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# Prevalence and Predilection Sites of Gastro-Intestinal Parasites among Slaughtered Cattle in Yola Modern Abattoir

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**Abstract**

Studies on the prevalence and predilection sites of gastro-intestinal parasites amongst slaughtered cattle were carried out in Yola modern abattoir from January to June 2017. Purposive and stratified method were used in sampling and chi square test was used to test if there is any significant difference $p<0.05$. Statistical Package for Social Science (SPSS) version 22 was used. One hundred fifty (150) faecal samples were collected from fifty (50) cattle and analysed using formol ether concentration method. Prevalence in female cattle was 36(72.0%) while male had 14(28%) with no significance difference. Cattle aged 2½ -5½ years had 40(80.0%), 6-9 years 10(20.0%) which showed no significant difference. The prevalence rates based on parasitic species indicated that *Taenia spp* 86.0% had the highest and, *Trichuris spp* 10.0% with the least. Parasite isolated from the large intestine showed 50(100.0%) prevalence while in the Abomasum 49(98.0%) and Small intestine 47(94.0%) which was statistically significant within the predilection sites. The White Fulani breeds had the highest prevalence of 33(66.0%) and the least were Adamawa Gudali 1(10.0%) with significant difference. The current study revealed that females and younger cattle showed higher prevalence rate of gastrointestinal parasites with *Taenia spp* as the most prevalent parasite and the large intestine harbouring most parasites. It is therefore recommended that regular veterinary examination, proper sanitation of the slaughter slabs be encouraged to avoid cross contamination, routine deworming of cattle by owners should be emphasized.

**Keywords:** Prevalence; Predilection site; Abattoir; Gastrointestinal parasites; Yola.

## Introduction

Cattle are ruminant animals with four chambered stomach (Abomasum, Omasum, Rumen and Reticulum). Meat and dairy products obtained from cattle represent important sources of animal protein in many countries of the world including Nigeria (Anon, 2005). Apart from being the source of animal protein, their wastes are also used as manure in agriculture (Ojurongbe *et al*., 2014).The losses due to parasites infestation are manifested as morbidity in acute cases, and in chronic infections reduced weight gains, reduced food conversions, abortion, infertility and reduced milk production (Edosomwan and Shoyemi, 2012). This type of infection can exist in the animal for a long period of time without the farmers and traders knowing about it, because the animals sold in the market are mostly adults which have built up a natural resistance to the parasites. Helminthic parasites can be seen in intestines, stomach, bile duct, lungs, liver and even gall bladder of ruminants but majority are seen in gastrointestinal tract (GIT).

Despite the relative importance of nematode parasites in ruminants, other gastrointestinal parasites like the trematodes, cestodes and nematodes have also shown higher prevalence rates in most countries of the world (Ntonifor *et al*., 2013) the most important helminth species known to infect cattle include Strongyle species (*Haemonchus, Ostatergia, Trichostrongylus, Cooperia*) while trematodes of economic importance are Fasciola species (*Fasciola hepatica*) and *Paraphistomum* species (*Paraphistomum cervei*) while cestodes like *Monezia* species (*Monezia benedeni* and *Monezia expansa*) could also be important constraints in cattle production (Cherutelila *et al*., 2014).The aim of the study was to investigate the prevalence and predilection site of gastrointestinal parasite among slaughtered cattle in Yola modern abattoir, Adamawa state, Nigeria.. Cattle are one of the domestic animals that are commonly reared in our society and eaten by most people. Therefore investigating the common

gastrointestinal parasites of cattle would provide information that would help in preventing cross infection between man and animal and ensure provision of wholesome meat, meat products and milk to consumers.

## Materials and Methods

### *Study Area*

Yola, the state capital of Adamawa lies between latitude 09.14°N and longitude of 12.8°E, the vegetation in Yola and environs is of secondary type due to such human activities as construction: farming, wood gathering for fuel and animal grazing all of which altered the natural vegetation (Adebayo and Tukur, 1999).

### *Study design and Sample collection*

The study was designed to be a field and a laboratory based research. Purposive and stratified methods of sample collection were used, a total number of fifty faecal samples each from the Abomasum, Large and small intestine, were collected from an excised portion of each organ and their content were emptied in to a sterile bottle which were transported to the laboratory for Macro and Micro examinations. They were examined using the formol ether sedimentation techniques according as described (Cheesbrough, 2009).

