



## Original Article

### Prevalence of Haemoparasites of Sheep and Goats Slaughtered in Bauchi Abattoir

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#### ABSTRACT

Blood samples were collected from about 200 animals 100 each of sheep and goats slaughtered at the abattoir were randomly sampled between July and December, 2011. The breeds of sheep sampled were the Yankasa, Balami and Uda while the Kano brown and Sokoto red were the breeds of goats sampled in this study. The result shows that *Anaplasma ovis* the most prevalent haemoparasite in both sheep and goat. The relatively high incidence of the haemoparasite could be attributed to the favorable environment conditions for the survival and proliferation of the arthropod vector responsible for their transmission. The relatively very low prevalence of *Babesia ovis* observed in this study could probably be due to the fact that animals that recovered from Babesiosis become immune to re-infection. The result of this study clearly indicates that haemoparasitic infections are common in the small ruminants kept by the animal owners (pastoralists) in the area of study. It was evident that the effect of the haemoparasites on the packed cell volume (PCV) of the infected animals shows significant decrease in the mean PCV values of the infected animals when compared to the uninfected animals. There is need for an appropriate treatment against these parasites in infected animals. This when carried out will improve the living standard of the owners since these animals have great economic potentials due to their high fertility and early maturity. Include percentages of parasites observed.

**Keywords:** Haemoparasites, Prevalence, Sheep, Goats, Abattoir, Bauchi

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#### Introduction

Sheep and goats form an important part of livestock industry in the Sub-Saharan Africa. They serve as valuable supplement to cattle in terms of animal protein supply for the teeming population including the

provision of manure for field crops. It has also been established that over 90% of sheep and goats in the Sub-Saharan Africa are found in East and West Africa (Jatau *et al.*, 2011). These animals are important source of investment especially in the

rural areas including, Nigeria, where livestock is regarded as capital investment in the absence of banking facilities, as well as serving as an important source of meat, milk, skin and socio-cultural values. Traditionally, the nomadic herdsman (pastoralist) also keep sheep and goats which graze along with cattle. These practice seems to maximize economic benefits owing to the small ruminant's high fertility and early maturity as well as their adaptability to the environment (Ademosun, 1988).

Small ruminants such as sheep and goats account for an estimated 35% to the current capital values of Nigerian Livestock (Adu, 1980) and contribute significantly to meat production (Adewuyi and Adu, 1983). However, in recent times benefits derived from small ruminants were notably below expectation owing to low productivity (Jatau *et al.*, 2011). One of the most important factors responsible for the decline in productivity is disease. Blood and gastrointestinal parasitic infections seemed to be the most prominent in this regard. Haemoparasitism continues to be the major constraints to livestock production in Sub-Saharan Africa (Ajayi *et al.*, 1987; Bell-Sakyi *et al.*, 2004; Okaiyeto *et al.*, 2008).

Small ruminants in Sub-Saharan Africa may be infected with a wide variety of vector-borne prokaryotic and eukaryotic haemoparasites. The haemoparasites that inhabit the blood of small ruminants include *Anaplasma*, *Babesia*, *Ehrlichia*, *Eperythrozoon*, *Theileria* and *Trypanosomes* (Urquhart *et al.*, 1996). Of these, the most economically important genera are the rickettsiae *Anaplasma* and *Ehrlichia* (Cowdria) and the protozoan parasites *Theileria*, *Babesia* and *Trypanosomes* (Bell-Sakyi *et al.*, 2004). The four major tick-borne diseases Anaplasmosis, Babesiosis, Heartwater,

and Theileriosis have been cited, along with Trypanosomiasis as the most important constraints to the health and improved productivity of cattle in sub-Saharan Africa (Young *et al.*, 1988) as well as small ruminants which are also at risk of trypanosomiasis. Krammar (1966), showed that trypanosomiasis was of little importance in goats reared in Eastern part of Nigeria. Reid *et al.* (2001) reported that goats are seldom infected with salvian trypanosomiasis. However, experimental studies have shown that small ruminants are highly susceptible to trypanosome infections (Adu, 1980).

Some haemoparasite species are only evident when the host is undergoing a clinical response to infection, while other members of the same genera may be seen in blood smears from apparently healthy animals. Infection with many of these haemoparasite species results in a state of pre immunity, in which the host becomes a long term often asymptomatic carrier serving as a source of infection for the tick or insect vector (Young *et al.*, 1988).

Although important studies have been carried out with respect to haemoparasite in small ruminants (sheep and goats), particularly in relation to their epidemiology, however, most of the studies are in cattle hence the need for such studies in small ruminants. This study therefore is targeted at providing relevant information in this regard.

## MATERIALS AND METHOD

### Study Area

The study was carried out in the Bauchi central abattoir located along Gombe Adamawa road in Northern Nigeria where the animals bought by butchers from nearby villages and towns markets were brought for slaughter.

