

Diversity of hard ticks in goats and sheep in Multan, Punjab, Pakistan

Muhammad Ramzan*, Unsar Naeem-Ullah, Hasnain Abbas, Muhammad Adnan, Zartasha Rasheed, Saba Khan

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The current study was carried out to check the prevalence of tick infestation in sheep and goats in district Multan, Punjab, Pakistan. For this purpose, a total of 45 animals (25 sheep and 20 goats) were screened out. The various body parts like ears, udder and tails of animals were checked for tick collection. Out of total, 17(68.00%) sheep and 08(40.00%) goats were

found infested with tick species. Three tick species such as *Rhipicephalus sanguineus*, *Hyalomma anatolicum* and *Hyalomma marginatum* were identified during the present study. The maximum infestation rate was in sheep as compared to goats. Mostly tick was collected from ears that are suitable site for tick infestation. The maximum tick infestation was in summer months (June-July) because these months are favorable for Tick development and reproduction

Key Words: *Rhipicephalus Sanguineus*; *Hyalomma Anatolicum*; *Hyalomma Marginatum*; Multan.

INTRODUCTION

The livestock industry is the main part of agricultural economy of various countries including Pakistan. The farmers earned their revenue through selling and purchasing their animals in Pakistan [1]. The animal products like bones and hides are very important and use for various purpose of man [2]. The livestock industry is affected by various types of ectoparasites and endoparasites [3]. Ticks (Acari) are blood sucking ectoparasites and transmit various type of protozoal, bacterial and viral diseases in wild as well as domestic animals like Cow, sheep, buffaloes and cattle globally [2]. The various types of diseases such as anaplasmosis, rickettsiosis and ehrlichiosis can be transmitted through ticks. Among all these diseases Crimean Congo hemorrhagic fever (CCHF) is contagious and main threat for animals [4-7].

Tick not only damage the skin and hide but due to severe infestation of tick and tick-borne diseases (TTBDs) the meat and milk production also effected. About 80% animal population in the tropical and subtropical regions of the world including Pakistan affected by ticks and ticks borne diseases (TTBDs).

There are three families viz. *Ixodidae*, *Argasidae* and *Nuttalliellidae* of ticks [8]. There are 700 and 200 species of *Ixodidae* and *Argasidae*, respectively while *Nuttalliella* has one [7]. There is large number of tick species found in Pakistan as tropical region of the world [7-10]. The abundance of tick population is due to favorable climatic condition of the country [11].

Only few studies have been conducted regarding tick fauna in Pakistan, it seems a gap in our knowledge about the tick species in domestic animals. The aim of current study is to evaluate the tick infestation rate in sheep and goats.

MATERIALS AND METHODS

Study area

The current study was carried out in District Multan (30.2° N and 71.4° E), 123 mm high above sea level with 127 mm rainfall, Punjab, Pakistan. The district consists of three tehsils like Jalalpur Pirwala, Shujabad and Multan.

Collection

The study was carried out and samples were collected randomly from all these tehsils by using sampling method [12]. A total of 34 ticks were collected from 45 animals (25 sheep and 20 goats). The whole body like udder, ears and tails of animals was screened out to check and remove the ticks. The ticks removed from host's body with the help of tweezer and forceps. The proper control measures were adopted during sampling.

Preservation

After collection, samples were preserved in vial containing 70% ethyl alcohol. The location, host name and date were labeled on vials.

Identification

The collected samples were brought to the laboratory for further identification. Before identification the samples were washed with the distilled water to remove the preservative and boiled with 10% potassium hydroxide (KOH) for 30 minutes to remove the excessive water. The samples were identified under stereomicroscope by using morphological key [13].

STATISTICAL ANALYSIS

Ticks infestation rate analysed by number of infested animals dividing total number of animals.

RESULTS AND DISCUSSION

During the current study total 34 ticks were collected from 45 animals (sheep and goat). *Rhipicephalus sanguineus*, *Hyalomma anatolicum* and *Hyalomma marginatum* were identified from sheep and goats during the present study (Figures 1 and 2). The infestation rate in goats and sheep was 68.00% and 40.00%, respectively. Out of total 45 animals, 17 sheep and 8 goats were infested with tick species. Our findings are similar with other studies which carried by other scientists [14,1]. The infestation rate was high in sheep due to their wool presence which is suitable site for tick development and growth [15]. The similar results had been reported by [7].

TABLE 1

Relative abundance of tick species infesting in small ruminants (sheep and goats) of district Multan, Punjab, Pakistan.

