



PREVALENCE OF TICK INFESTATION ON THE ONE - HUMPED CAMELS (*CAMELUS DROMEDARIUS*) IN SEMI- ARID REGION OF SOKOTO STATE, NIGERIA

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Abstract

The objective of this study was to determine the prevalence of tick infestation on the one - humped camels (*Camelus dromedarius*) in semi- arid region of Nigeria (12°N, 700 to 800mm annual rainfall). The study included 208 camels made up of 116 (55.8%) males and 92 (44.2%) females of varying age groups from seventy three 73 herds and a municipal abattoir in seven Local Government Areas (Illela, Gada, Tangaza, Gwadabawa, Kware, Goronyo and Sokoto North) of the State. The four genetic strains of camels available were sampled (Ja, baki, bule and kurri). Ticks were pulled out gently from camels using forceps and identified accordingly. The overall prevalence of ticks recorded in this study was 32.2%. Three species of ticks encountered were *Hyalomma dromedarii* (n= 49 or 23.6%), *Rhipicephalus sanguineus* (n=12 or 5.8%) and *Amblyomma variegatum* (n=8 or 3.8%). This study indicates the prevalence of some tick species encountered on extensively managed camels in semi – arid zone of Nigeria and the need for timely and effective ectoparasite control.

Key words: camels, ticks, prevalence, Sokoto, Nigeria.

Introduction

Ticks are known to affect the health of camels leading to anaemia, vectoring of infections and physical irritation. There are several reports of prevalence of ticks of camels from some parts of Nigeria, Africa and Asia with predilection sites as mammary, prepuce, anal, ear and abdominal regions respectively (Lawal *et al*, 2007; Biu and Konto, 2012; Bebe, 2001; Abdelrahman *et al*., 2001; Dinka *et al*., 2010 and Akhtar *et al*., 2011). Camel meat consumption which is currently on the increase in some parts of the world including Sokoto - Nigeria, where an average of five camels are slaughtered daily (Khalid *et al*., 2015), may be affected by the debilitating effects of tick infestation. The increase in use of camels for farm work due to their greater tractive efficiency when compared with work bulls and donkeys (Mohammed and Mansoor, 2013), may also suffer decline if ticks are not controlled. This study was conducted to determine the prevalence of tick infestation on the one - humped camels (*Camelus dromedarius*) from herds and those slaughtered in Sokoto State (semi- arid region of Northern Nigeria).

Material and Method

Sokoto State is located at the extreme north-western, semi-arid part of Nigeria between latitudes 12°N and 13°N and longitudes 4°E and 4°E. Purposive sampling technique was used to sample camels of all sexes and age groups belonging to camel herders and those brought to the abattoir for slaughter. The study included 208 camels made up of 116 (55.8%) males and 92 (44.2%)



females of varying age groups from seventy three 73 herds and a municipal abattoir in seven Local Government Areas (Illela, Gada, Tangaza, Gwadabawa, Kware, Goronyo and Sokoto North) of the State. The four genetic strains of camels available were sampled (Ja, baki, bule and kurri). Camels were physically examined carefully and ticks seen were pulled out gently using forceps. All ticks collected were identified and preserved in 70% alcohol in the laboratory.

Results and Discussion

The overall prevalence of tick infestations recorded in this study was 32.2%. The three common tick species encountered were *Hyalomma dromedarii*, leading with (n= 49 or 23.6%), *Rhipicephalus sanguineus* (n=12 or 5.8%) and *Amblyomma variegatum* (n=8 or 3.8%). There were no significant associations ($P > 0.05$) for tick infestation on camels between sexes (Table 1) and age groups (Table 2). The study however, recorded highest prevalence of tick infestation (40%) for growing camels up to 5- years of age (Table 2), month of October (96%) and the *Hyalomma dromedarii* tick species (23.6%) (Table 3).

Table 1: Overall prevalence of tick infestation in relation to sex of camels in study areas in Sokoto State, Nigeria

Variable	Total no. examined	No. Observed n (%)	X^2	P-value
Sex				
Male	116	38 (32.8)	0.036	0.85
Female	92	29 (31.5)		
Total	208	67 (32.2)		

Not significant at $P > 0.05$

The finding of growing camels (five years) with highest prevalence could be attributed to possibility of early introduction of young camels to grazing fields (Dinka *et al.*, 2010). However, low prevalence in adult camels may suggest development of acquired immunity in older animals with effects ranging from interference to feeding, inhibition of egg laying, decreased viability of eggs and death of the tick on the host (Akhtar *et al.*, 2011). This agreed with the reports of Van and Jongejan (2000) and Biu and Konto (2012).

Table 2: Overall prevalence of tick infestation in relation to age of camels in study areas in Sokoto State, Nigeria

Variable	Total no. examined	No. Observed n (%)	X^2	P-value
Age				
<5 years	90	29 (32.2)	0.209	0.901
5 years	25	10 (40.0)		
>5 years	93	28 (30.1)		
Total	208	67 (32.2)		



Not significant at $P > 0.05$

The finding of higher prevalence of tick infestation during the month of October which was still part of the rainy season in Sokoto State could be due to the fact that, rainy season provides a favorable environmental conditions as rainfall, temperature and relative humidity which are considered to be the major determining factors (Biu and Konto, 2012) for the tick's life cycle and increases their rate of infestation (host -vector contact) during browsing on green pasture. This agreed with the report of Abdelrahman *et al.*, (2001), while the least number of ticks per camel observed during the driest months of this study agreed with the report of Zeleke and Bekele (2004). During rainy season the immature stages (nymph) of ticks are mainly found in pasture while the adult stages are found on the camel's body. The finding of *Hyalomma dromedarri* with highest prevalence (23.6%) from the sampling units (Local Government Areas) in this study agreed with the finding of Salem *et al.*, (2011), but however contradicted

Table 3: Overall monthly (2016-2017) prevalence of tick infestation on camels in Sokoto State, Nigeria

Month of year	Total no. of camels examined	No. of ticks Observed	Types of ticks n (%)		
			<i>A.variegatum</i>	<i>H.dromedarri</i>	<i>R.sanguineus</i>
October	25	24(96)	2(8.3)	21(87.5)	1(4.2)
November	45	34(75.6)	5(14.7)	21(61.8)	8(23.5)
December	38	8(21.1)	1(12.5)	5(62.5)	3(37.5)
January	32	1(3.1)	0(0.0)	1(100)	0(0.0)
February	37	0(0.0)	0(0.0)	1(100)	0(0.0)
\March	31	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Total	208	67(32.2)	8(3.80)	49(23.6)	12(5.80)

The earlier reports of 91.28% by Lawal *et al.*, (2007) from the same study area and 88.1% reported from Borno (Biu and Konto, 2012). It was higher than 15.36% reported from Euthopia (Dinka *et al.*, 2010) and 20.44% (Bebe, 2001). Though, *Rhipicephalus sanguineus* was found on camels in this study, it could be attributed to close association between camels and dogs as the former was used as guard animal.

Conclusion and Recommendation

The overall prevalence of tick infections was 32.2%. Ticks of three different species were encountered with prevalence as *Hyalomma dromedarri* 49 (71.0%), *Rhipicephalus sanguineus* 12 (17.4%) and *Amblyomma variegatum* 8 (11.6%). Further study on tick infestation of camels in the area is recommended



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