



## PREVALENCE OF GASTRO-INTESTINAL PARASITES OF FREE-RANGE AND SLAUGHTERED CATTLE IN AKOKO SOUTH-WEST, ONDO STATE, NIGERIA.

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### ABSTRACT

*This study was conducted to determine the gastrointestinal parasites of cattle using the stool of 150 cattle gotten from free-range and abattoirs at different areas of Akoko South-West of Ondo State. Fresh faecal samples of cattle were collected directly from the rectum and a few from the ground. These faecal samples were processed through Direct smear, Sedimentation and Flootation techniques to identify gastrointestinal parasites species. Microscopic examination revealed that about 120 cattle (80%) were infected with gastrointestinal parasites. The study revealed that a total of 70 Cattle (46.67%) had single infection while 50 (33.33%) of the infected cattle had mixed infections. The prevalence rate of parasitic infection was higher in female (63.3%) than in male (16.7%) cattle. Out of all the parasites observed, trematode parasites had 18.18% prevalence in female cattle while protozoa had higher prevalence in female (83.36%) than in male (62.5%) cattle. Also nematode parasites were more prevalent in female (83.36%) than in male (62.5%) cattle. Nematode parasites had the highest prevalence rate among the identified parasites. This approach will initiate proper control strategies to minimize parasitic infection in cattle.*

**Key words:** Trematodes, Nematodes, Protozoa, Faecal, Cattle.

### INTRODUCTION

Cattle have a wide distribution and forms an integral part of the livestock industry in Nigeria. It is widely distributed and reared in most part of the country, mainly for beef and in some cases milk production (Okanta, 1992). This is because it serves as the major animal protein source consumed by the people. The extensive system being the main management practice is based mainly on extensive grazing by most smallholder herders. The practice has been for cattle owners to graze their animals on fields that they personally have not planted which are often not under any specific ownership or control. The commercial and public institution farms, practice varying levels of management systems that are better than the extensive system (Oppong-Anane, 2010). In

this better level of practice, cattle may graze on sown pastures as well as natural pastures. This practice is widely known as Cattle Ranching. The free range rearing system provides an ideal condition that encourages the settling of gastrointestinal parasites infection in Nigeria. Periods of greatest infection risk occur when ruminant are allowed for open grazing which is practiced by most farmers and herders. All these systems however expose the animals to several diseases including parasitic infections.

Parasitic diseases constitute a major impediment to livestock production in Sub-Saharan Africa; owing to the direct and indirect losses they cause (Harper and Penzhorn, 1999; Kanyari, et al., 2010). Parasite infestation is one of the most

common problem affecting cattle of all ages and breeds (Rafiullah, et al., 2011; Awraris et al., 2012). Endoparasites interfere with nutrition, growth and the production of cattle (Pilarczyk, et al., 2009; Awraris, et al., 2012; Khan, et al., 2013). They pose considerable economic losses to the livestock industry as they adversely affect the health status of animals. Among endoparasites, only a few species accounts for the major problems in grazing livestock (Rafiullah, et al., 2011).

The objective of this study therefore, is to determine the prevalence of gastrointestinal parasites affecting free-range and slaughtered cattle in Akoko South West of Ondo State, Nigeria. The result is intended to provide a guide in planning the control measures and treatment of the common gastrointestinal parasitic diseases affecting cattle production in this region

**MATERIALS AND METHOD**

A total of 150 cattle, were examined for endoparasitism. Faecal samples from all the selected animals were collected aseptically and on daily basis from November, 2014 to January, 2015. Samples were obtained

directly from animal rectum using the method of Kanyari, et al. (2010) and a few from the ground when fresh and clean. Each sample was collected in the early hours of the morning because that was the time when cattle were being slaughtered in abattoirs. Faecal samples were placed into separate vial containing 10% formalin.. The vials were labeled with specific number, gender of cattle, age, location collected and date of collection. They were placed into polythene bags and transported to the laboratory for examination. Faecal samples were processed and examined in the laboratory using the Direct Faecal smear method, Formol Ether concentration method (Sedimentation technique) and Formol Detergent concentration method (karki, 2008). The parasites were identified under a microscope according to their morphological characteristics.

**Statistical Analysis**

The rate of infection among the animals was derived using frequency distribution of Microsoft Excel (Descriptive Analysis) and expressed as percentage of total samples examined.

**Results and Discussions**

Results of the present investigations are presented in Tables 1-4 below. A bar chart showing the overall prevalence of gastrointestinal parasites in the cattle is also given.

