



# A Survey On Gastrointestinal Parasites of Bovin Slaughtered at Sokoto Abattoir

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**Abstract:** A survey on gastrointestinal helminth infection of Bovine (cattle) slaughtered in Sokoto State Abattoir was carried out. A total of 45 faecal samples of animals were examined comprising 20 males and 25 females using formal ether concentration technique. Out of which 32 (71.1%) were infected with one or more parasites. Five species of Nematode 23 (51.1%), one species of cestode 6 (13.3%) and one species of trematode 3 (6.7%) were encountered. Females had the highest prevalence of helminths infection (76.0%) than males (65.0%) and was statistically significant ( $P < 0.05$ ). Prevalence based on their breed, Sokoto Gudali had the highest prevalence (72.0%) than Red Bororo (70.0%) and was statistically significant. Based on age, cattle that were 3-4 and 4 $\frac{1}{2}$ -5 had the highest prevalence of (71.4%) respectively. While cattle that are 1-2 $\frac{1}{2}$  (70.0%) were statistically significance ( $P < 0.05$ ). The prevalence rates of the species encountered consist of *Ascaris* 10 (31.3%), *Bunostomum phlebotomum* 8 (21.9%), *Moniezia benedeni* 6 (18.8%), *Fasciola hepatica* 3 (9.4%), *Strongyloide papillosus* 3 (9.4%), *Nematodirus spathiger* 2 (6.3%), *Trichuris ovis* 1 (3.1%). The result of this survey revealed that gastrointestinal parasites were highly prevalent in cattle slaughtered at Sokoto Abattoir.

**Keywords:** Gastrointestinal helminthes, bovin health, Sokoto abattoir

## INTRODUCTION

Bovine cattle are the most common type of large and domesticated ungulates that live worldwide in association with humans. They are prominent modern member of the sub-family *Bovinae*, wide spread species of the genus *Bos*. Cattle were originally identified as three separate species: *Bos Taurus*, the European and *taurine* cattle (including similar types from Africa and Asia). In Africa, there are two main types of cattle, those with humps such as the Boran, sawiwal, and zebu, and the foreign or imported breed such as Friesian, jersey, Guensey, the most common cattle species in Nigeria are N'dama, Boran, Muturu, Sokoto gudali, Red bororo, white Fulani which belongs to *Bos Taurus* species. The most discriminating feeder among the zebu breeds, is the Rahaji (Gherzi et al., 1998). Sokoto gudali are usually reckoned to be poor animals for ploughing because of their uncertain temperament (Sambo, 1998).

Nigeria had a mean cattle population of 13.9 million in 1990, of which 11.5 million were kept in pastoral systems and 2.4 million in villages (Van, 2003).

Ruminant animals such as cattle, goats, and sheep represent an important source of animal protein in many countries of the world supplying a good percentage of the daily meat and dairy products in cities and villages in countries including Nigeria (Nwosu, 2007).

Apart from cattle source of milk and meat product, cow dung which is usually a dark magenta color is often used as manure if not recycled into the soil by earthworm, cow dung can dry out and remain on the pasture creating an area of grazing land (Berger, 1996). Another product is the cattle skin which is being processed into leather which is used for various purposes including clothing, bookbinding, leather wallpaper, foot wear

and as a furniture covering. Cow urine is also an excellent germicide and kills variety of germs because it contains Ayurveda which also compose of many minerals like copper, goldsalt etc. which compensate for mineral deficiency of the body.

Worldwide, gastrointestinal parasites like those of respiratory tract have a potentially major impact on herd health. Studies from various states of Nigeria indicated variable prevalence of gastrointestinal helminthes (Corwin, 1997; Mainna, 1986; Kudi, 2001; Kudi, 2001; Charlier, 2009).

The helminthiasis causes a gradual deterioration of animal performance and has been known to be major causes of economic losses in livestock in the tropics and Nigeria in particular [8], and have great impact on cattle health and their reproduction capacity(Charlier, 2009).

Therefore, this study was carried out to know the current status of epidemiology of gastrointestinal parasites among bovin slaughtered at Sokoto abattoir.

