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## Intestinal Helminths of Cattle Slaughtered for sale within Gboko Metropolis, Benue State, Nigeria.

**\*\*Zawua, T.P.<sup>1</sup>, Amali, O.<sup>1</sup>, Amuta, E.U.<sup>1</sup>, Sar, T.T.<sup>1</sup> and Anum, O.J.<sup>2</sup>**

Department of Biological Sciences, University of Agriculture Makurdi<sup>1</sup>, Department of Sociology, Benue State University Makurdi<sup>2</sup>.

Corresponding Author: zawua2014@gmail.com /+234-703-378-1296

### Abstract:

A total of 405 faecal samples were collected at three locations: Gboko Main Market Abattoir, Yandev and Mkar to determine the prevalence of intestinal helminthes of cattle slaughtered for sale within Gboko Metropolis of Benue State, Nigeria, between June 2012 and July 2013. Floatation and Sedimentation techniques were used in the faecal examination. Positive samples were cultured for larvae identification. An overall prevalence of 240 (59.3%) was obtained. 9 (75%) nematodes, 2 (16.7%) trematodes and 1 (8.3%) cestode were identified, which included *Haemonchuse* 41 (17.1%), *Fasciola* 37 (15.4%), *Trichostrongylus* 27 (11.3%), *Paramphistomum* 25 (10.4%), *Toxocara* 24 (10%), *Oesophagostomum* 23 (9.6%), *Bunostomum* 22 (9.2%), *Co-operia* 14 (5.9%), *Chabertia* 12 (5%), *Strongyloides* 4 (1.7%), *Moniezia* 9 (3.8%), and *Dictyocaulus* 2 (0.9%). There was no significant difference ( $p>0.05$ ) in rates of infection between the three study locations. However, statistical analysis showed significant differences in levels of infection by gender and age of cattle ( $p<0.05$ ). Poly-parasitism was common (67.5%) while mono-parasitism was rare (32.5%) and not significant ( $p>0.05$ ). Presentation of cattle to veterinarians for routine treatment and regular cleaning of pens is recommended in order to improve the quality and quantity of beef produce in Gboko.

**Keywords:** cattle, faeces, helminthes, slaughtered, Gboko, Nigeria.

### Introduction

Cattle are a source of protein, providing daily meat and dairy products. They are also used in special ceremonies such as wedding and burials, their dung are a source of manure for agricultural production (Nwosu et al., 2007). Parasitic diseases coupled with inadequate management hampers the

productive husbandry of animals all over the World including Nigeria (Nwosu et al., 2007; Nawathe et al., 1985). There is tremendous demand for animal protein in Nigeria due to the increasing human population. Parasitism in cattle brings about low quality and quantity of beef produce. It also causes economic loses, poor market value, hyper acuteness, death, premature slaughter and rejection of some parts at meat inspection. Indirect losses include the reduction in productive potentials such as decreased growth rate, weight loss, diarrhea, anorexia, and sometimes anaemia (Soulsby, 1986; Nahe-Tora et al., 2003).

Gastrointestinal helminthes are generally incriminated in cattle loss in the cattle industry (Aliyu and Kyari, 2005; James-Rugu, 2006; Useh and Esievo, 2006; Useh et al., 2006) all reported widespread distribution and prevalence of intestinal helminthes in cattle. This study investigated the prevalence of gastro-intestinal helminthes among cattle slaughtered for sale within Gboko Metropolis. The epidemiological significance was assessed to ascertain the effects of the parasites on the cattle, and the zoonotic and economic impact of the parasites to farmers and the public.

### Materials And Methods

#### Study Area

Gboko is the second most populous Local Government after Makurdi, the capital of the Benue State. It lies in the Guinea Savanna belt and covers an area of 12 km<sup>2</sup>. It is fast becoming a metropolitan centre. This study was conducted between June 2014 and July 2015. Three markets where ruminants' animals were slaughtered for sale within Gboko were chosen as sample sites. The three sites were

Gboko main market abattoir, Yandev market and Mkar market.

### **Sample Collection**

Four hundred and five (405) faecal samples were collected (200 from Gboko Main Market Abattoir), (100 from Yandev Market) and (105 from Mkar Market) per rectum with new unused gloves used for each animal. Collected samples were appropriately labeled and transported in cold boxes. The faecal materials were transported in ice packs to the Parasitological Laboratory of the College of Veterinary Medicine of the University of Agriculture, Makurdi, where they were examined the same day or stored in a refrigerator (4°C) for a maximum of 24 hours.

