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Tick infestation on animals slaughtered at Sokoto central abattoir, Sokoto, Nigeria

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ABSTRACT

Ticks are arthropods with four pairs of jointed legs, two body division i.e. cephalothorax and abdomen and they are wingless. The study was conducted to determine the incidence of ticks on animals slaughtered at Sokoto central abattoir. A total of 200 animals made up of 50 each of cattle, camel, Goat and sheep were examined during the study. The body of animals were divided into four i.e. legs, anal region, udder and other parts for tick examination. Age and sex of the animals were noted. 79 animals, representing 39.5% were infested. The results showed that camel has the highest infestation of 21%, followed by cattle with 15%, the sheep 2% and Goat with 1.5%. A total of 1055 ticks were collected from 79 infested animals. Six species of ticks belonging to three genera were recorded, the tick species encountered with their prevalence percentage are *Hyalomma dromedarri* with 69.19% followed by *Hyalomma truncatun* with 20.47%, *Ambylomma Variegatum* with 6.16%, *Boophilus decoloratus* with 3.15%, *Hyalomma marginatum rufipes* 0.75% and *Hyalomma impeltatum* with lowest percentage of 0.28%.From the study, the intensity of tick infestation is high, hence the need for strict adoption of preventive strategies.

Key Words: Ticks, animals, prevalence, Sokoto and infestation

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INTRODUCTION

Parasites are small living organism in or on another species (it host) obtaining from it part or all of it organic nutrient and shelter, commonly exhibit some degree of adaptive structural modification. Parasites are divided into two depending on where they are found on or in the host. The parasites found on the host (external) are called ectoparasites e.g. mites, lice, ticks, fleas etc. Ticks are animals with jointed appendages and belong to phylum Arthropoda alongside with insect and other jointed appendages animals which

fell into subphylum chelicerata and class Arachnida (which include scorpions, spiders and mites) and are in the order acarina together with mites. Ticks are cosmopolitan, widely spread in different ecological and geographical regions [1]. The ticks are divided into three families of Argasidae (soft ticks), Ixodidae (hard ticks) and *Nutalliellidae* which has only one rare species in Africa, *Nuttaliela namagua.* Approximately about 850 species cut across 9-12 genera have been described worldwide [2]. Soft ticks have four genera that is *Argas*, *Otobius, Ornithodoros* and *Anticola* while hard ticks have many genera such as *Rhipicephalus, Amblyomma, Boophilus, Dermarcentor* etc. These genera are also divided into species such as *Amblyomma variegatum, Dermancentor andersoni, Rhipiceplalus bursa, Boophilus decoloratus* that are of great veterinary importance [3]. Many species of ticks are found in Africa but the greatest health impact on livestock is caused by species belonging to the following genera i.e *Amblyomma, Hyalomma* and *Rhipicephalus* [3]. They are blood feeding ectoparasites of Mammals, birds and reptiles. Ticks transmit various pathogens of protozoan, bacteria and viruses, to cause diseases such as anaplasmosis, cowdriosis, babesiosis, relapsing fever and lyme disease [4].Ticks are known to be recognized as second to mosquitoes in term of serving as vector to human pathogens and worldwide known as the most important vector in veterinary field [5]. Tick and tick borne disease cause an estimated US Dollar of 13.9-18.7 billion loss and an annual shortfall of approximately 3 billion pieces of hide and skin in cattle alone[5]. These damages in turn affect the economy of countries that are endemic with tick infestation. Many factors have contributed to tick infestation of farm animals [6] which has direct impact on epidemiology of zoonotic diseases.

The aim and objective of this study is to determine the prevalence of ticks on animals, the group of animals with high infestation, and the species with high occurrences on animals and part of animal that harbor ticks more.

MATERIALS AND METHODS

Study area

This study was conducted in Sokoto, the state capital of Sokoto state. The specimen were collected from Sokoto central abattoir located in Sokoto North, North Western part of Nigeria with vegetation of Sudan Savannah. The study was conducted between 14th of August to 29th of August, 2007.

Animals sampling

The animals were camel, goat, cattle and sheep, 50 of them each. Parameters such as sex and age were known and recorded through observation and questioning of the people that reared the animals at the abattoir.

Sampled collection

The ticks were collected by forceful detachment and engorged ones were by the hair off the area with a sharp razor blade. The animals examined were divided into four for tick collection that is anal region, udder, fore and hind legs and other parts. The specimen were immediately put into specimen bottles filled with 10% formalin solution prepared from 90% distilled water and 10% formaldehyde before transportation to parasitology

laboratory of Biological Sciences Department, Usmanu Danfodiyo University, Sokoto.

Tick processing and examination for identification

The ticks were processed by warming in 10% potassium hydroxide (KOH), rinsed in distilled water and dehydrated with ethanol and mounted on a plain slide and view under a stereomicroscope. In identifying them into species, parameters such as presences and absences of eyes, color and shape of the body, mouthpart, color of legs, shape of Scutum, presences of festoons and ventral plate were used as stipulated by [2]. The results of observation were then subjected to statistical analysis by summing up the total examined and finally finding their prevalence in percentage.

