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Prevalence of helminths in cattle in Anyigba, Kogi state, Nigeria

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Abstract

The prevalence of helminths in cattle in Anyigba, Kogi State was studied. Faecal samples were collected from 100 Cattle per rectum from different locations across the study area. The collected samples were taken to the Parasitology Laboratory to determine the types of helminth eggs present using Centrifugal Flotation Method. Descriptive statistic and T-test were used to analyze the data. Result showed that 85% of cattle sampled had strongyle eggs while 1% had some oocyst eggs with prevalence of 86.4%, 82.9%, 83.9% and 92.3% for female, male, adult and calves respectively. The prevalence of 86.4% for cow was higher than for bulls (82.9%) showing significant difference at $p < 0.01$. The highest prevalence was in calves which was 92.3%. Adult cattle had 83.9% also showing a significant difference at $p < 0.01$. Faecal culture indicated the presence of *Haemonchus* spp. (42.5%), *Trichostrongylus* spp. (30.3%), *Cooperia* spp. (6.0%) and *Bunostomum* spp. (6.0%). Regular deworming is advocated.

Keywords: Helminthosis, parasitism, bovine, ruminants

Introduction

In the livestock industry, ruminants comprise the largest part of farm animals in the agricultural sector of Nigeria ^[1] with a cattle population of about 13.9 million which concentrates more in the northern area of the country ^[1]. Livestock production in most developing economies is at a low level and is a major source of finance and food in rural settings ^[2]. Production of livestock in Nigeria, which is mostly at subsistence level in rural communities ^[3] is being hampered by a number of factors which include nutrition management and health. The health of ruminants especially is affected by parasitic diseases ^[4] which leads to lowered productivity, economic losses, mortality and morbidity ^[5, 6].

Adequate attention therefore, must be paid to these factors as only healthy animals can produce to optimum level. Helminthes infestations are ubiquitous and remain a constraint to efficient raising of cattle on pastures ^[7]. Activities of parasite, both ecto and endoparasites have been recognized as major factors which militate against cattle production in the tropics ^[8, 9]. These parasites cause large economic losses in variety of ways: they cause losses through lower fertility, reduction in work capacity, involuntary culling, a reduction in food intake and lower weight gain, lower milk production, treatment cost, and mortality in heavily parasitized animals ^[10, 11, 12].

Among all the gastrointestinal infestation, helminths of livestock have a worldwide distribution and even zoonotic importance ^[13]. It is considered a major constraint on productivity. It is reported that the effect of these worms on cattle are varied, the adult are relatively less troubled while calves and yearling can be adversely affected and to a very high degree in the first year of grazing, causing anemia, inflammation of the abomasum, diarrhea, unthriftiness and general debility, thus lowering productivity ^[14]. The occurrence of gastrointestinal parasitism has been known to affect the growth rate in cattle. Even though growth rate depends on nutrition and the efficiency of conversion; nonetheless the effect of gastrointestinal parasite is the depression of the digestive efficiency arising from impairing absorption through inflamed intestinal infestation ^[15, 16]. More recently, it has been shown that adequately fed animal infested with lower number of intestinal parasite, may still be growing below their potential even though the other feature of unthriftiness, listlessness, weakness, diarrhea are absent. Growth inhibition due to parasite is an outcome of several factors including inappetence and Malabsorption from intestine ^[17, 18].

This study was done to determine the prevalence of helminthes of Cattle in Anyigba and this will add to the already existing database of Helminthosis in cattle in Kogi state.

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Materials and Methods

Location and site of the experiment

The study was conducted in Anyigba, Dekina Local Government area of Kogi State located on Latitude 7° 30'N and longitude 7° 09'E. [19]. The area receives 6-7 months annual rainfall of 1,400 — 1, 500 mm, with day time temperature of about 25 °C — 35 °C with the highest temperature in March and April [20]. The study vicinity has a subtropical weather, the raining season is usually from April to October while the dry season begins in November and ends in March.

Sample collection

Systematic random sampling method was employed in selecting cattle from different locations. For each animal selected, parameters such as the sex and age were recorded. Faecal samples were collected per rectum with a gloved hand into well-labeled sterile polythene bags and transported in ice packs to the parasitological laboratory of the Veterinary Teaching Hospital of the University of Nigeria, (UNN), Nsukka for examination and identification.

Examination of Faecal Samples

The test tube flotation technique was employed in analyzing the collected faecal samples. The faecal samples were analyzed in the following manner: 2g of faecal sample was mixed thoroughly (using an applicator stick) with about 2mls of normal saline solution in a test tube, the sample was then homogenized by stirring with the same applicator stick and the test tube filled to the brim with a saline solution. A cover slip was placed on the test tube and the test tube was placed inside a test tube rack undisturbed for about 15-20 minutes to allow eggs of lower density float to the surface of the saline solution and adhere to the cover slip. The cover slip was finally taken off the test tube, placed on a light microscope and viewed. Eggs were identified on the basis of their morphological features [21]. Faecal Egg Worm Count (FEC), expressed as egg per gram (EPG) of faeces was carried out as

described by Hansen and Perry [22] while faecal culture was carried out as described by Khin Khin [23].