### **Parasitological Examination of Faecal Samples**

Floation and Sedimentation techniques were used as described in (MAFF, 2016; Omudu, *et al.*, 2006; Urquhart *et al.*, 1996). Positive samples were cultured for worm or infective larva. Floation method was used for identification of nematodes and cestodes; about 2grams of faecal sample was taken in a suitable beaker and 100ml of saturated Sodium Chloride (NaCl<sub>2</sub>) was added. An applicator stick was used to emulsify the sample in the beaker. The emulsion was filtered into another beaker using a tea strainer to remove coarse faecal materials. More of the saturated NaCl<sub>2</sub> was added to fill the test tube to the brim. A cover slip was gently placed on the preparation and left to stand for 10 -15minutes. The cover slip was then gently removed vertically, and placed on a clean slide and examined under a light microscope for identification of helminthes ova and adult parasites.

Sedimentation was done for the identification of ova of trematodes and worm parasites: 3g of faeces in a

beaker were mixed thoroughly with distilled water using a stirring rod. The faecal suspension was filtered through a strainer. The filtered solution was centrifuged for 5 minutes at 1500 rpm. The supernatant was then poured off leaving behind the sediments. Subsequently, 1 to 2 drops of the sediments was placed on a glass slide and viewed under a light microscope for identification of ova of trematodes and adult parasites respectively. Parasites were identified using the keys provided in (Thienpont *et al.*, 2005; Shah-Fisher and Ralphy-Say, 1989).

### **Results**

The overall intestinal prevalence was 240 (59.3%). The prevalence of intestinal parasites in Yandev Market was 68 (68 %) Mkar Market 60 (57.1%) and Gboko Main Market Abattoir 112 (56.0%). Though, there was no significant difference between the 3 samples sites ( $X^2=35.3$ ,  $df= 26$ ,  $p>0.05$ ). *Haemonchus* spp, *Fasciola* spp and *Trichostrongylus* spp were the dominant helminths parasites recovered from the faeces (Table 1). Female cattle were more infected 175 (62.5%) compared to the males 65 (52%) (Table 2). There was a statistically significant difference between male and female infection ( $X^2 =18.85$ ,  $df= 2$ ,  $p<0.05$ ). Younger cattle had a higher prevalence 66 (62.85%) compared to older cattle 174 (58%) (Table 2). The parasitic prevalence in younger and older cattle was significant ( $X^2=6.35$ ,  $df= 2$ ,  $p<0.05$ ). Table 3 shows single and multiple intestinal parasitisms as observed in the study. Intestinal poly-parasitism was higher 162 (67.5%) as against single parasitism 78 (32.5%). However, chi-square analysis showed no significant difference ( $X^2 =4.13$ ,  $df= 2$ ,  $p>0.05$ ).

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**Table 1: Prevalence of Intestinal Parasites in Cattle within the Three Study Sites**

Parasites	Prevalence in the various Markets			Total
	Gboko Main (200) N(%)	Yandev (100) N(%)	Mkar (105) N(%)	
<i>Haemonchus</i>	21 (18.8)	11 (16.2)	9 (15)	41(17.1)
<i>Trichostrongylus</i>	12 (10.7)	9 (13.2)	5 (8.3)	27 (11.25)
<i>Strongyloides</i>	3 (2.7)	00 (00)	1 (1.7)	4 (1.67)
<i>Toxocara</i>	11 (9.8)	2 (2.9)	12 (20)	24 (10)
<i>Bunostomum</i>	10 (8.9)	7 (10.3)	5 (8.3)	22 (9.17)
<i>Chabertia</i>	5 (4.5)	4 (5.9)	3 (5)	12 (5)
<i>Oesophagostomum</i>	8 (7.1)	8 (11.8)	7 (11.7)	23 (9.58)
<i>Fasciola</i>	17 (15.2)	11 (16.2)	9 (15)	37 (15.41)
<i>Paramphistomum</i>	11 (9.8)	8 (11.8)	6 (10)	25 (10.41)
<i>Co-operia</i>	7 (6.3)	4 (5.9)	3 (5)	14 (5.85)
<i>Dictyocaulus</i>	2 (1.8)	0(0)	0 (0)	2 (0.83)
<i>Moniezia</i>	5 (4.5)	4 (5.9)	0 (0)	9 (3.75)
<b>Total</b>	112 (56.0)	68 (68.0)	60(57.1)	240 (59.3)

**Legend**

N=Number

% =Percentage

 $(X^2 = 35.3, df = 26, p > 0.05)$ **Table 2: Gender and Age Distribution of Intestinal Parasites of Cattle**

