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OCCURRENCE OF GASTROINTESTINAL PARASITE IN CATTLE SLAUGHTERED AT THREE DIFFERENT ABATTOIR IN ENUGU METROPOLIS.

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ABSTRACT
Gastrointestinal parasites play an important role in cattle farming in Nigeria, majority of parasite infection cause weight loss and decreases in appetite, productivity, milk production and farmers' economic income. This study assessed the prevalence of gastrointestinal parasites in cattle presented for slaughter in three different abattoirs in Enugu metropolis. Faeces were randomly collected from 285 cattle in New artisan, Old artisan and New Gariky of less and greater than one year of age. Helminthes eggs and oocysts were detected by coproscopy and faecal egg load determined using McMaster technique. The overall prevalence was 41.4%, among parasites encountered Eimeria had 19.6%, Nematodes 11.9% and trematodes 9.82% there was a significant difference at $p < 0.05$. The parasitic prevalence differ within the three area sample, new artisan 44.1%, old artisan 34.8% and new Gariky 44.3% prevalence rate of infection, analysis revealed significant ($p < 0.05$) among three abattoirs. < 24 months had highest prevalence with respect to age. Gastrointestinal parasites are prevalent in cattle in the study area with Eimeria spp. being most prevalent. Demonstration Fasciola spp. a zoonotic helminth, in the study area calls for serious public health concern and hence regular screening of gastrointestinal parasites should be carried out for effective monitoring and control.

Keywords: cattle, gastrointestinal parasites, zoonotic, helminthes.

INTRODUCTION

All over the world farming of livestock is a major sources of animal protein and cattle is one of livestock farming in sub-Saharan Africa. Cattle provide beef both during and after festivals around the world, they also provide income for family units, manure, employment, farm energy (Kingsley, *et al.*, 2013). In Nigeria, cattle livestock farming provide one third of Nigeria agricultural Gross Domestic Product (GDP) having given more attention by the government as one of agricultural productive area in Nigeria, in leather industries the skin serves as hide's raw material (Yahaya and Tyav, 2014)

Predominate of this livestock farming were Northern zebu, which includes, Rahaji (Red Bororo), Bunaji (white Fulani), and Sokoto gudali, while minute few are reared in East and West as well (Edosomwan and Shoyemi, 2012). Population mean of a cattle in Nigeria as of 2014 is about 16.9 million out of which 9 million of this population were kept under pastoral system and in the villages

A report of seasonal change to relative proportion of these animal with respect to ecological factor by Yadav *et al.*, (2006). In a community population where cattle farming have become main stay of the community, gastro-intestinal and as well as other ecological factor have a constitute major impediment, economic losses due to cattle helminthiasis as a result of poly etiologic condition with varying rate of effects which brought hardship and mortality cannot be over emphasized (Biu and Adindu, 2004). The hermitic cattle specie as reported in Nigeria includes paramphistomum spp, *Trychostrongylus Haemonchus*, *Dicrocoelium*, *Strongyloides* and (*Oesophagostomum*) are most parasite recorded in Jos and environs.

The survivorship of this parasite is the bulky nature of cattle faces with high moisture content that allow development of larva to third larval stage that remain in fecal dropping during dry season and released during the onset of the raining season which are therefore used as manure Yadav *et al.*, (2006). Symptoms of this parasite include weight and diarrhea which is age dependent (Rojas and Cartín, 2016), the young calves are mostly characteristic with symptoms diarrhea with blood stool the predisposed fautur include poor management which may be poor grazing practices, infrequent transfer of animal from high holding place and watering of animal from pool during the rainy season attached

Enugu State abattoirs is government approved area where ruminant are being slaughtered. The area provide meat and meat products, as well that includes abattoir by-products for livestock base industries. The area is also research surveillance site against animal and zoonotic disease with view to proffer solution in protecting both animal and human from disease infection. Therefore importance of the area (abattoirs) cannot be over emphasized in relation to records in analysis of prevalence rate and planning strategy for the control of livestock diseases

This work was designed to identify and determine the most prevalence spp of gastro-intestinal parasite infection among slaughtered cattle in Enugu state

MATERIALS AND METHODS

SAMPLE COLLECTION

The site was visited each day as early as 6:00am a total of 285 fecal samples were collected (April – August). The animal were sorted as male and female, young and adult (below < 24 months and > 24 months). Faecal sample were collected through the rectum of cattle slaughtered using a pair of hand gloves. The sample were transferred to a clean sample collection bottle labeled. The sample was transported to ESUT ETF lab for identification of parasite and egg count.