Data analysis

The prevalence of infection among the examined cattle was calculated using the number of infected cattle divided by the number of cattle examined. All data obtained were subjected to descriptive statistics and T-test at the 0.05% level of significance using statistical package for social sciences (SPSS) Version 20.0.

Results

A total of 100 cattle were examined in the study area among the nomadic herdsmen. The overall proportion of infective larvae from *strongyle* eggs cultured indicated that the common gastro-intestinal parasites were: *Haemonchus* spp. (42.5%), *Trichostrongylus* spp. (30.3%), *Cooperia* spp (6.0%) and *Bunostomum* spp, (6.0%). The result as presented in Table 1 showed the prevalence of helminth parasites in cattle based on sex. The cattle examined were more of females (59%) while males were 49%. This could be as a result of the fact that male cattle are mostly sold off for slaughter and the females kept for milk and reproduction. The result also showed that of the 59 females, 51 were infected while 34 out of the 41 males were infected. This amounts to a prevalence of 86.4% and 82.9% respectively. The overall prevalence sex-wise is 84.6%. The mean value of Egg per Gram of faeces was 34.26 (+ 69.72).

Table 2 shows the prevalence of helminth parasites in cattle based on age. The cattle examined were more of adults than calves. This could be as a result of the fact that every herd has more of adults than calves. The result also showed that of the 87 adults, 73 were infected while 12 out of the 13 calves were infected. This amounts to a prevalence of 83.9% and 92.3% respectively. The overall prevalence sex-wise is 88.1%. The high prevalence of infection in calves could be due to the low immunity in young animals to infection compared to adults.

Table 1: Sex wise prevalence of Strongyle Eggs in cattle in Anyigba

	Number of animals examined	Number infected	% infestation	Egg per gram (Mean ± SE)
Male	41	34	82.9%	26.61 ± 2.24 ^b
Female	59	51	86.4%	34.7 ± 16.29 ^a

Different superscripts along the rows signify the significant difference between the means $p < 0.01$

Table 2: Age wise prevalence of Strongyle Eggs in cattle in Anyigba

	Number of animals examined	Number infected	% infestation	Egg per gram (Mean ± SE)
Adult	87	73	83.9%	23.32 ± 5.07
Calves	13	12	92.3%	76.5 ± 37.28

Different superscripts along the rows signify the significant difference between the means $p < 0.01$

Discussion

Out of hundred (100) randomly selected cattle samples, 85% were infested with *strongyle* parasite, showing the prevalence of 85%. The environmental conditions could also be responsible for the high prevalence of infection since the animals are nomadic and the stress of moving them around could help lower immunity and predispose to higher infection prevalence [24].

The finding is similar to that observed by [25] who found the parasitic burden as high as 86.9% in Taiwan. However, it differs slightly from that of [26, 27] who found prevalences of 80.48% and 77.1% respectively. This result could be this similar due to the fact that the samples were collected around

the same season. These findings are in agreement with [28, 29] who reported that there was higher incidence of parasitic infestation during rainy season.

The result from this finding is higher than results from [12, 30-34] who reported prevalences of 59.2%, 41.6%, 34.4%, 59.8%, 44% and 60.68% respectively. The differences observed could be due to the periods or seasons in which the studies were conducted, the sources of cattle sampled in the various regions and the sample size of the study. Higher prevalence of gastrointestinal parasitism in the studied population might be due to favorable agro-climatic condition and the frequent exposure to the same communal grazing land that caused contamination of the pasture.

Sex wise prevalence

The prevalence of 86.4% for female might have been due to lowered immunity due to gestation and lactation. However, it is reported that high parasitic infestation could lead to losses due to lower fertility, reduction in work capacity, lower milk production, and reduction in food intake, higher treatment cost and mortality in heavily parasitized animal ^[10].

Age wise prevalence

It has been well established that young animals do not have a great deal of immunity to parasitism and are highly susceptible compared to adult animals ^[29, 35, 36].

Conclusion and Recommendations

There was high prevalence (85%) of *Strongyle* worms' infestation in cattle in the study area. The result of this study concludes, that there is higher prevalence (86.4%) of *strongyle* worm in female (cow) than in male (bulls) 82.9% and in calves (92.3%) than in adult (83.9%). This study was conducted during the rainy season and may therefore explain the high prevalence. Essential part of parasite control is based on stable and pasture management. This is because deworming alone is not satisfactory for parasite control. It's also advisable to submit fresh dung sample to Veterinarians for worm count to be done (every couple of years), which gives a good indication of control. Presence of sufficient feeding during rainy season could in turn increase the nutritional status, and these well fed animals develop good immunity that suppressed the fecundity of parasite. A good number of these parasites can be zoonotic and hence can infect man when the meat are not properly cooked before consumption. The presence of these zoonotic parasites among the cattle also suggests poor veterinary care in the area. It is therefore recommended that the cattle owners and the herdsman should be properly educated on the use of anthelmintic drugs and the need to keep the animals in the ranch rather than allowing them to freely graze around. Keeping the animals at the ranch is expensive, therefore, government intervention is required in the establishment of ranches in the country and also in subsidizing the drugs for the cattle farmers. This will not only help to improve the quality of meat consume in the area but also reduce the prevalence of infections among human population. It is also recommended that further laboratory test should be carried out to detect the egg of other possible worms.

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