**Table 1: Distribution and Type of Gastro -Intestinal Parasitic Infection in Relation to Sex.**

Sex	No of sample	% infected	Single infection%	Mixed infection %
Male	40	25 (16.7)	15 (10)	10 (6.7)
Female	110	95 (63.3)	55 (36.66)	40 (26.6)
Total	150	120 (80)	70 (46.67)	50 (33.33)

**Table 2: Distribution of Trematode Parasites in Both Sexes of Cattle from Abattoir (Slaughtered) and Free-Range.**

Age	Fasciola spp				Schistosoma spp			
	Male		Female		Male		Female	
	Total	+ve	Total	+ve	Total	+ve	Total	+ve
0-2	15	0	45	0	15	0	45	0
2½-4	10	0	50	10	10	0	50	10
4½-6	10	0	5	0	10	0	5	0
6	5	0	10	0	5	0	10	0
Total	40	0	110	10	40	0	110	10
% infected		0		9.09		0		9.09

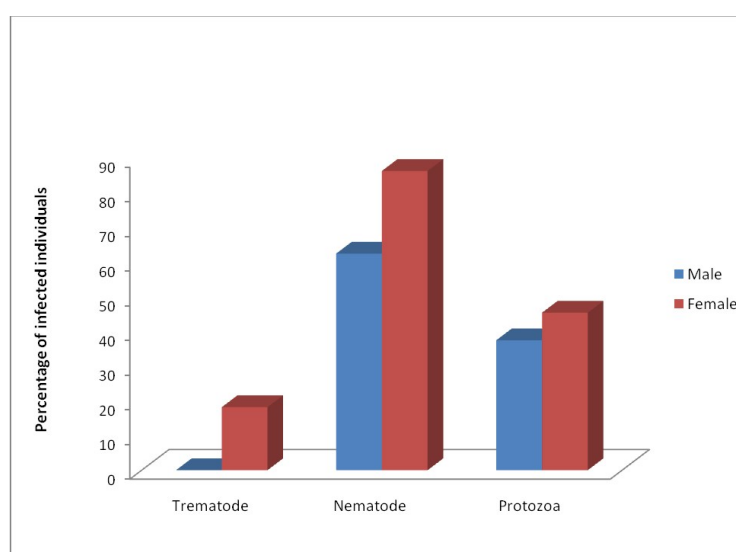
**Prevalence of Gastro-intestinal Parasites of Free-range and Slaughtered Cattle in Akoko South-West, Ondo State, Nigeria.**

**Table 3: Distribution of Protozoa Parasites in Both Sexes of Cattle from Abattoir (Slaughtered) and Free-Range.**

Age	Balantidium coli				Entamoeba spp.			
	Total	Male +ve	Female Total	Female +ve	Total	Male +ve	Female Total	Female +ve
0-2	15	0	45	5	15	5	45	30
2½-4	10	5	50	20	10	5	50	35
4½-6	10	0	5	0	10	5	5	0
≧6	5	0	10	0	5	5	10	5
Total	40	5	110	25	40	20	110	70
% infected		12.5		22.73		50		63.64

**Table 4: Distribution of Nematode Parasites in Both Sexes of Cattle from Abattoir (Slaughtered) and Free-Range.**

S/ No.	Age	Ascaris spp.		Strongyloides spp.		Haemonchus spp.		Ostertagia ostertagi		Toxocara vitulorum	
		Male Total	Female Total	Male Total	Female Total	Male Total	Female Total	Male Total	Female Total	Male Total	Female Total
1.	0-2	15	45	15	45	15	45	0	15	15	45
2.	2½-4	10	50	10	50	10	50	0	10	10	50
3.	4½-6	10	5	10	5	10	5	0	10	10	5
4.	≧6	5	10	5	10	5	10	0	5	5	10
Total		40	110	40	110	40	110	0	40	40	110
% infected		12.5	18.18	0	9.09	12.5	0	0	4.55	12.5	13.64



**Figure 1: Total Prevalence of Parasites in both Male and Female Cattle**

## DISCUSSION

The study showed that, cattle from the study area were infected with a wide variety of gastrointestinal parasites including nematodes, trematodes and protozoa. The overall prevalence (80%) was higher than the prevalence (53.8% and 50.2%) found in similar studies from Nigeria and Ethiopia, respectively [Regassa, et al., 2006; Tshering and Dorji, 2013) but lower than the study carried out by Squire et al. (2013) in Ghana who reported 95.5% prevalence. Majority of the animals in this study had single parasitic infections. This was contrary to the findings of Squire et al. (2013) and Swai et al. (2006) who reported that most of the sampled cattle had mixed parasitic infections. The high prevalence of these parasites in cattle may be due to their free-range grazing practice which increased their chances of picking up the cyst, ova, larvae or the intermediate host of these gastrointestinal helminth parasites that were attached to the pastures (Javed, et al., 1993; Edosomwan and Shoyemi, 2012). Sex-wise prevalence of gastrointestinal parasites indicated that female cattle (63.3 %) were more affected than male cattle (16.7 %), a finding contrary to Bilal and Ahmad (2009) who reported that male cattle were more affected than female cattle.

