Intestinal Helminth Parasite of Cattle Slaughtered in Abbatiors in Gwagwalada

Oyedeji, Funmilayo Nike

Department of Biology, Federal Capital Territory College of Education, P.M.B. 61, Abuja-Nigeria.
Email: deleijigbade@yahoo.com

Abstract: A survey on the prevalence of intenstinal helminthes parasites in cattle slaughtered in Gwagwalada was carried out between the month of May and July, 2015. A total of fifty-five (55) helminth parasites belonging to four (4) genera were observed in this study. The highest number of parasites were observed from the samples collected from Gwako 17(30.91 %) followed by the samples collected from Giri with 16 parasites (29.09 %), Agwandodo with 12 (21.82 %) and Kutunku recorded the least number of helminth parasites of 10 (18.18 %). Among all the helminth parasites in the intestinal tracts of slaughtered cattle examined in Gwagwalada, *Ascaris* sp was the most common helminthes species observed with 40 % of the total parasites observed followed by *Taenia* sp with 30.91 % of the total helminthic parasites, *Trichuris,*sp was observed, equivalent to 16.36 % and *Toxocara* sp 12.73 %. The prevalence of intenstinal helminth parasites in cattle slaughtered in Gwagwalada abattoirs were significantly different at $P < 0.05$ level of significant. There is a need to monitor intestinal parasites of cattle to promote animal production and public health in Nigeria.
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1. Introduction

Cattle, the most prominent domesticated livestock in Nigeria, represent a valuable asset in both traditional and modern agriculture; in addition, they also provide meat, milk, skin, and draught power for farming (Tewe, 1997). In some traditional settings, they also play an essential role in the socioeconomic system, representing family wealth or they can be regarded as a survival kit by nomadic people (Fabiyi, 1973). In Nigeria, the livestock sector contributes 5.2 % of the gross domestic products (GDP) while cattle production solely contributes 50 % of the total meat (Adedipe *et al.,* 1996). Meat is one of the most important livestosck products, although there could be losses due to various diseases including helminth infections. The quantity of meat and revenue obtained from domestic livestock is far below the national demand due to factors such as death and ill health with associated reduced productivity and increased cost of treatment (Hossain *et al.,* 2011). Helminths also commonly known as parasitic worms, are large multicellular organisms, which when mature can generally be seen with the naked eye. They are often referred to as intestinal worms even though not all helminths reside in the intestines; for example Schistosomes are not intestinal worms, but rather reside in blood vessels. Helminths are known to be a major constraint to ruminants' well-being and productive performance (Rajput *et al.,* 2006; Hesterberg *et al.,* 2007). Gastrointestinal helminths are ubiquitous parasitic agents of livestock especially ruminants and are known to limit cattle production in many areas and countries (Keyyu *et al.,* 2005). Mortality of animals due to parasitic diseases may not be alarming at times but their indirect effects on livestock productivity and their zoonotic impact on human health are considerably greater (Ekong *et al.,* 2012). Indirect losses associated with helminth infections include the reduction in productive potential such as decreased growth rate, weight loss, diarrhea, anorexia, and sometimes anaemia (Swai *et al.,* 2006). The most important predisposing factors of helminth infections are grazing habits, climate, nutritional deficiency, pasture management, immunological status, vector, presence of intermediate host, and the number of infective larvae and eggs in the environment (Radostits *et al.,* 1994). The effect of helminth infections is determined by a combination of factors, of which the varying susceptibility of the host species, the pathogenicity of the parasite species, the host/parasite interaction, and the infective dose are the most important (FAO, 2000). The aim of this study was to determine the prevalence of the intestinal helminthes parasites of cattle slaughtered in abattoir in Gwagwalada, Abuja.

2. Materials And Methods

2.1 Study area

This research work was carried out at the Laboratory of the Department of Biology, School of Sciences, Federal Capital Territory College of Education, Zuba-Gwagwalada, Abuja, Nigeria.

2.2 Study population

In Gwagwalada, FCT Abuja abattoirs, the butchers' only slaughter, adult male cattle, therefore the research was based only on male cattle. A total of 160 faecal samples of freshly slaughtered cattle were randomly collected from the rectum with 40 samples each from four (4) different abattoirs located in Gwagwalada, FCT Abuja. Faecal samples were collected from abattoir at Kutunku, Agwandodo, Gwako and Giri with five (5) samples per week for eight (8) weeks.