### *Statistical Analysis*

Statistical Package for Social Sciences (SPSS) version 22 was used for entering data and chi square test was used to test if there is any significant difference between the variables at $p<0.05$.

## Results

The study revealed that out of the one hundred and fifty (150) faecal samples collected from different sites of the gastrointestinal tract (Abomasum, Large Intestine and Small intestine), fifty of the cattle 14(28%) males were positive for either *Ascaris* spp, *Bunostomum* spp, *Coccidia* spp, *Cooperia* spp, *Fasciola* spp, *Haemonchus spp, Moniezia* spp, *Oesophagostomum* spp, *Ostertagia* spp, *S.haematobium* spp, *Strongyloides* spp, *Taenia* spp, *Trichostrongylus* spp, *Trichuris* spp, respectively, and 36(72.0%) females were positive for same species of parasites with sex which showing a significant difference $P<0.05$ (Table 1).\

Based on age, 40(80%) of the cattle between the age of 2-5 to5-5years were positive for all the parasites isolated previously. Age range 6-9 years had 10(20%) positive cases with significant difference $P<0.05$ (Table 2). This explained the fact that younger animals (less than a year old had resistance due to immunoglobulins proteins obtained from the mother at birth and are not exposed to parasites because they don't go out for grazing. while young animals growing age above two years have higher prevalence because they are much exposed to parasites during grazing, while adult cattle have higher immunity due to previous exposure to intestinal parasites (Regassa *et al*,. 2006).

Results from different gastrointestinal sites revealed *Ascari*s spp, *Bunostomum* spp, *Coccidia* spp, *Fasciola* spp, *Moniezia* spp, *Oesophagostomum* spp, *Schistosoma haematobium* spp, *Strongyloides* spp, *Taenia* spp, *Trichostrongylus* spp, *Trichuris* spp, were isolated from the abomasum. In the Large intestine, *Ascaris* spp, *Bunostomum* spp, *Coccidia* spp, *Cooperia* spp, *Fasciola* spp, *Haemonchus* spp, *Moniezia* spp, *Oesophagostomum* spp, *Ostertagia* spp, *Schistosoma haematobium* spp, *Strongyloides* spp, *Taenia* spp, *Trichostrongylus* spp, and *Trichuris* spp, were isolated. While in the small intestine, *Ascaris* spp, *Bunostomum* spp, *Coccidia* spp, *Cooperia* spp, *Fasciola* spp, *Haemonchus* spp, *Moniezia* spp, *Ostertagia* spp, *Schistosoma haematobium* spp, *Strongyloides* spp, *Taenia* spp, and *Trichostrongylus* spp, were isolated with the predilection sites showing a significant difference (Table 3). This can be explained to the fact that certain parasites have specificity in various organs in their host.

Results based on breeds showed that 33(66%) White Fulani had the highest prevalence this was due to pastoral nature of moving from one area to the other and due to favourable weather conditions for parasitic spread. Adamawa Gudali having the least 1(10%) this is because they do not go extensive grazing as much as other breeds, hence are limited to a as much small area with breeds showing significant difference (Table 4).

Results obtained from the study indicated a relatively high prevalence of gastrointestinal parasites among cattle slaughtered in Yola modern abattoir of Yola North local Government Area of Adamawa state. The study revealed that 100% of the sampled animals within the period were infected with either one or more species of parasitic

helminths. This high prevalence could be due to the fact that cattle have frequent exposure to the same communal grazing land that causes contamination of pasture. These results are in line with findings (Okike-Osisiogu *et al*., 2016) in Aba, who reported a prevalence of 87.41%, Kingsley *et al.*(2013) reported 62.1% prevalence rate in Port Harcourt, South-South, Nigeria and in Umuahia South Local Government Area, Abia State, Nigeria. However the result is in contrast with the findings (Yahaya *et al.*, 2014) which indicated a lower prevalence of 34.9% in Wudil Local Government Area of Kano, Kano State Nigeria.

**Discussion**

Results from this study showed that *Taenia* spp, was most prevalent (86.0%) while *Trichuris* spp, had least occurrence (10.0%). This is in contrast with the findings (Okike-Osisiogu *et al*., 2016) who reported *Ascaris* spp, as more prevalent 27.97% and the least was *Toxocara* spp, 8.48% in Aba, Abia State Nigeria.

