



## Prevalence of Gastro- intestinal Parasites of Sheep slaughtered at Keffi Abattoir, Nasarawa Sate, Nigeria.

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**Abdullahi M. M<sup>1\*</sup>, Okaku, M. S<sup>2</sup>, Tongjura J. D<sup>3</sup> and Sani Z. R<sup>4</sup>**

1. Department of Zoology, Faculty of Natural and Applied Sciences, Nasarawa State, Keffi, Nigeria.

4. Department of Biological Sciences, Federal University Gusau, Nigeria

\* Corresponding author e-mail:mairiga.nasuk.edu.ng@gmail.com

### Abstract

This study investigated the prevalence of gastrointestinal parasites of sheep slaughtered in Keffi main abattoir conducted from June to July 2019. One hundred and fifty (150) fecal samples comprising of 60 Yankasa, 18 West African dwarf (WAD), 33 Balami and 39 Uda breed were collected from the abattoir. The samples were taken to the Laboratory to examine the intestinal helminthes eggs and protozoan oocysts using sodium chloride floatation and sedimentation techniques. Out of 150 samples examined, 84(56.0%) had gastrointestinal parasites. The Yankasa breed had the highest prevalence of 32(38.1%), while the WAD breed had the lowest prevalence of 12(14.3%). Female had the highest prevalence of 54(64.3) than male which have 30(35.7%). Young sheep had the highest prevalence of 52(61.9%) than adults which had prevalence of 32(38.1%) respectively. The gastrointestinal parasites encountered were *Strongyles edentates sp.*, *Coccidian spp.*, *Haemonchus spp.*, *Trichostrongyles spp* and *Fasciola spp.* *Trichostrongyles spp.*, had the highest prevalence of 23(27.3%) while coccidian had the lowest prevalence of 4(4.7%). Chi-square statistical analysis revealed no significant difference ( $p>0.05$ ) among the breed, age, and sex of the sheep. The result of the study shows that high prevalence of gastrointestinal parasites among the sheep breed, therefore with good management practice, prompt diagnosis, treatment with antihelminthes drugs and mass education of farmers on the importance of hygiene and sanitation will reduce the risk of the disease and increase productivity.

**Key word:** gastrointestinal parasites, abattoir, *Strongyles edentates sp*, intestinal helminth



## Introduction

Sheep are important live stocks in developing countries because they provide source of protein and other products like fibers and skins (Hassan *et al.*, 2013a). Nigeria has basically four definitive breeds of sheep which include the West African Dwarf (WAD), the Uda(UD), Balami(BAL) and the Yankasa (YANK) (Olufunmilayo *et al.*, 2000). The WAD sheep is a small breed but not dwarf in the genetic sense. True dwarf are physically weak and poor, whereas the sheep of West Africa have notable physical and sexual vigor and robustness that enables them to withstand the stress of the climate, diseases and irregular feeding (Charray and Levif, 1992).

Gastrointestinal parasites are considered the major diseases causing organisms of small ruminant (sheep) in Nigeria and are of the major importance in many agro-ecological zones as well as a primary factor in the reduction of production and productivity of livestock (Hassan *et al.*, 2013b). The effects of gastro intestinal nematode pose a serious limitation to small ruminants due to associated morbidity, mortality and cost of treatment and control measures (Nwosu *et al.* 2007). The major factor that influences gastrointestinal parasites infestation in small ruminants, especially sheep is exposure to fecal contamination of grazing land (Pathak, 2011). Pathak and Pal (2008) reported that poorly nourished animals maintained on poor quality roughage which are deficient in protein, energy, minerals and vitamins are also susceptible to parasitic infestation. Gastrointestinal parasites have become more difficult to manage in small ruminants because of the parasite increasing resistance to several antihelminthics (Magona *et al.*, 2011). Parasite problems negativity impact the animal's health, reduce productivity and increase treatment costs. The losses caused by parasites can be distinguished into direct and indirect losses (Lüscher *et al.*, 2005). Direct losses include those due to acute illness and death and damage condemnation of organs and cost of dead animal inspection, while indirect losses include the decreases in productive potential such as decreased growth rate, weight loss in young growing animals and late maturity of slaughter stock (Blackburn *et al.*, 2011).