2.3 Samples collections

The samples were collected in sterile plastic containers and taken to the parasitological laboratory of the Veterinary Medicine at the University of Abuja, Gwagwalada FCT-Abuja- Nigeria, for the study of helminthic parasites in the intestinal tract of the cattle. The samples were analysed on the day of collections.

2.3.1 Assessment of the Helminthic Parasites

The faecal sample was spread on a dissecting board and visible worms to the naked eye were picked up using thumb forceps and then stored in 10 % formalin before identification (Radostits *et al.*, 1994). About one gram (1 g) of the faecal sample was dissolved in sterile test tube containing 10 ml of sterile distilled water. The mixtures was agitated for 3 min by shaking and then centrifuged at 4000 rpm for 10 min. The supernatant was decanted and the sediment was examined for helminthic parasites (Radostits *et al.*, 1994).

2.4 Identification of Helminthic Parasites

The helminthes parasites were identified using dichotomous keys (Soulsby, 1965; Cheesbrough, 2006). Microscopic examination of the helminthic parasites was done at X40 magnification (Muller, 1975).

2.5 Determination of frequency of occurrence of Helminthic parasites

The frequency of occurrence of helminthic parasites was determined by taking the sum of all the numbers of the parasites in each sample and the percentage was calculated as:

$$\frac{\text{Number of parasites per sample}}{\text{Overal Total number of parasites}} \times 100$$

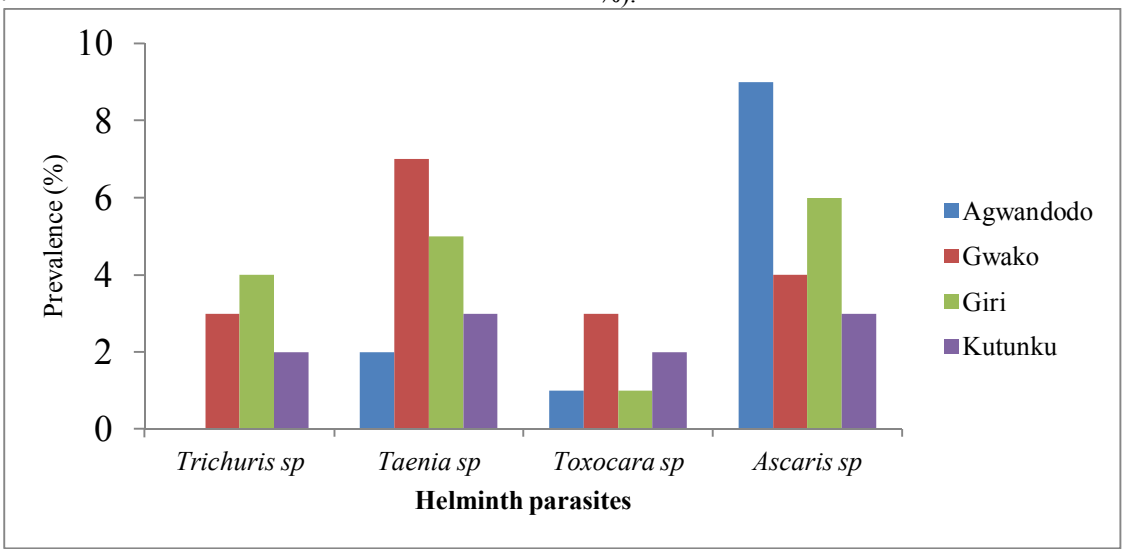
2.5.1 Statistical analysis

The prevalence of intestinal helminthes parasites obtained was statistically analyzed using one-way ANOVA and the F- test statistic at P = 0.05 level of significant from Microsoft excel statistics.

3. Results

3.1 Prevalence of Helminth parasites in Gwagwalada abattoir

Table 1 showed the prevalence of helminth parasites in the intestinal tracts of cattle slaughtered in Gwagwalada. The most prevalence helminth parasite observed in the cattle slaughtered was *Ascaris* sp with 40 % of the total parasites observed followed by *Taenia* sp with 30.91 % of the total helminth parasites, *Trichuris,*sp with 16.36 % and *Toxocara* sp had 12.73 % (being the least observed helminthic parasites) as seen in Figure 1. A total of fifty-five (55) helminth parasites belonging to four (4) genera were observed in this study. The highest number of parasites were observed from the samples collected from Gwako 17(30.91 %) followed by the samples collected from Giri, 16 (29.09 %) Agwandodo was next with 12 (21.82 %) helminth parasites and Kutunku recorded the least number of helminth parasites of 10 (18.18 %).



