Prevalence of species of helminthes parasites in cattle slaughtered in selected abattoirs in Port Harcourt, South-south, Nigeria

Elele, Kingsely¹*, Owhoeli, Ovutor² and Gboeloh, Lebari Barine¹

¹Department of Biology, Ignatius Ajuru University of Education, Port Harcourt, P.M.B 5047 Port Harcourt, Nigeria.
²Department of Animal and Environmental Biology, University of Port Harcourt, P.M.B 5323 Choba, Rivers State, Nigeria.

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A total of 251 stool samples were collected from four abattoirs in Port Harcourt metropolis, South-South Nigeria. The study showed that out of 129 exotic cattle (White Fulani) Bos indicus examined between the months of May - September, 2009, 80 were infected while out of 122 exotic cattle (White Sokoto) Bos indica between the months of October, 2009 - February, 2010, 76, were infected with various species of gastrointestinal helminthes. The formol-ether concentration method was used to analyse the specimens. The study revealed that an overall prevalence of (62.1%) was recorded; out of which 80 (62.0%) and 76 (62.2%) were recorded for months of May - September, 2009 and October 2009 - February, 2010 respectively. The overall prevalence amongst the infected animals was not statistically significant (p>0.05). Species of helminthes revealed from the study were; Haemoncus, Strongyloides, Chabertia, Trichuris, Ostergia, Bunostomum, Trychostrongyloides, Ascaris, Tenia, Avitelina, Fasciola, Eurytrma, Gastrotylax, Schistosoma, Dicrocoelium.

Key words: Gastrointestinal helminthes, Bos indicus, Prevalence, Port Harcourt Metropolis.

INTRODUCTION

Ruminants; Cattle, Goats and sheep represent an important source of animal protein in many countries of the world, supplying a good percentage of the daily meat and dairy products in cities and villages in such countries including Nigeria (Nwosu et al., 2007). Apart from being the source of animal protein, their wastes are also very important in agriculture (Nawathe et al., 1985; Nwosu et al., 2007). These animals are used in special ceremonies such as wedding and burials in most parts of Nigeria. However, parasitic diseases, coupled with inadequate management hampered the productive husbandry of these animals (Nawathe et al., 1985, Fikru et al., 2006). Gastrointestinal parasitic infections are world-wide problem for both small and large-scale farmers, but their impact is greater in Sub-Saharan Africa due to the availability of a wide range of agro-ecological factors suitable for diversified hosts and parasite species (Fikru et al., 2006). Gastrointestinal parasites are known to be widespread in Nigeria (Fabiyi, 1973; Eysker and Ogunsusi, 1980) and limit ruminant production in many areas of the country (Eyster and Ogunsusi, 1980; Chiejina, 1987; Keyyu et al., 2005). The direct losses caused by these parasites are attributed to hyper-acuteness and death, premature slaughter and rejection of some parts at meat inspection whilst indirect losses include the reduction in productive potential such as decreased growth rate, weight loss, diarrhea, anorexia and sometimes anaemia (Soulby, 1986; Nahed et al., 2003; Gonzelez and Gonzelez, 2004).

Helminths or worms cause a wide range of health problems to both man and animals (Colley et al., 2001). Helminthiasis, in large part, is caused by members of the phyla Nematoda and Platyhelminthes (Kennedy, and Harnett, 2001). Species belonging to both phyla occupy numerous niches within their mammalian hosts, ranging from intestinal lumen to intravascular and even intracellular sites (Littlewood, and Bray, 2001). They are responsible for substantial loss of productivity in the livestock industry. Their harmful effects on these animals range from gastro-enteritis, anorexia, abdominal distention, diarrhoea, emaciation etc, all of which result in serious economic losses to the farmer and the nation in...
general (Junaidu and Adamu, 1997). Similarly, they constitute a major impediment to efficient and profitable livestock production (Akerejola et al., 1999).

The prevalence of gastrointestinal helminths is related to the agro-climatic conditions like quantity and quality of pasture, temperature, humidity and grazing behavior of the host (Pal and Qayyum, 1993). However specific parasites may be distributed throughout the world, they have different impact according to production system, management and geo-climatic conditions (Kennedy and Harnett, 2001).

The information on the prevalence and distribution of various species of gastrointestinal parasites of cattle and goats kept by the nomadic Fulani’s in Nigeria and those in Port Harcourt is important in the formulation of control strategies for the nomads and other farmers.

**MATERIALS AND METHODS**

**Study area**

The study was conducted in Port Harcourt City; the capital of Rivers State, Nigeria. Obio/Akpor and Port Harcourt city Local governments are commonly referred to as Port Harcourt city (10). It is situated on the bonny River within the Niger Delta, South-South, Nigeria. The study area lies between latitude 4° 30’ and 7° 10’ to longitude 7° 55’ east of the Greenwich meridian. It is situated some 60km from the open sea, which is immediately where the coastal marshes give way to the land of the interior (18). Four abattoirs were selected from Rumuodumaya; Ogbogoro; Eliozu and Aluu communities in the study.

**Collection of faecal samples**

Faecal specimens were collected from Cattle in four selected abattoirs in Port Harcourt metropolitan area. Animals were slaughtered between the hours of 6.30 am and 8.00am daily for a period of ten months (May, 2009 to February, 2010). Faecal samples were randomly collected weekly from the intestines of slaughtered animals (Exotic and Indigenous). The samples were collected in clean labeled sterile vials, preserved in 10% formalin and taken to the laboratory for microscopic examination.