Muhammad Ramzan*, Unsar Naeem-Ullah, Hasnain Abbas, Muhammad Adnan, Zartasha Rasheed, Saba Khan

Department of Entomology, Faculty of agriculture, MNS-University of Agriculture, Multan, Punjab, Pakistan *Corresponding author: Muhammad Ramzan, Department of Entomology, Faculty of agriculture, MNS-University of Agriculture, Multan, Punjab, Pakistan, Tel: +92619201680; E-mail: ramzan.mnsua@gmail.com Received date: April 24, 2019; Accepted date: May 18, 2019; Published date: May 28, 2019



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Tick Species	Goat	Sheep
<i>Rhipicephalus sanguineus</i>	40.00%	60.00%
<i>Hyalomma anatolicum</i>	35.29%	64.70%
<i>Hyalomma marginatum</i>	33.33%	66.66%

The infestation rate of tick's species was lowest in goats due to their different behaviors. The goats were infested 40.00%, 35.29% and 33.33% with *Rhipicephalus sanguineus*, *Hyalomma anatolicum* and *Hyalomma marginatum*, respectively while sheep were infested about 60.00%, 64.70% and 66.66% respectively (Table 1). Our results are similar with the findings of earlier studies [16]. In another study the prevalence of tick species were recorded 41.53% and 43.37% in goats and sheep respectively [1]. The results of our current study are also similar with this.

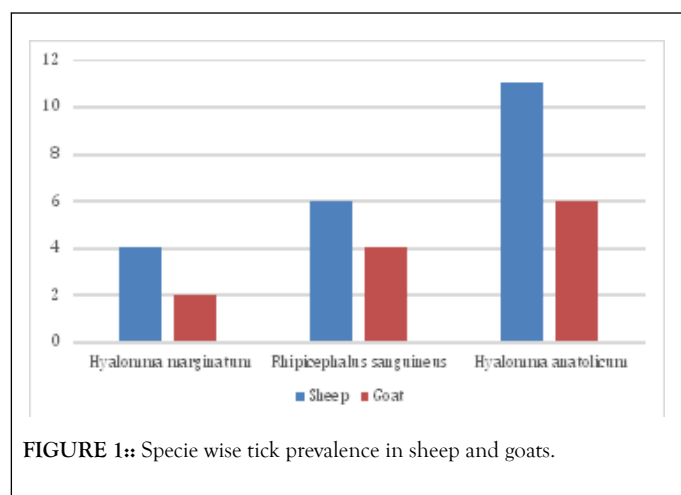


FIGURE 1:: Specie wise tick prevalence in sheep and goats.

The findings of our study were about similar with other earlier studies which carried in Iran [17,18]. The reasons of these abundance and distribution of tick species in the animals like goats and sheep is due to their movement from one area to other. There are many factors that become the cause of tick infestation in animals. Among these factor, migration and trade of animals are the major one.

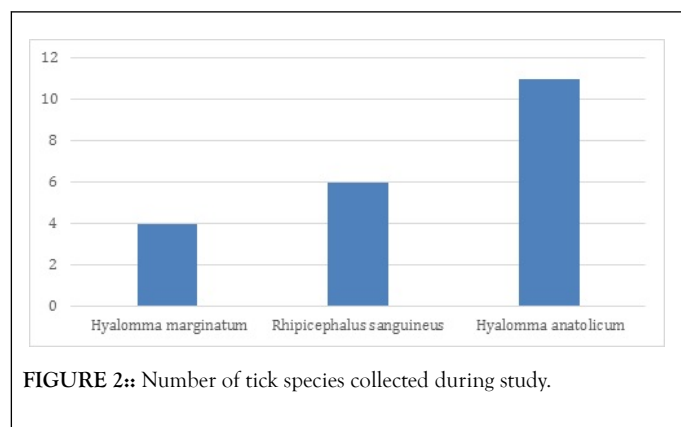


FIGURE 2:: Number of tick species collected during study.

It has been observed that tick infestation rate was maximum in summer season as compared to winter, which is similar to the findings of earlier studies. The tick infestation was lowest in April-May while highest in June-July. The tick infestation was high in ears in sheep and goats while low in tail and udder. Our results are in agreement with other studies [1]. The ears are suitable site for tick infestation which may be easiness for tick to suck the blood [19]. The attachment of tick depends on the temperature and thickness of skin site [20].

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CONFLICT OF INTEREST

Authors have no conflict of interest.

CONCLUSIONS

During the current study three species of tick (*Rhipicephalus sanguineus*, *Hyalomma anatolicum* and *Hyalomma marginatum*) were identified. The tick species, *Hyalomma anatolicum* was dominant in the study area. Tick species were found in abundant because the climatic conditions of the area are favorable for tick reproduction, growth and development. There is need to control and adopt preventive measures against tick in the present area.

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