Figures 1: Prevalence of different species of intenstinal helminth parasites in cattle slaughtered in abattoirs in Gwagwalada

Table 1: Prevalence of intenstinal helminth parasites in cattle slaughtered in abattoirs in Gwagwalada

Parasites	Prevalence rate, Number (%)				
	Agwandodo N=40	Gwako N=40	Giri N=40	Kutunku N=40	Total N=160
Trichuris sp	0(0)	3(7.50)	4(10.0)	2(5.0)	9(16.36)
Taenia sp	2(50.0)	7(17.50)	5(12.50)	3(7.50)	17(30.91)
Toxocara sp	1(2.50)	3(7.50)	1(2.50)	2(2.50)	7(12.73)
Ascaris sp	9(22.50)	4(10.0)	6(15.0)	3(7.50)	22(40)
Total	**12(21.82)**	**17(30.91)**	**16(29.09)**	**10(18.18)**	**55(100)**

4. Discussions

The findings of this study show that 34.38 % (55/160) of the cattle screened had helminth infection, thus providing valuable information on the burden of helminths among cattle in Nigeria since animals slaughtered in this abattoir are representative of cattle in the country. The overall prevalence of 34.38 % of helminth infection obtained in this study is similar to that of Edosomwan and Shoyemi (2012) who reported a prevalence of 47.4% in south-south region of Nigeria but lower than the 50.8% and 62.1% earlier reported by Edosomwan and Shoyemi (2012) and Nwigwe *et al*. (2013) in south-eastern and south-southern Nigeria, respectively. The differences observed could be due to the periods or seasons in which the studies were conducted as well as the sources of cattle sampled in the various regions. The most prevalence helminth parasite observed in the cattle slaughtered was *Ascaris* sp with about 22 equivalent to 40 % of the total parasites observed followed by seventeen (17) *Taenia* sp which covered about 30.91 % of the total helminthic parasites, nine (9) *Trichuris,*sp was observed, equivalent to 16.36 % and *Toxocara* sp recorded 7 (12.73 %) being the least observed helminthic parasites out of the 55 parasites observed as seen in Figure 1. Dantanko and Idris (2014) also reported the prevalence of *Taenia* sp, *Ascaris* sp and *Trichuris* sp in livestock slaughtered in Dei-Dei Abattoir, F.C.T Abuja. Furthermore, this finding revealed that nematodes and cestodes were the most prevalent among the helminths; however, this is at variance with previous reports by Hailu *et al*. (2011), Mir *et al*. (2013), and Nwigwe *et al*. (2013) who reported nematodes as the most prevalent helminths in studies carried out in India, Ethiopia, and eastern Nigeria, respectively. This difference could however be associated with the differences in geographical and/or climatic conditions and ecology. Again, the helminths identified in this study were similar to those identified by Edosomwan and Shoyemi (2013) and Elele *et al*. (2013) in earlier studies carried out in Benin and Port Harcourt, south-south Nigeria. It can therefore be suggested that the similarity in the helminth profile indicates exposure of these animals to common conditions (e.g., ecology, pasture, and humidity) which are prevalent in northern Nigeria where majority of these animals are sourced from before being transported to different abattoirs in Nigeria. One major factor that would have accounted for this is the fact that cattle under the local setting in Nigeria are exposed to poor feeding and veterinary care, factors accountable for equal susceptibility to helminth infections. The difference in the prevalence obtained could be attributed to the existence of favorable environmental factors necessary for the prolonged survival and development of infective larval stage of most helminths. Furthermore, management system of animals could also be accountable for the difference in prevalence. Cattle with moderate body condition score had higher prevalence of intestinal helminths when compared to those that were emaciated. Possible reason for this could be that those with moderate body condition for a number of reasons, including good nutrition, tolerated helminth infections better or that both host and parasites had reached a state of equilibrium and were asymptomatic at the point of sample collection.

Conclusion

The result of this study showed a moderately high prevalence of intestinal helminth infection of both economic and zoonotic importance among trade cattle slaughtered in abattoirs in Gwagwalada, Nigeria. This has negative impact on both animal production and public health. Therefore, to mitigate these problems, appropriate anithelminthic regimen and control measures (i.e., comprehensive parasite control program, pasture management, and environmental sanitation) in cattle and public health awareness should be encouraged. Finally, there is a need to monitor intestinal parasites of cattle to promote animal production and public health in Nigeria.

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