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INFECTION OF AGRICULTURAL ANIMALS IN THE NORTHEASTERN REGION OF UZBEKISTAN BY TICKS OF THE GENUS RHIPICEPHALUS

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Abstract
In the Tashkent and Syrdarya regions, the following species of Rhipicephalus ticks were found: R. sanguineus, R. turanicus, R. bursa, R. pumilio species, a wide distribution of R. sanguineus species in domestic animals was noted. In particular, the damage rate (IE) of agricultural animals was: Bos taurus 38%, Ovis aries 50.6%, Capra hircus 41.8%, Equus caballus 38.1%, Canis lupus familiaris 54.5%.

Keywords: Rhipicephalus, Bos taurus, Ovis aries, Capra hircus, Equus caballus, Canis lupus familiaris, tick, damage rate.

Introduction

It is observed that the processes of climate change lead to the vital activity of biological objects, including the spread of representatives of parasitic systems and changes in their number. In the field of medicine and veterinary medicine, much attention is paid to the study of the importance and life cycle of ticks of the family Ixodidae as carriers of infectious and parasitic diseases [4-5]. In recent years, 82 species of ticks of the genus Rhipicephalus Koch., 1844 have been recorded in the world fauna (Ixodidae) [2].
Rhipicephalus sanguineus, R. turanicus, R. bursa, R. rossicus, R. pumilio, R. leporis and R. schulzei ticks belonging to the genus Rhipicephalus Koch., 1844 were found in the fauna of Uzbekistan. [3]. Blood-sucking ticks, including ticks of the genus Rhipicephalus, which ectoparasitize farm animals and humans, pose a serious epizootological (epidemiological) danger. Therefore, a detailed study of the distribution, ecological and biological characteristics of ticks, as well as the development of effective measures to combat them is one of the urgent tasks of our time.
Most tick-borne diseases are zoonotic in nature and are transmitted to humans through close contact with various farm animals. Ticks are the main source of transmission of dengue fever, rickettsiosis, and viral infectious diseases to humans, and these spread diseases are considered one of the major health problems today. Rhipicephalus ticks are also carriers of rickettsioses. [7].

Materials and Methods

The research work was carried out in the spring, summer and autumn seasons of 2022-2023 in the regions of Tashkent and Syrdarya.

In particular, samples of ticks from 7 farms and 21 private farms located in Parkent, Yuqorichirchiq, Chinoz, Bekabad, Piskent, Yangiyul districts of the Tashkent region and Boyovut, Gulistan, Syrdarya districts of the Syrdarya region were studied. Among them: Bos taurus (cattle) 50, Ovis aries (sheep) 310, Capra hircus (goat) 67, Equus caballus (horse) 21 and 11 copies of Canis lupus familiaris (domestic dog) based on route and stationary methods, belonging to the genus Rhipicephalus 1065 tick samples were collected (Fig. 1).

It was observed that ticks of the Rhipicephalus genus mainly parasitize the ear and eye area of livestock. Brought samples of ticks were placed in 70 and 96% solutions of ethyl alcohol and stored in labeled glass and ordinary plastic containers. Identification of tick samples was carried out under laboratory conditions Walker et al., (2003); Estrada-Peña et al., (2004) [1-6].

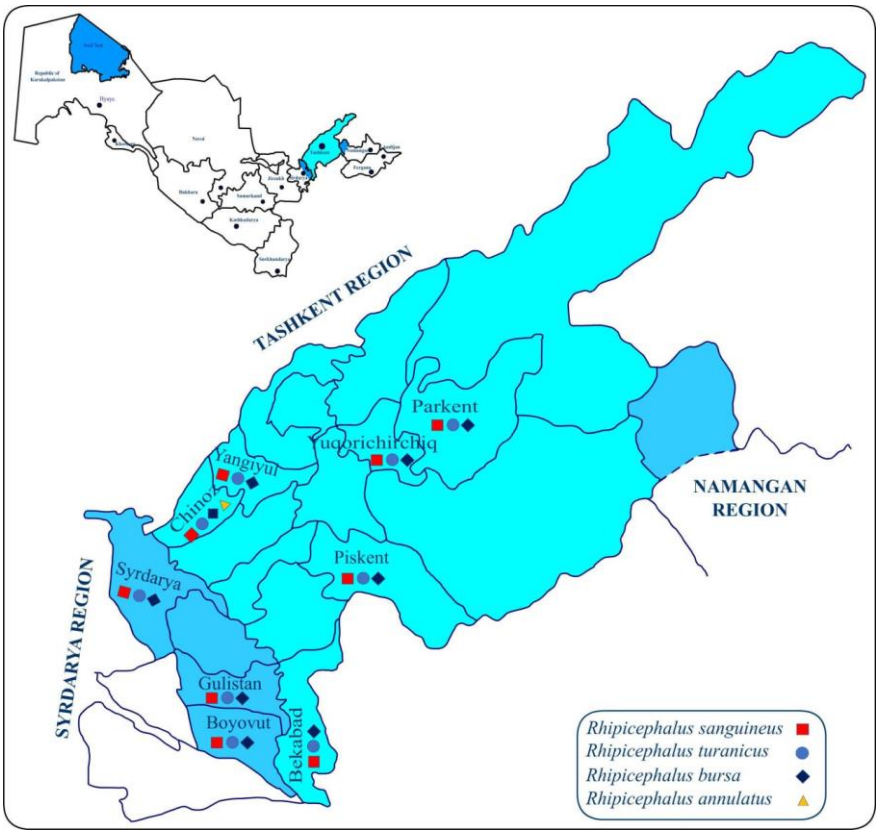

Fig. 1. The research area (Tashkent, Syrdarya regions).