Sample analysis

The samples was analysis using two techniques floatation ad sedimentation methods as described by Yahaya, *et al.*, 2014, for helminthes eggs and other protozoan oocysts . The Faecal egg/oocyst load was estimated using the McMaster egg counting technique.

Floatation method

About 50 ml of flotation fluid (specific gravity between 1.10 and 1.20) was added to 3g of faecal sample and mixed thoroughly. The faecal suspension was poured through a tea strainer into a container and

the faecal suspension poured into test tube supported rack. The test tube was gently topped off with the suspension leaving a convex meniscus at the top of the tube and cover slip was carefully placed on top of the test tube. After 15 minutes, the cover slip was carefully lifted with the drop of fluid adhering to it and placed on clean slide and viewed under x 10 and x 40 magnifications of light microscope.

Sedimentation technique

Sedimentation was conducted by mixing thoroughly about 3 g of faeces with 50 mls of water. The faecal samples suspension was sieved into container and allowed to sediment for 5 minutes after which the supernatant was remove carefully and re-suspended in water. After 5 minutes, the supernatant was carefully discarded and the concentrate was stained by adding one drop of 5% methylene blue. A drop of the sediment was placed on slide and cover with a cover-slip and viewed with microscope under x10 and x40 magnification

The data obtained was analyzed using Chi-square. The significant level was set as $P<0.05$

RESULTS

Out of 285 faecal sample collected and examined for the presence of gastro-helminthes infection in cattle slaughtered in three difference location in Enugu state metropolis, 118 (41.4%) were positive for one or more helminthes infection. *Eimeria* oocysts had the highest prevalent percentage of 19.6% (56) followed by helminthes eggs of Nematodes, 11.9% and least was Trematoda 9.82%. Among the parasite encountered Eimeria was significant higher at ($p < 0.05$) than other parasite. Within the three difference areas, Cattle slaughtered at New Gariky had the highest prevalence of gastrointestinal parasite infection 44.3% followed by New Artisan 44.1% and least was found among cattle at old Artisan Enugu state, Nigeria.

Table 1: Prevalence of gastrointestinal parasites of cattle slaughtered within the Enugu metropolis

		Parasite encountered		
Samples location	Number of samples	Nematodes n (%)	Eimeria oocyst n (%)	Trematoda n (%)
New artisan	102	13 (12.7)*	21 (20.5)*	11 (10.7)*
Old artisan	86	9 (10.4)*	13 (15.1)*	8 (9.30)*
New Gariky	97	12 (12.3)*	22 (22.6)**	9 (9.27)*
n = 285, % (41.4)				

Note: Values with different superscript are significantly different ($p < 0.05$).

Prevalence of gastrointestinal parasites based on age group of cattle sampled in three different areas in Enugu metropolis, highest prevalence was found in < 24 months of age 32 (25.3%), with Eimeria accounting for highest prevalence infection. The least prevalence was found in > 24 months among Trematoda spp 11 (6.91%).

Table 2: Prevalence of gastrointestinal parasites based on age group of cattle sampled in three areas in Enugu metropolis

		Parasite encountered		
Age Years	Number of samples	Nematodes n (%)	Eimeria oocyst n (%)	Trematoda n (%)

< 24 months	126	18 (14.2)*	32 (25.3)**	17 (13.4)*
> 24 months	159	16 (10.1)*	24 (15.1)*	11 (6.91)*

Note: Values with different superscript are significantly different ($p < 0.05$)

The mean faecal egg and oocyst count of the cattle sampled in the three different locations, new Artesian had egg count of 11.12 ±3.46, Old Artisan 257.58 ± 27.91 and new Gariky had 268.52 ± 29.82 of egg per gram, respectively, there was a significant difference between the egg count per gram and locations ($p < 0.05$), while that of oocyst were 942.01±69.51 for new Artesian, 781.68 ± 71.08 for Old Artesian and New Gariky 864.87 ± 92.83 Oocyst per gram respectively. The Oocyst also show a significant difference at $p < 0.05$ among the different location sampled table 3.

