PREVALENCE OF TICK INFESTATION AND COMPARATIVE EFFICACY OF DIFFERENT DRUGS IN BUFFALOES

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ABSTRACT

An epidemiological study was conducted with the aim of determining the prevalence, type of ticks present in buffaloes in Karur district and to assess the efficacy of two different types of insecticides against tick infestation under field conditions such as ivermectin and deltamethrin spray. A total of 165 buffaloes were selected randomly and examined carefully for tick infestation. Both physical examination and laboratory investigation were employed in the study. The study revealed that buffaloes in the study area were infested with single *Boophilus* species (70.32%) and multiple (29.63%) species of ticks. The preferred sites of tick attachment to infested animals were udders, external genitalia and inner thigh (64.8%) then neck and chest (52.0%), perineum (9.25%) and ears (3.7%). The obtained results revealed that poor husbandry practices of small holder farmers be a determinant making the animals more prone to tick infestation in this district. The result shows that Ivermection injection gives 96% and Deltamethrin spray gives 48% efficacy. To improving the hygienic conditions associated with treatment of Ivermectin (0.2 mg/kg Body weight) and spraying of Deltamethrin (1%) for surrounding environment every 7 days are recommended to control 100% of tick infestation under field condition.

Keywords: *Bubalus bubalis*, buffalo, epidemiological study, ivermection, deltamethrin, *Boophilus* sp., poor husbandry

INTRODUCTION

The world buffalo population is estimated at 185.29 million, spread in some 42 countries, of which 179.75 million (97%) are in Asia. India has 105.1 million and they comprise approximately 56.7% of the total world buffalo population. During the last 10 years, the world buffalo population increased by approximately 1.49% annually, by 1.53% in India, 1.45% in Asia and 2.67% in the rest of the world. Parasitic infestation especially ecto-parasites are the major veterinary problem in most of the developing countries including India and under developed countries of the world. Ecto parasitic diseases mainly tick infestation causes severe health issue. Ticks are also responsible for the transmission of various diseases like piroplasmosis, theileriosis, anaplasmosis and causing heavy economic losses (Ramzan *et al*., 2008). In neglected and untreated animals death could occur (Manurung *et al*., 1986). Ixodid ticks as the predominant parasites of domestic animals

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of India (Latha *et al*., 2004). Keeping in view the clinico-economic importance of Ticks, the present study was designed to find out the prevalence of Tick infestation in buffaloes and to assess the efficacy of ivermectin and doramectin against tick infestation (Ramzan *et al*., 2008).

MATERIAL AND METHODS

A total of 165 buffaloes were selected randomly irrespective of age, sex and examined carefully for tick infestation in and around the Karur district of Tamilnadu. Both physical examination and laboratory investigation were employed in the study. Adult ticks and ticks with various development stages were collected from the infested animals without cause any damage to its mouth parts and ticks were transported to the laboratory with glass bottle.

Examination of ticks

For identification of species of ticks the microscopically examination were carried out, first the ticks were examined in the low power and then to the high dry power to identify its morphology as per Soulsby (1982).

Examination of animals

Animal found positive for ticks were used for the treatment trial. Out of 165 buffaloes 40 buffaloes were selected, which are randomly divided into 4 groups which are Group A, B, C and D. Each group having 10 animals, Group A is treated with Ivermectin 0.2 mg/kg as subcutaneous injection and Group B treated with deltamethrin spray 2 ml/ liter of water, Group C treated with combination of ivermectin 0.2 mg/kg as subcutaneous and deltamethrin spray 2 ml/liter of water and Group D act as a control. The efficacy of the drug calculated by using the below formula.

$$\text{Percent efficacy} = \frac{\text{Number of animals cured} \times 100}{\text{Number of animals treated}}$$

RESULTS AND DISCUSSION

The prevalence of tick infestation was reported to be 54 (32.7%) out of 165 buffaloes included in the study. Various workers like Chaudhry (1965); Hiregoular; Harlapur (1988); Khan *et al*. (1993); (Ramzan *et al*., 2008) were reported the prevalence of tick infestation in cattle was 28.2%, 22.6%, 39.2% and 36% , respectively in. Their findings are closely related to the results of present study. The ticks belonging to species *Boophilus microplus, Boophilus annulatus, and Rhipicephalus haemaphysaloides* were identified. The study revealed that buffalo in the study area were infested with single *Boophilus* species 38 numbers (70.32%) and *Boophilus* with *Rhipicephalus* species 16 numbers (29.63%) species of ticks. The preferred sites of tick attachment to infested animals were udders, near external genitalia and inner thigh (64.8%) then neck and chest (22.2%), perineum (9.25%) and ears (3.7%). The distribution (%) of tick infestation in different body parts of examined animals are presented in Table 1 and Table 2.

This result is in concordance with Asmma *et al*. (2014) which revealed that the udders and external genitalia of examined cattle were the most predilection sites of tick infestation (70.7% of each) followed by animal's neck and chest, perineum, ears and around eyes. Ticks usually prefer thinner and short hair skin for infestation. This helps in easy penetration of mouth parts into richly vascular area for feeding (Sajid, 2007).

Moreover, Atif *et al*. (2012) found that perineum, udder and external genitalia (98%) were the most tick infested sites followed by dewlap (92%), inner thighs (90%), neck and back (54%), tail (26%), ears (13%), around eyes (10%), flanks (4%) and legs (2%) in descending order.

In the above study efficacy, of Ivermectin, Deltamethrin spray and combination of both is about 80%, 60% and 100% respectively. Ramzan *et al*. (2008) reported that ivermectin at the dose rate of 0.2 mg / kg in subcutaneous route give hundred percent cure against ticks but our study is contracted to that. Leite *et al*. (1995) detected 51.65% of efficacy level for deltamethrin. However Merlini and Yamamura, (1998) recorded higher averages for deltamethrin was 74.58%. Our result shows that the efficacy of deltamethrin is about 60%. Our finding is in concordance with Asmma *et al*. (2014) who attained maximum efficacy on treatment with combination of both Ivermectin and deltamethrin spray.

CONCLUSION

Buffaloes are more prone to tick infestation. Improving of hygienic measures accomplished with intensive treatment of both infested animals with (Ivermectin 0.2 mg/kg b.wt, S/C) adjunct to Deltamethrin (1%) to the surrounding environment are advisable for tick control under field conditions.

Table 1. Area of tick infestation in animals (Total number of infested animals 54).

Area of tick infestation	Number of infested animal	Percentage of infestation
Udders, near external genitalia and Inner thighs	35	64.8
Neck and chest	12	22.2
Perineum	5	9.25
Ears	2	3.7
Total	54	

Table 2. Drug efficacy.

Treatment group (N=10)	Drug used	Efficacy percentage
A	Ivermectin (0.2 mg/kg)	80
B	Deltamethrin spray (2 ml/liter)	60
C	Combination of both	100
D	Control	-

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