## **MATERIALS AND METHOD**

### **STUDY AREA**

Sokoto state is located in the extreme northwest of Nigeria, near to the confluence of the sokoto River and the River Rima. The vegetation type is Sudan/Sahel savannah in which rainfall starts late in May/June and lasts till September or early October. Sokoto state abattoir is situated in sokoto north local government area of sokoto state.

### **SAMPLE COLLECTION**

Visits were done to the abattoir on each day of the sample collection during the study period as early as 8:00am when the animals are usually brought to the abattoir. The studied animals Age, Gender, and Breed were identified and labelled. A total of 45 fresh faecal samples (directly from the rectum of slaughtered cattle, one sample per animal) were collected using a pair of hand gloves into a clean labelled sample container. The samples were taken to parasitology laboratory, Usmanu Danfodiyo University Sokoto, for investigation. Each faecal sample was tested for helminth parasites using formal ether concentration technique as suggested by Ballweber(Ballweber, 2001).

A concentrated formaldehyde solution was prepared in ratio of 10:90ml distilled water that 10ml of concentrated formaldehyde solution was added to 90ml of distilled water in measuring cylinder and was shaken vigorously.

### **SAMPLE PREPARATION**

One gram (1.0 g) of stool sample was scraped using spatula deposited in to a beaker and emulsified with 4 ml of 10% formal saline; another 3 ml of 10% formal saline was also added to the mixed solution. The mixture was filtered into a clean beaker and transferred into a test tube for spinning. 3- 4ml of concentrated diethyl ether was added to the solution, covered with foil paper and shaken vigorously for minute. Then the tubes were placed in a centrifuge machine and centrifuged for 15 minutes at 3,500. Using broom stick, the faecal debris from the side of the tube was loosened and the tube inverted to pour off the supernatants. The tube was returned to its original upright position and the fluid from the side of the tube allowed draining to the bottom. The deposit was mixed by tapping the tube with the finger and a drop of the sediment was applied on a microscopic slide; lugo's iodine was used as a stain, the slide was covered with a cover slip and examined under the microscope using x10 first and then x40 objective lens ((Ballweber, 2001; Cheesbrough, 1999).

### **3.5 STATISTICAL ANALYSIS**

The data obtained were subjected to descriptive statistical analysis using percentages (prevalence rates) in the different breed, sex and age. Prevalence of helminthes parasite in relation to sex, breed and age was analysed using Chi-square statistical test, the level of significance was set at  $P < 0.05$ .

## **RESULTS**

The prevalence of gastro-intestinal ova/oocysts identified in this survey indicated an overall prevalence rate of 71.1%. Among which, 51.1% samples were positive for nematodes, 13.3% for cestodes and 6.7% for trematodes (Table-1).

**Table 1:** Prevalence of helminth among studied sample

Helminth	Nematode	Cestode	Trematode	Total Prevalence (%)
No of parasites recovered	23 (51.1)	6 (13.3)	3 (6.7)	(71.1)
Total	23	6	3	32

**Table 2:** Prevalence of gastrointestinal parasites of cattle based on sex

Cattle SEX	Examined	No of infected	X <sup>2</sup> -value	P-value
Male	20	13(65.0)	54.32	0.0001 Female
	25	19 (76.0)		
Overall	45	32 (71.1)		

The prevalence of helminth in relation to gender revealed that 65.0% of the males and 76.0% of the females were infected (table-2).

**Table 3:** Prevalence of gastrointestinal parasites of cattle examined based on their age

Cattle age (In Years)	Examined	No of infected	X <sup>2</sup> -value	P-value
1-2	10	7(70.0)	114.5	0.0001
3-4	28	20 (71.4)		
4-5	7	5 (71.4)		
Overall	45	32 (71.1)		

Prevalence of helminth in relation to age revealed that cattle 3-4 and 4 -5 yrs had higher prevalence of 71.4% followed by those of 1-2 years old with prevalence rate of 70.0%, (Table 3). However, there exist significant differences in the distribution of the cattle by sex, age and breed as (P<0.05) after computing chi-square and analysis of data.