### Sample Collection

A total of 200 animals comprising of 100 each of sheep and goats slaughtered at the abattoir were randomly sampled between July and December, 2011. The breeds of sheep sampled were the Yankasa, Balami and Uda while the Kano brown and Sokoto red were the breeds of goats sampled in this study.

The animals were slaughtered immediately, 3-5mls of blood were collected from the severed jugular vein a bijoux bottle containing Ethylene Diamine Tetra Acetate (EDTA) as anti-coagulant. The samples were properly labeled and transported immediately to the laboratory in ice packs.

### Parasitological Analysis

Wet blood films were prepared as described by Cheesbrough (1999) as follows:

A drop of blood was placed onto a clean glass slide and then followed by placing a clean cover slip on the drop of blood which spread the latter into a monolayer of cells. This was then examined for trypanosomes movement using X40 objective lens.

A thin blood smear was prepared from each blood sample, by placing a drop of blood on one end of a clean glass slide, then use a spreader to spread the blood by allowing the spreader to touch the blood the spread gently but firmly along the surface of the horizontal slide so that the blood is dragged behind the spreader to form the film with a feathered edge,

air-dry and fixed in methanol for 3-5min, stained In 1:10 Giemsa and Buffer dilution and stain for 25-30minutes and rinse with distilled water then allow to dry. The smears were examined at x100 magnification (oil immersion) for presence of parasites and identification as suggested by Cheesbrough (1999).

Blood from each sample was introduced into a glass microhaematocrit tube, one end of the tube was heat-sealed, and the tubes were spun for 3 minutes at 15000 rounds per minutes in a Haematocrit centrifuge as described by Reid *et al* (2001).

### Determination of Packed Cell Volume (PCV)

Packed cell volume(PCV) was determined for each of the blood samples examined as haematological index for anaemic conditions. It was calculated using standard formula described by Dacie and Lewis (1991).

## RESULTS

The result obtained indicated that out of the total blood samples collected from the 100 sheep at the point of slaughter 21 (21.00%) were positive for haemoparasites and 79 (79.00%) were negative. Whereas of the total number of 100 goats sampled 17 (17.00%) were positive for haemoparasites, 83 (83.00%) were negative.

**Table 1:** Prevalence of heamoparasitic infections in the sampled sheep and goats

S/No	Parasites	species	Number sampled	Number positive	Percentage positive (%)
1	<i>Anaplasmaovis</i>	Sheep	100	13.00	13.00
		Goats	100	11.00	11.00
2	<i>Babesiaovis</i>	Sheep	100	1.000	1.000
		Goats	100	2.000	2.000
3	<i>Theileriaovis</i>	Sheep	100	7.000	7.000
		Goats	100	4.000	4.000

Significant decrease in the mean PCV values of the infected sampled animals when compared to the uninfected animals was observed in both sheep and goats.

This decrease was regardless of whether the animals were grouped as having specific specie of heamoparasitic infection (Table 2)

**Table 2:** Pack cell volume (PCV) of uninfected sheep and goats and those with heamoparasitic infection.

PCV (%)	Non infected animals		Infected with haemoparasites	
	Sheep	Goats	Sheep	Goats
	35.00±1.700	33.37±1.38	29.47±0.48	26.69±0.45

## DISCUSSION

The species of haemoparasites reported in this study were similarly observed by Ajayi *et al* (1987) in sheep in Abeokuta, Nigeria. Similarly, this report shows that *A. ovis* is the most prevalent haemoparasite in both sheep and goats agree with the findings of Adu (1980). A relative high incidence of the haemoparasite could be attributed to the favorable environmental conditions for the survival and proliferation of the arthropod vectors responsible for their transmission. The relative very low prevalence of *Babesia ovis* observed in this study is in accordance to earlier report by Bell-Sakyi *et al* (2004). This could probably be due to the fact that animals that recovered from babesiosis become immuned to re-infection (Shompole *et al*, 1982). *Trypanosoma evansi* has been previously isolated in camels in the sampled area (Akerejola *et al*, 1979) indicating that that the parasite is endemic in the area. There are also reports indicating that camels are herded together with small ruminants in some parts of Northern Nigeria. Therefore, there is risk of possible disease transmission among these animals most especially mechanically vector-borne disease including *T. evansi*.

The absence of trypanosomes in all the sampled animals in this study indicates that small ruminants play little or no role in the epidemiology of *T. evansi* in the study area.

The observed anaemia characterised by low mean PCV values of all the categories of infected animals suggest that the haemoparasitic infection may be the cause of anaemia. The effect of blood sucking activities of the haemolytic activities of the haemoparasite might be the cause of anemia in the infected with haemoparasitic infections.

The result of this study clearly indicates that haemoparasitic infections are common in small ruminants kept by the animal owners (pastoralist) in the area of study. These pastoralists may not easily notice the effect of these endoparasites on the performance of their animals because of the subclinical or chronic nature of the diseases they cause, which often do not only result in mortality but also in production loss.

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