The present study reveals that sex of the studied animals did not show significant association with the prevalence of parasites. This is more probably due to an equal opportunity for infection when they would be exposed to the parasite in communal grazing pasture with females having higher prevalence of 36 (72.0%) as obtained in this study which agrees with the findings (Kemal and Terefe, 2013). Cattle within the age group of 2.5 -5.5 years had higher prevalence 40 (80.0%) than age group of 6-9 years had 10 (20.0%). The higher prevalence rate in younger animal is in agreement with the finding (Regassa *et al.,* 2006). These could be due to the fact younger animals are more susceptible than adult counter parts. Adult animals may acquire immunity to the parasites through frequent challenge and expel the ingested parasite before they establish infection (Regassa *et al.,* 2006). On the predilection site large intestine showed higher prevalence 50(100%) and the least recorded was Small intestine 47(94%). The breed prevalence of 33(66.0%), 10(20.0%), 6(12.0%), and 1(2.0%) obtained for White Fulani, Red Bororo, Sokoto Gudali, and Adamawa Gudali respectively were higher compared to the 41.0% white Fulani and Sokoto Gudali 10% as earlier reported (Qadeer *et al*.,2015). The absence of association between the breed is in line with the findings (Qadeer *et al.*, 2015) in a cross sectional study of gastrointestinal and haemoparasites of cattle in Girei and Yola north local government of Adamawa state. The difference in prevalence obtained could be attributed to the existence of favourable environmental factors necessary for the prolonged survival and development of infective larval stage of most helminth.

**Conclusion**

This study has indicated the presence of parasitic infection among cattle slaughtered at Yola modern abattoir which is associated with neither age nor sex but showed that the predilection site and the difference in breed had an association with parasitic infection. This might be due to lack of proper sanitation and hygienic environment that promotes the development of parasite and also the non-use of deworming drugs by cattle owners, coupled with poor husbandry system in the area. Furthermore, these nomadic cattle migrate in the dry season towards water sources which consequently exacerbates the probability of infection. It would seem that the owners themselves directed their attention towards maintaining large numbers of cattle for sale to the abattoirs regardless of their qualities.

**Recommendations**

High standard of environmental sanitation and hygiene should be maintained by animal herdsmen to minimize the helminthic infection in cattle. Anti-helminthic should be administered by cattle owners to reduce the survival of oocytes. There should also be health education among the owners of the importance of helminths as a cause of production losses and even death among their animals so they might be treated. Cattle meat purchased by consumers from the abattoir should be thoroughly inspected, processed and cooked before consumption to avoid transmission of parasitic infection from cattle to man. Drug and vaccines should be made available for the treatment of the infected cattle and to increase their resistance to helminths infection. There is need for regular faecal examinations of the cattle or routine prophylactic treatment of the herds.

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**Table 1:** Prevalence of gastrointestinal parasites based on the type of parasite infection among slaughtered cattle

| | Parasite species | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sex No (%) | *Ascaris* | *Bunostomum* | *Coccidia* | *Cooperia* | *Fasciola* | *Haemonchus* | *Moniezia* | *Oesoph agostum* | *Ostertagia* | *S haematobim* | *Strongyloides* | *Taenia* | *Tricostrongylus* | *Trichuris* |
| Male | 9(64.2) | 2(14.2) | 1(7.1) | 5(5.0) | 8(57.1) | 5(5.0) | 6(42.8) | 6(42.8) | 8(57.1) | 3(21.4) | 10(71.4) | 14(100 | 5(35.7) | 2(14.2) |
| Female | 25(69.0) | 12(33.3) | 6(16.6) | 11(30.5) | 19(52.7) | 16(44.4) | 17(47.2) | 9(25.0) | 19(52.7) | 3(8.3) | 17(47.2) | 29(80) | 18(50.0) | 3(8.3) |

$\chi^2$ = calculated=15.628[a], $\chi^2$ tabulated=22.38, DF=13, P<0.05 Significant

