

**STUDY ON EFFICACY OF COMBINATION OF HERBAL OIL (NEEM & KARANJ OIL)  
AND DELTAMETHRIN AGAINST *HYALOMMA. ANATOLICUM. ANATOLICUM*  
INFESTATION IN CROSSBRED COWS**

S.R. Dadhich, A.K. Deshawal, R.S. Tailor and N.K. Pachlaniya

KrishiVigyan Kendra, Kasturbagram, Indore

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Corresponding Author : ram.dadhich@rediffmail.com

### **ABSTRACT**

The present study was carried out to compare efficacy of combination of herbal oil and acaricide delta methrin in crossbred cows. Application of the neem and Karanja oil was found to be economically beneficial as compared to the farmers practice (in which deltamethrin 2ml/lit. was used).

### **INTRODUCTION**

Tick infestation causes significant economic losses to the dairy industry all over the world. The most widely used method for the effective control of ticks is the direct application of acaricides to the host animal, but with limited efficacy in reducing tick infestations and is often accompanied by serious drawbacks. However, acaricides are expensive and can be detrimental to the environment. Their use should be minimized and integrated with alternative approaches. Combination of neem oil and karanja (*Pongamia glabra*) oil in 1:1 proportion found to be an excellent biopesticide (Kumar *et al.*, 2005). There are considerable economic benefits in the development of indigenous medicines and in the use of medicinal plants for the treatment of various diseases.

Azadirachtin as a major active ingredient of neem oil is a famous natural anti-feedant, growth regulator and oviposition repellent for insects, which makes it a perfect alternative to chemical pesticides. Karanja tree (*Pongamia glabra*) is commonly found in India. Karanj is the main active ingredients of karanja oil. It acts as an acaricide and insecticide and is often used in pet care for the treatment of flea, mange and scabies as it has insecticidal properties.

### **MATERIALS AND METHODS**

This study was conducted at Jagmalpipliya village of Indore district under KVK Kasturbagram, Indore (M.P., India) to control tick infestation in crossbred cows (HF and Jersey crosses). Total of 45 cross breed cows with moderate to high ticks infestation were randomly selected and divided into 3 groups having 15 crossbred cows in each. Group 1 crossbred cows were treated by painting with combination of herbal oil (neem and karanja oil in the ratio of 1:1) at regular interval of 21 days for 6 months. Group 2 animals were treated with spray of freshly prepared solution of deltamethrin 2 ml/lit of water at regular interval of 21 days for 6 months. Group 3 animals were treated as control. The number of ticks (larval, nymph and adult) on all cows in each group were counted before and after treatment for 24 & 48 hrs of post treatment and mean of each group was noted. To determine the residual effect, the treated animals were observed till they become re-infested with any stage of ticks. The per cent efficacies were determined at the rate of droppings of larvae nymph and adult from the host on post treatment. The benefit cost ratio were also calculated so as to assess economic viability.

### **RESULTS AND DISCUSSION**

The result of the present study (Table ) reveals that combination of herbal oil (neem and karanja oil in 1:1 ratio ) was found to be 90.17, 95.91, 94.2 effective against larvae, nymph & adult stages

**Table : Comparative efficacy (%) of Herbal oil (Neem and Karanja oil in ratio of 1:1) and Deltamethrin(2 ml./lit.) on its recommended dose against tick infestation in crossbred cows.**

Treatments	No. of cows	Concentration	No of ticks (Mean±SE)						Residual effect in days	B:C ratio			
			Larva			Nymph					Adult		
			Pre treatment	24 hour post treatments	48 hrs post treatments	Pre treatment	24 hour post treatments	48 hrs post treatments			Pre treatment	24 hour post treatments	48 hrs post treatments
Neem +Karanja oil	15	50 ml+ 50 ml	48.87±0.91	4.80±0.33 (90.17)	2.20±0.22 (95.54)	28.13±0.54	1.15±0.35 (95.91)	0.28±0.20 (99.00)	13.47±0.74	0.78±0.05 (94.2)	0.14±0.03 (98.96)	22-24	2.21
Delta methrin	15	2 ml/ litre	47.00±0.79	4.47±0.48 (90.48)	1.20±0.26 (97.44)	24.13±0.38	1.92±0.06 (92.04)	0.13±0.03 (99.46)	14.07±0.46	1.07±0.05 (92.39)	0.04±0.01 (99.71)	16-20	1.84
Control	15	-	47.20±1.12	47.20±1.12	47.20±1.12	23.73±0.50	24.80±0.49	28.47±0.63	14.53±0.45	15.73±0.65	15.53±1.29	-	-

Figure in parenthesis indicate % efficacy

of ticks respectively at 24 hrs post treatment. Whereas at 48 hrs post treatment it was 95.54, 99.00 and 98.96 per cent effective against different ticks stages. In group 2 acaricide deltamethrin (2ml/lit) was found to be 90.48, 92.04 and 92.39 per cent effective at 24 hrs post treatment on different stages of ticks whereas at 48 hrs observation it was 97.44, 100 and 100 per cent effective at different stages of ticks.

The comparative per cent efficacy between herbal oil (neem and karanja oil) and deltamethrin revealed that performance of deltamethrin at 48 hrs treatment was superior. However, mean residual period was found higher in herbal oil (neem and karanja oil). The herbal preparation was also found to be safer without side effect.

A number of reports are available on the effect of different extracts of plants material in control of different tick species. Preliminary results of Ghosh *et al.* (2007) with alcoholic extracts of Custard apple (*Anonasquamosa*) and neem (*Azadirachtaindica*) against different life stages of *Hyalomma* and *Boophilus* are highly encouraging.

Application of the neem and Karanja oil was found to be economically beneficial as compared to the farmers practice (in which deltamethrin 2ml/lit. was used). The cost of painting herbal oil (neem and karanja oil in the ratio of 1:1) per animal per month was found to be Rs. 80 as compared to Rs 110 in use of deltamethrin (farmer practice). The B:C ratio in farmer practice was 1.84 while in recommended practice it was 2.21.

#### REFERENCES :

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