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Prevalence of Gastro-Intestinal Helminthes of Slaughtered Cattle at Wukari Abattoir Taraba State, North-Eastern Nigeria

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Abstract

Studies were conducted to determine the prevalence of helminthes parasites affecting cattle slaughtered at the Wukari Local Government abattoir, in Taraba State, North-Eastern Nigeria. The Standard saturated salt (NaCl) floatation technique was used, and examined microscopically to determine the parasites and the number of eggs per gram. Of the 350 samples examined, 122(34.90%) were infected with one or more intestinal helminthes. In order of prevalence, *Paramphistomum* species recorded 83(23.70%); *Oesophagastomum radiatum* 50(14.30%); *Fasciola gigantica* 31(8.90%); *Trichuris* species 28(8.00%) and *Monezia expansa* 23(6.60%). A Chi-Square analysis revealed that the prevalence of gastro-intestinal helminthes between male and female animals varied significantly, so it is between the young and the adult cattle ($P<0.05$). Of the 163 male cattle examined, a higher prevalence of 62(38.04%) was observed when compared to the 60(32.10%) of their female counterpart out of the 187 examined. The young cattle between the ages of 0 and 23months were more susceptible to the intestinal parasites infection having a prevalence of 43(45.30%) than the adult examined who had 79(30.10%). The result of this study showed a high prevalence of gastro-intestinal parasites among the slaughtered cattle in Wukari. Farmers' awareness and national campaigns are highly recommended.

Keywords: Cattle, Gastro-intestinal, Helminthes, Abattoir, Wukari.

Introduction

In Sub-Saharan Africa, as in other tropical and sub-tropical regions of the world livestock farming is one of the major sources of animal protein, cattle provides beef during festivities around the world, flexible income for family units, employment, farm energy and manure. It accounts for as much as one third of Nigeria's agricultural gross domestic product (GDP), it also provides hide and skin as a raw material in the leather industries, [1], [2], [3], [4].

Nigeria had a mean cattle population of 13.9million in 1990, of which 11.5million of this population were kept under pastoral system [5] and 2.4 million in the villages [6]. Furthermore, these cattle were predominantly zebu, such as, Bunaji (White Fulani), Rahaji (Red Bororo), Sokoto gudali and others. A seasonal change in the relative proportion of these animals in various ecological zones of the country has also been reported. In communities where livestock production have become the mainstay of the people, gastro-intestinal infection have, in addition to other socio-

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economic parameters constituted major impediment to the development of an economically viable livestock industry [7].

In cattle, helminthiasis is a polyethiologic condition with varying rates of effects brought about by hardship leading to mortality with huge economic losses, hence the great need to control or possibly eradicate this debilitating disease [8]. Studies in Nigeria have reported incidences of helminthes to include, *Paramphistomum* species, *Dicrocoelium*, *Strongyloides*, *Fasciola gigantica*, *Trychostrongylus*, *Haemonchus* and *Oesophagostomum* found in sheep and goats, [9, 10].

Reports by [9] showed that *Paramphistomum*, *Coccidia*, *Dicrocoelium*, *Dictycaulus* species, *Strongyloids* and *Bonustomum* are the common intestinal parasites affecting cattle in Jos and environs. They observed that the bulky nature of cattle faeces and the high and sufficient moisture content in it allowed for larval development and survival which enable the third larval stage to remain in faecal droppings in the dry season until the onset of the rains when they are released and the faeces used as manure.

Earlier [11], [12] reported that age affected the distribution of parasites and in the young calves it was characterised by weight loss and diarrhoea. It was further suggested by [11] that poor management such as poor grazing practices, infrequent transfer of animals from the right holding place and watering of animals from natural pool during the rainy season affected the animals. Abattoirs provide meat and meat products as well as abattoir by-products for livestock base industries. More importantly, abattoirs are used for the purpose of surveillance against animal and zoonotic diseases with a view to protecting both man and animals from these diseases. The importance of abattoir records in analysis of prevalence rate and planning strategy for the control of diseases of livestock cannot be overemphasized. This study was therefore, designed to identify and determine the prevalence of gastro-intestinal parasites infection among slaughtered cattle in Wukari Abattoir and to keep this record for future studies and research.

Methodology

Study area/site

The study was conducted in Wukari Local Government Area of Taraba State, Nigeria. Wukari abattoir, the study site is located in the southern part of the metropolis, about 2km South of Kwararafa University, Wukari. Wukari is situated in Southern Taraba. Taraba State is geographically situated in the Northern Guinea Savannah vegetation belt and has an annual rainfall of about 150mm-200mm with a mean temperature of 25^{o}C and maximum temperature of 38^{o}C (Taraba State Government, Diary 2010). The total land area is about 60,291.82sqkm and lies within Latitude 6^{o}30' N and 9^{o}36' N and Longitude 9^{o}10' E and 9^{0}50' E.