RESULTS

Table 1 showed the distribution of infection within the group of animals out of 200 animals examined for ticks infestation, 79 were infected which represent 395% of examined animals. The distribution of infestation within the group of animals showed that camels has 42, while cattle has 30, with goat and sheep relatively low of 3 and 4 respectively. For the sex, male has the highest of 41 while the female has 38 as shown in table 2. Age group analysis revealed that 3-4 age groups has the highest of 23% followed by 5-6 age group which has 10% and 1-2 age group with 6.5% as shown in table3

The tick species encountered are *Hyalomma dromedarii* with 69.19%, followed by *Hyalomma truncatum* with 20.47%, *Amblyomma variegatum_with* 6.16%, *Boophilus decoloratus* 3.15% and *Hyalomma marginatum rufipes* and *Hyalomma impeltatum* has very relatively low of 0.75% and 0.28% respectively as shown in table 4 Distribution of ticks on different part examined, udder region has the highest of 61.42%, followed by Anal region with 35.07% while legs has 2% and other part has 0. 1 5% as presented in table 5

Table 1. The distribution of infestation within the group of animals slaughtered at Sokoto central abbatoir, Sokoto, Nigeria

Animals	Number examined	Number infested	Prevalence percentage
Camel	50	42	21%
Cattle	50	30	15%
Goat	50	31	1.5%
Sheep	50	42	21%
Total	200	79	39.5

Table 2. Infestation in relation to sex and age of the animals slaughtered at Sokoto central abbatoir, Sokoto, Nigeria

Sex	Number examined	Number infested	Prevalence percentage
Male	119	41	20.5%
Female	81	38	19%
Total	200	79	39.5
Age			
Age group			
1-2	120	13	6.5%
3-4	59	46	23%
5-6	29	20	10%
Total	200	79	39.5

Table 3.The frequency and prevalence percentage of collected species of ticks from animals slaughtered at Sokoto central abbatoir, Sokoto, Nigeria.

Species of ticks	Frequency	Percentage
Amblyomma variegataim	65	6.61%
Hyalomma truncatum	216	20.4%
Hyalomma marginatum rufipes	8	0.75%
Hyalomma dromedarii	730	69.19%
Hyalomma mpeltatum	3	0.28%
Boophilus decoloratus	33	3.15%
Total	1055	100%

Table 4. Tick distribution across the body of animals examined at Sokoto central abbatoir, Sokoto, Nigeria

Part of the body	Total number collected	Percentage
Legs	20	2.0%
Anal Region	370	3 5.07%
Udder	649	61.42%
other part	16	1.5%
Total	1055	100%

DISCUSSION

From the result of this study, the infestation rate of tick on camel and cattle is high. This high infestation may be due to grazing activities of the animals which is higher in these animals than goat and sheep, this pattern of infestation has been .In general the parasitic infestation rate stand at 39.5% which is higher than 25.5% earlier reported by [7] and 32.4% by [4] but the result of this work is lower than 57.7% reveal by [8]. In relation to age group, the age groups 3-4 and 5-6 account for high percentage and this could be due to high grazing activities in this age groups than those of 1-2 age group compare to the number of animals examined and very low infestation rate recorded in 1-2 age group but this result is at variance with one earlier presented by [9] that recorded 85.4% in young animals compare to 55.8% for adult animals.

In relation to sex the differences observed may be due to parental care done to young ones' by the female, which in doing that will reduce their grazing activities compares to male ones and this account for insignificant difference observed and this corroborate that of 78.9% for male and 68.4% for female earlier submitted by [4]. The study show high occurrences of ticks on the udder and anal region of the animals examine, this may not be unconnected with the fact that udder region is a contact part of animals with grasses when grazing and both with anal region also offer protection to the ticks as they will not be expose to sun, the result is similar the one earlier submitted by [9] from Maiduguri. The exposure of tick to sun by other part of the body account for low occurrence in those part of the body. The genera of ticks recorded in this work are *Amblyomma, Hyalomma* and *Boophilus,* this is due to the fact that *Hyalomma* survive in harsh condition which is obtainable in this region of study and it was also reported by [1] in Pakistan. The season of this study (raining season) account for *Amblyomma* and *Boophilus* presence, which is in conformity with result presented by [7]. The high prevalence of two species of *Hyalomma* on the animals could be due to the fact that the species remain active in their host throughout the year without suffering any harsh condition which they survived due to hard covering structure they possess. The percentage of *Amblyomma variegatum* and *Boophilus decoloratus* in this study is low and similar to what was obtained by [10] for *Amblyomma variegatum* but different in the case of *Boophilus decoloratus* with 32.3%. Above all the result obtained are supported by the following factors which determine the distribution of ticks that is vegetation cover, grazing habit, season, temperature and humidity.

CONCLUSION AND RECOMMENDATION

From the data obtained, it has been confirmed that there is high infestation of ticks on camel and cattle and that the *Hyalomma dromedarii* is the species of ticks with high prevalence, therefore to avoid high economic damages, appropriate measures should be adopted in preventing and controlling of ticks, such as imbibing the culture of using repellant on animals, clearing of tall grasses around animal house and also man should be vigilant and make it a duty bound to spend much time on serving his stock, this is economical way of keeping animals.

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