Increasing recognition of the burden of human fascioliasis has occurred and it is

now recognized on both public health and transmission through infected fomites or ingestion of infected milk and meat. As an emerging zoonosis by the World Health Organization. The zoonotic disease has a serious impact Livestock get exposed to these pathogenic parasitic organisms very early under natural grazing conditions and the effects of infections are influenced by the environment, nutrition, climate and management ad practices (Blackburn *et al.*, 2011). In keffi abbatoir there is need to know the status of endo parasite infestation in sheep slaughtered, as most of them are not knowledgeable about parasitic infections, this bring about the need to study the endo-parasites infestation of sheep slaughtered in Keffi abattoir, Nasarawa state, Nigeria, for the first time.

## Materials and methods

### Study Area

This study was conducted in Keffi Local Government Area of Nasarawa State, Nigeria. Keffi is situated on latitude 8°50', 55<sup>11</sup> N and longitude 7° 52' 23<sup>11</sup> E. The area falls within the North central region of Nigeria, which is noted for great climatic and seasonal variations. Keffi has an estimated population of 92,664 people (NPC, 2006).

### Samples collection and processing

About 5g of fresh fecal samples were collected directly from the rectum of individual sheep through rectal stimulation by fingers using hand gloves between the hours of 7-8am weekly and transferred in to universal clean labeled bottles noting the sex and age (Cheesbrough, 2005). The samples were taken to the Zoology Laboratory, Faculty of Natural and Applied Sciences, Nasarawa State University, Keffi for parasitological examinations. The identification of the gastrointestinal nematode species was made based on the morphology (Van Wyket *et al.*, 2004, Van Wyk and Mayhew 2013).

### Parasitological examinations

Fecal samples were examined by flotation techniques for the presence of gastrointestinal parasites ((Oyerinde, 1999; Cheesbrough, 2005). About 2-3g of the fecal samples were taken in to a mortar, grounded and

mixed thoroughly in a saturated sodium chloride solution and filtered through a sieve with minute holes into a beaker to remove the large particles. The solution obtained was poured into a small bottle until it was completely filled to make a convex meniscus at the top and covered with a clean grease-free cover slide. After 10 minutes, the cover slide was removed and mounted on a clean slide and examined under the microscope using objective of 10× 20 magnification to determine the presence of eggs (ova).

### Sedimentation Method

About 2-3g of the fecal matter was mixed with water and put in tubes. The tubes were centrifuged for three times for about 5 minutes and each supernatant fluid was removed and replaced each time. The deposits were taken and placed on slides with covers slip and examined microscope at high power 10 × 40 magnification for detection of morphological

structure of the ova of the helminthes seen.

### Statistical analysis

The data generated were subjected to descriptive statistical analysis using percentages and charts (SPSS version 20.0) and Chi – square analysis was used in determining the prevalence rates in the gender, age and the different types of small ruminants studied.  $p < 0.05$  was considered indicative of a statistically significant difference.

### Results

A total of 150 slaughtered sheep were examined for gastrointestinal parasites on the basis of age groups as young (1-10 months) and adult (above 10 months), sexes (male and female), sheep breed as well as infection among the sheep. The result indicated that only 84 (56.0%) were infected (Table 1).

**Table 1:** Prevalence of intestinal parasite in relation to age and infection percentage.

Sheep breed	Number	Adult	Young	No. examined	No. infected	%Prevalence
Yankasa	32	12(37.5%)	19(36.5%)	60	32	38.1
WAD	12	4(12.5%)	8(15.4%)	18	12	14.3
Balami	18	7(21.9%)	11(21.2%)	33	18	21.4
Uda	22	9(28.1%)	14(26.9%)	39	22	26.2
<b>Total</b>	<b>84</b>	<b>32(38.1%)</b>	<b>52(61.9%)</b>	<b>150</b>	<b>84</b>	<b>56.0</b>

No significant difference. (P value = 0.278 > 0.05)

Table 1: the result showed that Yankasa has the highest percentage prevalence (38.1) while Wad had the list with (14.3%). No statistical difference in age variation. The overall prevalence of infection based on age groups (young and adult) higher

infection rate were observed in young ones than in adult. No significance difference was observed among the age groups, (young and adult as (P value = 0.174 > 0.005)

