injectable formulations some of which provide sustained release of Ivermectin have produced good results in control of *Boophilus* ticks according to Tylor & Kenny (1990), Miller et al., (1997). However studies of Miller *et al*., (1999), Davey *et al*. (2001), Daily oral Ivermectin treatments of ticks has demonstrated the total elimination of ticks in the field.

On the basis of the present study it may be concluded that oral Ivermectin solution @ 400 µg/kg body weight is very effective in control of ovine acariasis. It is a much better method in overall improvement of sheep health as the drug is effective on both external and internal parasites.

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