

Occurrence of *Rhabditis Dubia* in Cattle Dungs in Lagos State, Nigeria

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Abstract

Prevalence of *Rhabditis dubia* (eggs and worms) in cattle dungs were carried out in ten different abattoirs of Lagos State. A total of 2,000 samples of cattle dungs were examined for the occurrence of both the eggs and worms. The result showed that cattle dungs collected in these areas were highly infected with worms and eggs of *Rhabditis dubia* which causes Rhabditiasis among the cattle. The prevalence of *Rhabditis dubia* (worms) was the highest at Mile 12 with percentage prevalence of 25.0% was observed in cattle dungs at Isolo. The percentage prevalence of eggs of *Rhabditis dubia* was highest at Oshodi with 56.5% while the least percentage prevalence of 9.0% of eggs was recorded in cattle dungs at Egbeda. The overall percentage prevalence of worms was 44.9% while that of eggs was 26.1%. There was a significant difference ($t = 1.320$; $p < 0.05$) of worms and eggs detected in the cattle dungs.

Keywords: Occurrence/Prevalence *Rhabditis dubia*, eggs, worms, cattle and dungs

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Introduction

Cattle are domestic ungulates, a member of the family Bovidae. They are raised as livestock for meat (beef), dairy product (milk), leather and as draught animals (pulling carts, plows) (Bitakaramire, 2003).

Cattle are large grass-eating mammals with two-toed or cloven hooves and a four chambered stomach which is adaptation to help digest such material (Anderson, 2009).

Nematodes have adapted to almost every ecological niche and are found wherever there is moisture, warmth and shade. *Rhabditis spp* is the most common nematode in the gastrointestinal tract of cattle *Rhabditis dubia* are soil dwelling nematode and are most abundant in moist soil enriched with decomposing organic matter. The cattle are also inhabitant of moist soil enriched with decomposing organic matter, thereby enhancing regular contact between the parasites and the host (Odaibo, et al 2000). The parasites are hosted by the cattle, feed within the cattle and lay eggs. Some of the eggs larvae or adult are passed out with faeces and since the cattle or other still feed on materials already defecated with nematode parasites, hence continuous ingestion of these parasites which facilitate high level of effective transmission (Levine, 2008).

Although, *Rhabditis spp* is a common gastrointestinal parasite of cattle, no detailed studies have been made on the occurrence and prevalence in the cattle population. Therefore this study aimed at the occurrence/prevalence of *Rhabditis dubia* in cattle dungs in view of the importance the growing interest in the rearing of cattle in Nigeria.

Materials and Methods

Studies on the occurrence of *Rhabditis dubia* (eggs and worms) were carried out in ten abattoirs namely Agege, Ikotun, Ejigbo, Surulere, Isolo, Egbeda, Ipaja, Oshodi, Mushin and Mile 12 located in Lagos State. Lagos State is located in South-western, Nigeria and lies on longitude $3^{\circ} 27^{\circ}E$ latitude $6^{\circ} 25^{\circ}N$. Territorially, Lagos State encompasses/occupies 3,577sqkm. The dominant vegetation of the state is tropical swamp forest consisting of fresh water and mangrove type both of which are influenced by the double rainfall pattern that makes the environment a wetland area. The state has two climatic seasons which are rainy season (April - October) and dry season (November - March) with annual rainfall between 1,524mm and 2,699mm. The relative humidity is above 80% and temperature ranges between $31^{\circ}C - 28^{\circ}C$. Inhabitant living in Lagos States are mainly civil servants, petty traders, business men and women and Laborers.

Sample Collections: Dung samples were collected from each abattoir in 5ml specimen bottles. Each samples were labeled for the purpose of identification. A total of 2,000 samples were collected. Samples were later transported to the zoology laboratory of Lagos State University for analysis.

Laboratory analysis: Dung samples were labeled 1 – 2,000 in each 5ml specimen bottle. Each dung sample were decounted about 2ml in each sample bottle. 10% Normal Saline, 10% Formol Saline and 3ml absolute ethanol were added to each specimen bottle. Sedimentation techniques using centrifugation method was used leading to good analysis of worms and eggs of the parasite. Little portion of the settled worms and eggs were dropped on a glass slides by means of a glass rid. This was later stained with a drop of Eosine and Iodine for observation under research microscope. Descriptive and inferential statistics were used to compare the

susceptibility of cattle to infection.