**Table 4:** Prevalence of gastrointestinal parasites of cattle examined based on breed

Cattle Breed	Examined	No of infected	X <sup>2</sup> -value	P value
Red bororo	20	14 (70.0)	53.1	0.0001
Sokoto gudali	25	18 (72.0)		
Overall	45	32 (71.1)		

Based on cattle breed, Sokoto gudali breed had the higher infection rate 72.0% than Red bororo with 70.0% respectively.

**Table 5:** Differential prevalence of gastrointestinal helminth species among studied cattle

Species of Parasites	No. infected (Prevalence%)
<i>Ascaris lumbricoides</i>	10 (31.3)
<i>Bunostomum phlebotomum</i>	8 (25.0)
<i>Moniezia benedeni</i>	6 (18.8)
<i>Strongyloide papillosus</i>	3 (9.4)
<i>Fasciola hepatica</i>	3 (9.4)
<i>Nematodirus spathiger</i>	2 (6.3)
<i>Trichuris ovis</i>	1 (3.1)
Overall	32 (71.1)

Based on species distribution of parasites, a total of 5 nematode species were identified; these were, *Ascaris lumbricoides*, *Bunostomum phlebotomum*, *Strongyloides papillosus*, *Trichuris ovis*, *Nematodirus spathiger*, (table 5); which showed prevalence of *Ascaris lumbricoides* was very high (31.3%) followed by *Bunostomum phlebotomum* (25%), *strongyloides papillosus* (9.4%) and *Nematodirus spathiger* (6.3%) then *Trichuris ovis* with (3.1%).

Under cestode infection, only 1 species ova/oocyst were identified but 6 samples were positive with *Moniezia benedeni* with prevalence rate of 18.8% as shown in table 5. Also under trematode only 1 parasite species was identified but 3 samples were positive for *Fasciola hepatica* with prevalence rate of approximately 9.4%.

## DISCUSSION

The results of this study showed that cattle slaughtered at Sokoto Abattoir are commonly infected with a variety of gastrointestinal parasite species with a high prevalence of 71.1% and generally high egg/oocysts count. This finding agrees with the reports by (Elele *et al.*, 2013) that the prevalence of gastro enteritis of ruminants is usually high especially those kept under traditional methods of husbandry. Precisely, nematode infections were particularly high, as they accounted for 51.1% of the total helminth burden. High nematode infection has huge impact on livestock production since they result in reduced milk, meat, wool, hide products, and stamina of working animals (Nwosu *et al.*, 2007; Ballweber, 2006). Cestode 13.3% and trematode 6.7% infections were lower; however, they are of significant public health importance. The overall prevalence of 71.1% is higher than 50.8% and 61.2% of Edosomwan and Elele *et al.* (Edosomwan *et al.*, 2012), earlier reported in South-eastern and South-southern Nigeria respectively. The differences observed could be due to period or seasons in which the studies were conducted as well as the feeding habit of cattle sampled in various regions.

Furthermore, this finding revealed that *Ascaris lumbricoides* 31.3% were the most prevalent among the helminthes; however, this is at variance than previous reports by (Okoli *et al.*, 2012) who reported trematodes as the most prevalent helminth in studies carried out in India, Ethiopia, and eastern Nigeria respectively. This difference could however be associated with the differences geographical or climatic conditions and ecology since the prevalence of trematode infections is dependent on availability of the intermediate hosts.

Moreover, this study reveals that both the male and female cattle have equal likelihood of being infected with gastrointestinal helminth; though earlier findings of (Elele *et al.*, 2013) indicated that the male cattle

were more likely to be infected with helminth than the female, reason given was that male animals were more aggressive when feeding and thus likely to pick up more ova of helminthes on the pasture. The breed prevalence of 70.0% and 72,0% obtained for Red Bororo and Sokoto Gudali were higher compared to the 62.0% and 62.2% Red Bororo and Sokoto Gudali as earlier reported by (Elele et al.,2013) The differences in the prevalence could be attributed to management system of animals. As most of these parasites are known to adapt well even to harsh conditions; elimination is therefore difficult, which threatens food security in this area.

In conclusion it can be said that gastrointestinal helminth parasites were prevalent among cattle slaughtered at sokoto abattoir, as long as these diseased cattle being slaughtered and consumed, the health of human is at risk.

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