Table 3: Mean ± SEM Egg count per gram and oocyst count per gram of faecal sample collected from slaughtered house in Enugu metropolis

Samples areas	Number of Samples	Egg count Per gram	Oocyst count Per gram
New Artesian	102	11.12 ±3.46*	942.01±69.51**
Old Artesian	86	257.58 ± 27.91*	781.68 ± 71.08*
New Gariky	97	268.52 ± 29.82**	864.87 ± 92.83*

Note: Values with different superscript are significantly different ($p < 0.05$)

DISCUSSION

Prevalence of gastro intestinal parasite among livestock cannot be over emphasized to their importance in maintaining good health as they are one of source of meat and protein including industrial raw materials. Out of 285 faecal sample collected and analysis for the presence of gastro intestinal helminthes, 118 were positive with 41.1% prevalence rate for different parasitic egg in this study. This work is in consonant with the work reported by (Colina *et al* 2013) who reported higher prevalence rate of 56% in the regions of Peru. Although the higher prevalence could be due to the season of his study and sample techniques used in the study, in addition to that, the environmental characteristics, reproductive stage, sex of the animal, as well as the pasture and agricultural practices in the farms have been predisposing factors for the high parasite prevalence in the cattle and other ruminate. All these factors play a determinant role in the presence of the infective stages, favoring the developing of the reproductive cycles and the viability of eggs and larvae, which, in turn, depend on the season of the year, the age, and the immune status of the host (Colina *et al* 2013). Within the three different location or area studied New Gariky hard the higher prevalence 44.3% this could be the animals are allowed to move freely and pasturate on vegetation with high moisture content and temperature which favored the growth and development of the helminthes and coccidial eggs or oocysts and larva stage of these parasites on pasture. close to stream, New artisan hard 44.1% it may be also connected to the environmental factors such poor environmental hygiene and disobedient of government order in their slaughter house, because the area is mainly dominated by Hausa and Fulani. On the other hand Old artisan accoutered for 34.8%. The variation in results especially the lower prevalence recorded in one of the study area may be an indication that the management level is better, it may that the prevalence is on the high side and may not be unconnected to free-range grazing management which increased their exposure to cyst, ova and larvae or the intermediate host of these gastrointestinal parasites on pastures Gastrointestinal

parasites in cattle are considered one of the most important in tropical herds, since they cause reduction in weight gain and high morbidity and mortality in young animals (Cordero and Rojas, 1999 and Diaz de Ramírez, *et al.*, 1998). This study found that Eimeria spp. was most prevalent parasite in cattle (19.6%) followed by Nematode spp. (11.9%) and parasite genera grouped under the Trematodes (9.82%). These results is similar with those by Orjuela *et al.* (1991) who reported 26.8% of coccidian infection in cattle of the North Coast of Colombia. However, these results differ from those reported by Pinilla *et al.* (2018) who found high prevalence (77.9%) of Eimeria spp. in cattle of Aguachica and Rio de Oro municipalities, Cesar state, In these vain Diaz de Ramirez *et al.* (1998) reported 53% prevalence in cattle from Trujillo state, Venezuela, and 86.01% prevalence in cattle from Yucatan state, Mexico (Domínguez, *et al.*, 1993 and Rodríguez-Vivas, *et al.*, 2001). One of the reasons may be caused by immunosuppression in the animals due to stress associated with overpopulation, transportation, and herd movements (Shepelo *et al.*, 2015).

Regarding the age; it was observed that Eimeria spp. prevalence in animals that the infection occurs in any period during life and with higher excretion of oocysts in young animals (under than 24 months). The results obtained in this study agree with those reported by Díaz de Ramírez *et al.* (1998) and Tomczuk *et al.* (2015) who found higher excretion of oocysts in young cattle, while the infection in adult decreases. This is attributed to a considerable percentage of calves excreting oocysts during their 1st month of life, and as most bovine Eimeria species have prepatent periods ranging from 2 to 3 weeks, calves most ingest a sufficient amount of sporulated oocysts to establish a patent infection in the herd. The prevalence of trematode (Fasciola spp) eggs was low, this call for serious health concern as one larvae (sporocyst) from Fasciola spp egg may give rise to hundreds of cercaria, the process known as paedogenesis, resulting in serious outbreak of fasciolosis.

CONCLUSION

Cattle slaughtered in three difference location in Enugu state were infected with Eimeria and helminths. The prevalence values of gastrointestinal parasites were moderate in both species warranting treatment. Detection of trematodes, especially Fasciola spp, a zoonotic helminth, in the study location calls for serious public health concern and hence a concerted effort should be made to the control and monitoring of gastrointestinal parasites. This report serve as preliminary information on prevalence of gastrointestinal parasite in cattle to the public health epidemiologist, veterinarians and farmers. This may have serious implication on the control and management of parasitic diseases in Enugu State,

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