**Table 2:** Prevalence of gastrointestinal parasitic infection among slaughtered cattle based on age

| | Parasite species | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Age No (%) | *Ascaris* | *Bunostomum* | *Coccidia* | *Cooperia* | *Fasciola* | *Haemonchus* | *Moniezia* | *Oesoph agostum* | *Ostertagia* | *S haematobium* | *Strongyloides* | *Taenia* | *Trichchostrongylus* | *Trichuris* |
| 2½ -5½ years | 25 (62.5) | 9(22.5) | 7(17.5) | 11(27.5) | 22(55.5) | 19(47.5) | 15(37.5) | 12(30.0) | 3(30.0) | 4(10.0) | 23(57.5) | 34(85.0) | 18(45.0) | 5(12.5) |
| 6-9 years | 8(80.0) | 4(40.0) | 0(0.0) | 6(60.0) | 4(40.0) | 5(50.0) | 7(70.0) | 3(30.0) | 6(60.0) | 1(10.0) | 5(50.0) | 8(80.0) | 6(60.0) | 0(0.0) |

$\chi^2$ = calculated=7.365[a], $\chi^2$ tabulated= 22.36, DF=13, p<0.05 Significant

**Table 3:** Prevalence of gastrointestinal parasitic infection among slaughtered cattle based on predilection sites

| | Parasite species | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Predilection sites No (%) | *Ascaris* | *Bunostomum* | *Coccidia* | *Cooperia* | *Fasciola* | *Haemonchus* | *Moniezia* | *Oesoph agostum* | *Ostertagia* | *S haem atobium* | *Strongyloides* | *Taenia* | *Trichc hostrongylus* |
| Abomasum | 15(30.0) | 8(16.0) | 1(2.0) | 8(16.0) | 9(18.0) | 20(40.0) | 10(20.0) | 2(4.0) | 18(36.0) | 1(2.0) | 13(26.0) | 30(60.0) | 7(14.0) |
| Large intestine 23(46.0) | 5(10.0) | 5(10.0) | 0(0.0) | 17(34.0) | 0(0.0) | 10(20.0) | 13(26.0) | 0(0.0) | 3(6.0) | 13(26.0) | 30(60.0) | 17(34.0) | 4(8.0) |
| Small intestine 0(0.0) | 17(34.0) | 3(6.0) | 1(2.0) | 11(22.0) | 16(32.0) | 1(2.0) | 15(30.0) | 0(0.0) | 20(40.0) | 2(2.0) | 10(20.0) | 31(62.0) | 3(6.0) |

$\chi^2$ = calculated = 123.776[a] $\chi^2$ = tabulated= 38.89 Df= 26 p>0.05

**Table 4:** Prevalence of gastrointestinal parasites infection among slaughtered cattle based on breeds

| | Parasites species | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Breeds | *Ascaris* | *Bunostomum* | *Coccidia* | *Cooperia* | *Fasciola* | *Haemonchus* | *Moniezia* | *Oesoph agostum* | *Ostertagia* | *S haem atobium* | *Strongyloides* | *Taenia* | *Trichc hostrongylus* | *Trichuris* |
| White. Fulani | 23(69.6) | 11(33.3) | 3(9.0) | 11(33.3) | 19(57.5) | 16(48.4) | 17(51.5) | 10(30.3) | 16(48.4) | 3(9.0) | 15(45.4) | 27(14.1) | 15(45.4) | 5(15.1) |
| Red bororo | 7(70.0) | 1(10.0) | 3(30.0) | 4(40.0) | 5(50.0) | 3(30.0) | 6(60.0) | 2(20.0) | 5(50.0) | 1(10.0) | 8(80.0) | 8(80.0) | 5(50.0) | 0(0.00) |
| Sokoto. Gudali | 3(50.0) | 2(33.3) | 1(16.6) | 3(50.0) | 5(83.3) | 1(16.6) | 3(50.0) | 2(33.3) | 3(50.0) | 1(16.6) | 4(66.6) | 6(100) | 4(66.0) | 0(0.00) |
| Adamawa Gudali | 1(100.0) | 0(0.00) | 0(0.00) | 1(100.0) | 0(0.00) | 1(100.0) | 0(0.00) | 0(0.00) | 1(100.0) | 0(0.00) | 0(0.00) | 0(0.00) | 1(100.0) | 0(0.00) |

$\chi^2$ = calculated = 19.874[a] $\chi^2$ =tabulated 54.57 DF= 39 P<0.05 Significant

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