Results

Rhipicephalus ticks were found in agricultural animals in the researched areas, R. sanguineus, R. turanicus, R. bursa, R. pumilio species were found in cattle, sheep, goats, horses and domestic dogs.

Ticks of the genus Rhipicephalus identified in Bos taurus, R sanguineus, R turanicus, in Ovis aries, R sanguineus, R turanicus, R bursa, in Capra hircus, R sanguineus, R turanicus, R pumilio, in Equus caballus, R sanguineus, R bursa, in Canis lupus familiris, R sanguineus, R turanicus meeting of species was recorded (Table 1).

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Table 1. Occurrence of ticks of the genus Rhipicephalus in domestic animals

Types of ticks	Pet name				
	Bos taurus	Ovis aries	Capra hircus	Equus caballus	Canis lupus familiaris
Rhipicephalus sanguineus	+	++	++	+	+
Rhipicephalus turanicus	+	++	++	-	+
Rhipicephalus bursa	-	+	-	+	-
Rhipicephalus pumilio	-	+	+	-	-
Total	2- specie	4- specie	3- specie	2- specie	2- specie

Explanation: (+ the number of ticks is from 5 to 100; ++ the number of ticks is greater than 100)

The fauna of ticks of the genus Rhipicephalus was studied in the research areas, and a total of 1065 tick samples were collected. Based on the collected materials, extensive damage was determined in farm animals. In particular, Bos taurus showed 38%, Ovis aries 50.6%, Capra hircus 41.8%, Equus caballus 38.1%, Canis lupus familiaris 54.5% (Table 2).

Table 2. Indicators of infection of domestic animals with ticks of the genus Rhipicephalus

Animals examined during the study					
Animal species		total number	infected animals	(%)	collected ticks
1	Bos taurus	50	19	38%	87
2	Ovis aries	310	157	50.6%	783
3	Capra hircus	67	28	41.8%	118
4	Equus caballus	21	8	38.1%	43
5	Canis lupus familiaris	11	6	54.5%	34
Total:		459	218	47.5%	1065

In general, for ectoparasitic species of ticks, such a difference in the number of dominant species in the body of different hosts can be explained by the fact that they are located in different conditions and at a certain distance, as well as the ability to adapt to parasitism in some animal species, the species diversity of ticks, the structure of the mouth organ, life cycle, ability to adapt to the natural environment.

The morphological structure of ticks identified during the research was studied, and the body size of ticks of the genus Rhipicephalus was analyzed. The length of female ticks at the adult stage ranged from 4.5 to 11 mm. It was noted that male ticks are smaller than females, body length 3-4 mm, body coloration is dark red and brown, the upper part is covered with chitinous cover.

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This cover covers the male's body from top to toe and is called the dorsal shield. In females, the shield covers only the front part of the body. Accordingly, male ticks can be distinguished from females.

The body of ticks consists of two parts: the head (capitutum) and the real body (idiosome). The gnathosomes include the hypostome, chelicerae, basis capituli and articulated pedipalps. One of the characteristic features of ticks of the genus Rhipicephalus is the presence of a basis capituli (hexagonal).

The sharp side of the hypostoma is involved in piercing the body of the host with chelicerae. Ticks cling firmly to the body of the host with the help of a chelicerae. Pedipalps act as sensory organs. The tick feels the surface of the skin with its pedipalps, selects a place for the chelicerae to attach, and with their help pierces and clings to the host's body. Hypostome is injected into the host's body from the injured area. At this time, the tick's saliva hardens and forms a cement layer around the chelicerae. A significant part of the cement layer remains on the surface of the skin and surrounds the main part of the capitutum.

The idiosome has four pairs of six-jointed legs. At the tip of each foot is a pair of sharp claws. On the ventral side, between the first and second pairs of legs, there is a genital opening, which is crescent-shaped in male ticks and round in females. At the base of the last fourth pair of legs, breathing holes are opened on both sides of the body. The eyes of the species of this genus are located mainly in the idiosome part of the back of the body opposite the second pair of legs, the shape of the eyes is slightly elongated oval.

Conclusion

In conclusion, in the research conducted in Tashkent and Syrdarya regions, R. sanguineus, R. turanicus, R. bursa, R. pumilio species were found.

Infestation of agricultural animals: Bos taurus 38%, Ovis aries 50.6%, Capra hircus 41.8%, Equus caballus 38.1%, Canis lupus familiaris 54.5% were observed. In particular, R. sanguineus from the Rhipicephalus genus was noted to be widespread in domestic animals.

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