The study revealed that the Trematodes, *Fasciola* spp. and *Schistosoma* spp. had an equal distribution rate in the cattle. They both showed 0% prevalence among the male and 9.09% prevalence among the females of all ages. This agrees with the findings of Squire et al. (2013) who reported that female cattle were more susceptible to trematode infestation than male cattle. This was also similar to Sardar et al. (2006) who reported a high distribution rate of trematode among female cattle observed. Considering the age groups, female cattle between the age range of 2<sup>1</sup>/<sub>2</sub> -4years old were the only ones infected with trematodes.

The identified protozoan parasites in this study (*Balantidium coli* and *Entamoeba*

spp.) were more prevalent among the female (22.73%) than male cattle (12.5%). The incidence of *Balantidium coli* (35.23%) in both male and female cattle was highest for all categorized cattle. This study agrees with the work of Tshering and Dorji (2013) who observed that *Balantidium coli* was one of the most common organism in faecal samples of free range cattle of all age groups. The prevalence of *Balantidium coli* (35.23%) could be due to presence of pig in the grazing areas. The prevalence of *Entamoeba* spp. was quite high in both male (50%) and female (63.64%). This result disagrees with the findings of Rafiullah et al. (2011) who observed a moderate prevalence of *Entamoeba* spp. among the cattle. It is important to note that protozoan parasite prevalence had the highest toll in cattle investigated than other parasites.

The study also showed a high prevalence of nematode parasite. Five different nematode parasites, *Ascaris* spp., *Toxocara vitulorum*, *Haemonchus* spp., *Strongyloide* spp., *Ostertagia ostertagi* in that order of prevalence were observed. The nematodes identified were similar to the findings of Javed et al. (1993), Rehman et al. (2009) and Adedipe et al. (2014) in Pakistan, India and Southwestern Nigeria respectively. The prevalence of *Ascaris* spp., *Toxocara vitulorum* and *Haemonchus* spp. were high when compared to other nematode parasites found among the male cattle. This agrees with Rafiullah et al. (2011) who reported the presence of *Haemonchus* spp. and *Ostertagia ostertagi* among male cattle. This is also similar to the findings of Adedipe et al. (2014) who reported that nematode infections were particularly high accounting for 71.7% of the total helminth burden in Ibadan, Southwestern Nigeria Among female cattle investigated, *Ascaris* spp. had the highest prevalence rate (18.18%). This is followed by *Toxocara vitulorum* (13.64%) and *Strongyloide* spp. (9.09%).

Female cattle showed a higher prevalence rate for most of the parasites observed except

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**Haemonchus spp.** which was higher in males. The reason for this trend is however not clear, although, other studies recorded no association between sex and parasitic prevalence (Fikru, et al., 2006; Awraris, et al., 2012). The overall high prevalence of parasites in the cattle examined may be due to the relatively high humid condition and moisture content of the area. This cold harmattan period favor the growth and development of larvae on pasture resulting in increased contact between the host and parasites. This agrees with Bhattacharya and Ahmad (2005) who recorded higher prevalence of parasitic infection due to the rainy season that resulted in high humidity. The prevalence of gastrointestinal parasites depends on the type of pasture, environmental conditions and age of animal (Bilal and Ahmad, 2009; Biu, et al., 2009). However, many eggs and intermediate

stages of gastrointestinal parasites such as **Fasciola** may survive in unfavourable condition for several months. The other reason could be because of contamination of pasture with faeces from infected dogs and pigs in grazing areas (Tandon, et al., 2005).

## **CONCLUSION**

Gastrointestinal parasites were highly prevalent in cattle from the study area. The study showed a wide variety of parasites with some of the animals having multiple parasitic infections. Therefore, farmers should be educated about prevention of parasitic infestations. The animals should be de-wormed at regular intervals with an appropriate antihelminthic drug. Proper husbandry practices should be exercised to improve overall hygiene of the grazing

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