Results

The result showed that cattle dungs collected in the sampled abattoirs were highly infected with worms and eggs of *Rhabditis dubia* that causes Rhabditiasis in cattle. Worms and eggs of the parasite settled and concentrated at the bottom of the centrifuge tube. Of the 2,000 samples of cattle dungs examined for parasitic infection, 516 were infected with worms (*Rhabditis dubia*) representing overall percentage 44.9% while 222 were infected with eggs representing 26.1%. The highest percentage prevalence of 86.7% of worms was found in cattle dungs at Mile 12 while the least percentage prevalence of 25.0% of eggs was observed at Isolo. Highest percentage prevalence of 56.5% of eggs was found in cattle dungs at Oshodi while 9.0% represent the least percentage prevalence of eggs (table 1) recorded at Egbeda (Table 2). There was a significant difference ($t=1.320$; $p<0.05$) in the numbers of worms and eggs detected in the cattle dungs. The isolate of stained glass slides highlighted the numbers of the eggs and worms. It is evident from this study that a greater numbers of the cattle would have been infected, hence high prevalence of infection.

Table 1: PREVALENCE OF *Rhabditis dubia* (Worms) IN COW DUNG

S/N	SAMPLE SITE	NO OF COW DUNG EXAMINED	NO POSITIVE	NEMATODE PREVALENCE (%)	ISOLATES
1	IKOTUN	200	93	46.5%	Worms
2	EJIGBO	200	90	45.0%	Worms
3	IPAJA	200	73	36.5%	Worms
4	MUSHIN	200	80	40.0%	Worms
5	ISOLO	200	50	25.0%	Worms
6	MILE 12	150	130	86.7%	Worms
TOTAL		1,150	516	44.9%	

Table 2: PREVALENCE OF *Rhabditis dubia* (Eggs) IN COW DUNG

S/N	SAMPLE SITE	NO OF COW DUNG EXAMINED	NO POSITIVE	NEMATODE PREVALENCE (%)	ISOLATES
1	AGEGE	300	75	25.0%	Eggs
2	EGBEDA	100	9	9.0%	Eggs
3	SURULERE	250	25	10.0%	Eggs
4	OSHODI	200	113	56.5%	Eggs
TOTAL		850	222	26.1%	

Discussion

This study showed that there were variations in the prevalence of *Rhabditis spp* in cattle dungs. Infected cattle dungs were found throughout the period, which showed that there was a continuous flow of *Rhabditis dubia* through the cattle population. Similarly, such a continuous flow of *Rhabditis dubia* in cattle dungs have been reported by Odaibo, 2000. He reported that the cattle are also inhabitant of moist soil enriched with decomposing organic matter and that the regular contact between the parasite and the cattle host is therefore ensured. Although *Rhabditis dubia* is primarily a parasite of ruminants, its route of transmission to animals seems to be through grazing, however in humans the factors that may put some people at increased risk of infection with this spirurid parasite are not clearly understood. *Rhabditis dubia* are commonly found in wet dungs and not in dry or formed state (Bongers and Bongers, 2010).

The significant difference in the number of worms and eggs detected in the cattle dungs could be as a result of suitable environmental conditions in the cattle dungs which facilitated the development of eggs of *Rhabditis dubia* into adult worm. The developmental stages take place in wet dungs and the egg hatches into larvae under suitable conditions such as temperature, warmth, moist and sunlight, while in the dry dung the eggs cannot develop into larvae due to the unsuitable environmental conditions for the eggs to survive (Eslami and Nabavi, 2009).

In conclusion, this study has proved the occurrence of *Rhabditis*, presumably *Rhabditis dubia* in cattle dungs. Therefore, with regard to observation of adult worms in slaughtered cattle, control measures must be adequately considered to prevent human infection with this rare but a potential agent of so-called delusional parasitosis because of its migrating behaviour around the oral cavity and throat in human patient (molavi et al, 2010). The appropriate procedures of control in health sector will definitely improve the general status of

environmental hygiene which subsequently would be protective against soil-transmitted nematode. Concerning the prevention measures in veterinary sectors i.e proper overall management, improving environmental hygiene, providing clean feed and water supplies and application of suitable pesticides, if necessary, will all be helpful to minimize the chance of cattle dung infection with the parasite.

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