Parameter	N	Prevalence in the various Markets			Total N(%)
		Gboko Main (200) N	Yandev (100) N	Mkar (105) N	
<b>Gender</b>					
Male	125	19	28	18	65(52.00)
Female	280	93	40	42	175(62.5)
<b>Age (Years)</b>					
Younger	105	21	24	21	66(62.85)
Older	300	88	44	42	174(58)

**Legend**

N=Number

Gender ( $X^2 = 18.85, df = 2, p < 0.05$ )Age ( $X^2 = 6.35, df = 2, p < 0.05$ )

**Table 3: Single and Multiple Intestinal Parasitism Observed**

Parasitism Among Cattle	Number of cattle infected in the various Markets			
	Gboko (N)	Yandev (N)	Mkar (N)	Overall infection N(%)
Single parasitism	38	16	24	78 (32.5)
Polyparasitism	74	52	36	162 (67.5)
<b>Total</b>	<b>112</b>	<b>68</b>	<b>60</b>	<b>240 (100)</b>

**Legend**

N=Number

%=Percentage

( $X^2 = 4.13$ ,  $df = 2$ ,  $p > 0.05$ )

**Discussion**

The result of the study clearly indicate a high prevalence rate of gastrointestinal helminthes among the cattle slaughtered in the three selected sites in Gboko , Benue State, Nigeria. The study revealed that 59.3% of the sampled cattle were infected with various species of helminthe parasites. Our finding is consistent with previous report in other parts of Nigeria and elsewhere (Adejinmi and Harrisson, 2007; Kaufman and Pfister, 2009). The predominant parasitic helminthes encountered (*Haemonchus*, *Fasciola*, *Trichostrongylus* and *Paramphistomum*) seem to be widespread globally as these featured consistently in other studies (Mhoma, Ehsan and Kagira, 2010; Dreyer et al., 2009; Kaewthamsorn and Wongsamee, 2006; Sardar et al., 2006; Gilles et al., 1991b). These parasites are believed to be the leading cause of diarrhea, emaciation, weakness, ocular and nasal discharges, thereby reducing beef quality and profitability in cattle production. The high level of parasites infection observed in this study could probably be as a result of high level ticks infestation, location of farms and poor management practices including poor feeding, poor or unhygienic environment, presence and control of tsetse fly , age and haemoparasitic profiles of the study animals, malnutrition, breed, health status and physiological factors of pregnancy and exposure to parasites. The effects of these helminthes could be clinical or sub-clinical. However, sub-clinical infection may be very important economically leading to retarded growth, reduce productivity (milk production, weight gain, altered carcass composition and conception rate) and increase susceptibility to other infections.

The area of study shows how vulnerable workers in the abattoir and people who consume the intestinal parts of the animals are to infection especially to *Fasciola* which is zoonotic and was observed in the course of the study. Not routinely presenting cattle for treatment and not separating unhealthy animals from healthy ones as practiced in Gboko and

elsewhere in the world is epidemiologically significant. It was observed that the present of nematodes was associated with haemoparasitic pathogens. The high level of trematodes (*Fasciola* and *Paramphistomum*) infection in this study could probably be as a result of high level of ticks infestation and the suboptimal management system existent in the area compared best practices that exist in other part of the world (Swai et al., 2000).

In this present study, we observed that female cattle were more infected compared to the males. Similarly, younger cattle had a higher prevalence compared to older cattle. This finding is consistent with previous report (Biu et al., 2009).

**Conclusion**

Various degrees of gastrointestinal parasites have been found in Cattle slaughtered in Benue State, Nigeria. There is need to routinely monitor and effectively manage the prevalence rate of helminthiasis among livestock in the area. Regular control measures should be practiced and farmers should be educated on the proper use of antihelminthics Epidemiological facts suggest that high standard of sanitation in modern animal husbandry will prevent exposure of livestock to helminthiasis resulting from grazing in deteriorated and environmentally polluted range lands.

**Recommendations**

We recommend that herdsmen in the area should be properly trained on the best animal husbandry practices which should focus on sanitation of pens and routine treatment of cattle. There is need for a comprehensive approach to be adopted to ensure that an inclusive meat inspection in the abattoirs should be carried out before distribution to the public for consumption The general public should be enlightened on proper cooking of animal parts especially the intestine. Herdsmen should present their cattle to veterinarians for routine treatment and

the use of antihelminthics such as Albendazole, Ivermectin and other drugs of choice are recommended.

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