**Table 2:** Prevalence of intestinal parasite in relation to sheep breed and sex

Parasites	Yankasa	WAD	Balami	Uda	Female	Male
<i>Strongyloites spp</i>	5(15.6%)	2(16.7%)	3(16.7%)	3(13.6%)	8(14.8%)	5(16.7%)
<i>Coccidian spp</i>	2(6.3%)	0(0.0%)	1(5.6%)	1(4.5%)	3(5.6%)	1(3.3%)
<i>Trichostrongylus spp</i>	9(28.1%)	3(25.0%)	5(27.7%)	6(27.3)	14(25.9%)	9(30.0%)
<i>F. gigantica</i>	2(6.3%)	1(8.3%)	1(5.6%)	1(4.5%)	3(5.6%)	2(6.6%)
<i>Haemonchus spp</i>	5(15.6%)	3(25.0%)	3(16.7%)	4(18.2%)	10(18.5%)	5(16.7%)
<i>Oesophagostomus spp</i>	5(15.6%)	2(16.7%)	3(16.7%)	4(18.2%)	10(18.5%)	4(13.3%)
<i>F. hepatica</i>	4(12.5%)	1(8.3%)	2(11.1%)	3(13.6%)	6(11.1%)	4(13.3%)
<b>Total</b>	<b>32(38.1%)</b>	<b>12(14.3%)</b>	<b>18(21.4%)</b>	<b>22(26.2%)</b>	<b>54(64.3%)</b>	<b>30(35.7%)</b>

Table 2: Showed the prevalence of intestinal parasites of sheep among the breeds and sexes with no significant differences in infection rate in both breed and sexes of the sheep ((P value = 0.828 > 0.005 and P value = 9.689 > 0.005) respectively.

## Discussion

The result of the parasitological examination of 150 faecal samples among the sheep studied showed that 84(56.0%) were infected with different species of gastrointestinal parasites such as *Stongyloies spp*, *Coccidia spp*, *Fasciola spp*, *Haemonchus spp* and *Oesophagostomus spp*. The prevalence of the gastrointestinal parasites was high in Yankasa breed (38.1%) than WAD (14.3%), Uda (26.2%), and Balami (21.4%). This might be probably due to the fact that sheep do not normally developed a protective immunity against exposure to an infectious agent (Black burn *et al.*, 2011). The variation in the incidence may be due to different management systems especially those kept under traditional methods of husbandry compounded by additional stress of mal nutrition (Pal and Qayyum, 1993). Infection by these parasites can result in severe effects such as reduced fertility, decreased work capacity, reduction of feed intake and lower weight gain, treatment costs and mortality in heavily parasitized animals (Waller, 2006).

The Various species of endo-parasites encountered in the present study have also been reported previously by (Ayaz *et al.*, 2013), who observed that the higher prevalence of *Trichostrongylus spp* and *Haemonchus spp* in Yankasa breed may be attributed to a variety of factors like grazing habit and relatively less environmental cleanliness compared to other (Javed *et al.*, 1992). The prevalence rate of the *Trichostrongylus spp* reported in this study is in agreement with the result of Fitscher *et al.*(1993), who observed that *Strongyles* and *Coccidian* species are the most common parasites of sheep. In respect to sex specific rate of infection, females showed higher infection rates than males under similar management system. This finding supports the general understanding of helminth infections that female animals are more susceptible to helminthosis (Valcarel and Garcia, 1999). It was also observed that sex is a determinant factor influencing prevalence of parasitism (Adedokum *et al.*, 2008) and females are more prone to parasitism during pregnancy and per parturient period due to stress and decreased immune status (Urguhart *et al.*, 1996).

The results of this study also showed that higher prevalence rate of gastrointestinal

parasites was found in young sheep than in the adults. This is similar to the finding of Yohana *et al.* (2012) and Bashir *et al.* (2012). Although all the two age groups were infected but was higher in young animals screened which is in line with the findings of higher prevalence in young animals in Ethiopia (Tefera *et al.*, 2011) and elsewhere (Ibrahim *et al.*, 2008), this might be due to the fact, that younger sheep lack strong immunity compared to the adults. Therefore, infection by gastrointestinal parasites in ruminants including sheep can result in severe economic losses in a variety of ways. They cause loses through infertility, reduced work capacity, a reduction in food intake and lower weight gains, treatment costs, and mortality in heavily parasitized animals (Waller, 2006).

## Conclusion

The result of this finding will be of great assistance in understanding the epidemiology of the endo parasites infection in keffi abattoir. The findings of this study revealed that gastrointestinal parasites encountered in sheep breeds was 56.0%.The dominant parasites encountered were *Ttrongyloides spp*, *Coccidian spp*, *Trichostrongylus spp*, *Haemanchus spp*, *Fasciola spp*, and *Oesophagustomus spp*. These parasites affected all the animals regardless of ages and sexes in the area.

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