Sample collection

Visits were done to the abattoir on each day of the sample collection during the study period (October to December) as early as 6:00am when the animals were usually taken to the abattoir. The animals were identified and labelled as male or female, and young (below 24months old) or adult (above 24months) after [13]. Fresh faecal materials were collected directly from the rectum of the slaughtered animals using a pair of hand gloves. The samples were placed in clean labelled bottles and transferred to the parasitology laboratory of the Kwararafa University Wukari, for analysis. A total of 350 samples were collected during the study period.

Identification of parasites

The standard floatation technique was used where saturated solution of NaCl was prepared with specific gravity of 1.2. Parasites were observed using microscope and keys from [7, 14] was used for identification.

Statistical analysis

The proportions obtained in the study were compared using Chi-Square test. The level of significance was set at $P<0.05$.

Results

A total of 350 faecal samples were collected from cattle and examined during the study period. Out of the total sample examined, 122(34.90%) were found to be infected with one or more helminthes parasites, Table 1.

Tables 2 and 3 presented the prevalence of helminthes eggs by sex and age respectively. The parasites encountered during this study in order of prevalence were *Paramphistomum* species 83(23.70%), *Oesophagostomum radiatum* 50(14.30%), *Fasciola gigantica* 31(8.90%), *Trichuris* species 28(8.00%) and *Monieza expansa* 23(6.60%).

Table 1: Infection by sex and age

SEX	No. Exam.	No. infected	% infected	Age(Mnths)	No. Exam	No. infected	% infected
Male	163	62	38.04	0-23	95	43	45.30
Female	187	60	32.10	24>	255	79	30.10
Total	**350**	**122**	**34.90**		**350**	**122**	**34.90**

Table 2: Prevalence of helminthes eggs by sex

Parasite infected	No. Exam. (Male)	No. infected	% infected	No Exam (Female)	No infected	% infected	Total infected	% infected
Paramphistomum	163	38	23.30	187	45	24.10	83	23.70
Oesophagostomum radiatum	163	19	11.10	187	31	16.58	50	14.30
Fasciola	163	11	6.75	187	20	10.70	31	8.90
Trichuris	163	10	6.13	187	18	9.63	28	8.00
Monieza expansa	163	8	4.90	187	15	8.02	23	6.60

Table 3: Prevalence of helminthes eggs by age

Parasite infected	No. Exam. (0-23months)	No. infected	% infected	No Exam (>24months)	No infected	% infected	Total infected	% infected
Paramphistomum	95	34	23.30	255	49	24.10	83	23.70
Oesophagostomum radiatum	95	17	11.10	255	33	16.58	50	14.30
Fasciola	95	9	6.75	255	19	10.70	31	8.90
Trichuris	95	12	6.13	255	19	9.63	28	8.00
Monezia expansa	95	13	4.90	255	10	8.02	23	6.60

Table 4: Overall prevalence of helminthes eggs in faeces of cattle examined

Parasites	No. Examined	No. infected	% infected
Paramphistomum	350	83	23.70
Oesophagostomum radiatum	350	50	14.30
Fasciola sp	350	31	8.90
Trichuris sp	350	28	8.00
Monezia expansa	350	23	6.60

Discussions

A prevalence of 34.90% encountered in this study area is relatively high. Despite the number of samples examined, this finding is similar to the report by [10] who had a higher number of samples and reported 56.2%. The high prevalence could be due to the fact that veterinary care and services to the abattoir in checking and educating farmers on the other hand about the health of their animals is limited; this was observed during the study period.

A total of five helminthes parasites types were recovered and identified as *Paramphistomum*, *Oesophagostomum radiatum*, *Fasciola sp*, *Trichuris sp*, and *Monezia expansa*. This corroborated the ealier reports by [9], [10], [15] who observed and reported that Cestodes and Nematodes constituted the major cause of serious morbidity associated with young ruminants in both Nothern and Western Nigeria.

Paramphistomum species was the highest occurring gastro-intestinal helminthes parasite of cattle in this study area with 83(23.70%), this agreed with the findings of [16] who also reported a high incidence of this parasite in cattle in Kenya during the rainy season but, very low in the dry season. This could probably be due to the luxuriant nature of rainy season that aided the development and fast reproduction of the parasite in question [17]. *Oesophagostomum radiatum* was the second most prevalent intestinal parasite encountered during the study with 50(14.30%) prevalence; this is lower than the Kenyan report of 69.30% prevalence. This could be attributed to the geographical location and difference in the conditions of the abattoirs involved in the study.

Fasciola gigantica was found to have a prevalence of 8.90%, *Trichuris* species recorded 8.00% infection rate and *Monezia expansa* was the lowest with 6.60% prevalence. These were generally low when compared to the studies by [10, 18]. This might be because the study was conducted when the rains were going and the harmattan period was setting in which is not favourable to eggs and the parasites as reported by [20].

A Chi-Square analysis revealed a significant difference in the infection rate of helminthes between the males and females, it also varied between the young and the adult cattle. The overall result indicated that five species of gastro-intestinal parasites commonly infect cattle in Wukari, the study area. This suggests that helminthes control measures/strategies for cattle should be concentrated on the dominant parasites species encountered.

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