**Laboratory examination**

The Formol-ether concentration technique (Agyemang et al, 1997) was used to analyze the samples. 1 g of stool sample was emulsified with 4 ml of 10% formol saline in a test tube. The mixture was filtered into a test tube using a cloth gauge and 3-4 ml of diethyl ether was added and shaken vigorously and allowed to stand for two minutes. The mixture was then centrifuged at 1000 revolutions per minutes (1000 rpm) for 3 minutes. Using a glass rod, the faecal debris from the side of the tube was loosened and the tube inverted to pour off the supernatants. The tube was returned to its original upright position and the fluid from the side of the tube allowed draining to the bottom. The deposit was mixed by tapping the tube with the finger and using a Pasteur pipette. A drop of the sediment was applied on a microscope slide; covered with a cover slip and examined under the microscope using ×10 and ×40 objectives. Lugol’s iodine was also used as a stain.

**RESULTS**

A total of 129 cattle were examined between the months of May- September 2009. Eighty (80) were infected with various species of gastrointestinal helminths as follows: *Haemoncus* species 3, 2, 2, 2, 3, *Strongyloides* spp 2,1,3,2,1, Chabertia spp 1,2,1,1,2, *Trichuris* spp 0,0,0,1,1, *Ostergia* spp 0,1,1,2,2, *Bunostomum* spp 1,1,1,1,2, *Trichostrongylus* spp 0,0,1,0,1, *Ascaris* spp 1,1,0,1,0, *Tenia* 1,0,0,0,1, *Monezia* spp 0,0,1,1,0, *Avitellina* spp 0,2,1,0,1, *Dicrocoelium* spp 1,0,2,1,1, *Fasciola* spp 2,2,2,2,0, *Eurytrema* spp 0,0,1,1,1, *Gastrotylax* spp 1,1,1,1,0, and *Schistosoma* spp 1,2,0,1,1, for the months of May, June, July, August and September respectively (Table 1).

A total of 122 cattle were examined between the months of October 2009- February 2010. Seventy-six (76) were infected with various species of gastrointestinal helminths as follows: *Haemoncus* species 3, 2, 2, 2, 3, *Strongyloides* spp 1,3,2,1,2, *Chabertia* spp 2,2,1,1,1, *Trichuris* spp 0,0,0,1,1, *Ostergia* spp 1,1,1,2,2, *Bunostomum* spp 1,1,1,1,1, *Trichostrongylus* spp 2,1,1,0,1, *Ascaris* spp 0,0,1,2,0, *Tenia* 0,1,0,1,2, *Monezia* spp 0,0,1,0,0, *Avitellina* spp 0,2,1,0,0, *Dicrocoelium* spp 1,0,2,1,1, *Fasciola* spp 2,2,2,2,0, *Eurytrema* spp 0,0,1,1,1, *Gastrotylax* spp 1,1,1,1,0, and *Schistosoma* spp 0,2,2,2,2, for the months of October, November, December, January and February respectively (Table 2 and Plates 1 to 3).

**DISCUSSION**

The result of the study clearly indicates a high prevalence rate of gastrointestinal helminthes in cattle slaughtered in four selected abattoirs in Port Harcourt; namely, Eliozu, Rumuokoro and Aluu abattoirs.

The study revealed that 62.1% of the sampled animals within the period were infected with various species of helminthes parasites. The cattle slaughtered between May - September, 2009 had a prevalence rate of 62.0% while October 2009 - February, 2010, had a prevalence rate of 62.2% (Tables 1 and 2 respectively). These
### Table 1. Species of helminths in cattle between the months of May 2008-February 2009.

<table>
<thead>
<tr>
<th>Parasite type</th>
<th>Nematodes</th>
<th>Cestodes</th>
<th>Trematodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Months</td>
<td>No. Examined</td>
<td>No. Infected</td>
<td>Haemoncus</td>
</tr>
<tr>
<td>May</td>
<td>27</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>June</td>
<td>25</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>July</td>
<td>24</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>August</td>
<td>29</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>September</td>
<td>24</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>Total (%)</td>
<td>129</td>
<td>80(62)</td>
<td>12(9.3)</td>
</tr>
</tbody>
</table>

### Table 2. Species of helminthes obtained between the months of October 2008 – February 2009 from exotic cattle.

<table>
<thead>
<tr>
<th>Parasite Nematode</th>
<th>Cestode</th>
<th>Trematode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Months</td>
<td>No. Examined</td>
<td>No. Infected</td>
</tr>
<tr>
<td>October</td>
<td>23</td>
<td>14</td>
</tr>
<tr>
<td>November</td>
<td>23</td>
<td>14</td>
</tr>
<tr>
<td>December</td>
<td>23</td>
<td>15</td>
</tr>
<tr>
<td>January</td>
<td>26</td>
<td>17</td>
</tr>
<tr>
<td>February</td>
<td>25</td>
<td>16</td>
</tr>
<tr>
<td>Total (%)</td>
<td>122</td>
<td>76(62.2)</td>
</tr>
</tbody>
</table>
Plate 1. Eggs of Nematodes as seen under the X40 objective of the microscope on slides stained with Lugol’s iodine.

Plate 2. Eggs of Trematodes as seen under the X40 objective of the microscope on slides stained with Lugol’s iodine.
results are consistent with findings of different researchers in the semi-arid zone of North-Eastern and South-Eastern Nigeria (Anene et al., 1994a; Fakae, 1990; Fakae and Chiejina, 1993; Nwosu et al., 2007).

The helminthes community consisted of sixteen parasitic species, eight (8) nematodes (Haemonchus, Strongyloides, Chabertia, Trichuris, Ostertagia, Bunostomum, Trichostrongylus and Ascaris), three (3) Cestodes (Taenia, Moniezia and Avitellinium) and five (5) (Dicrocoelium, Fasciola, Eurytrema, Gastrotylax and Schistosoma). Haemonchus species have the highest prevalence in all the samples analyzed that were positive.

Fakae (1990) studies the epidemiology of helminthosis in ruminants under the traditional husbandry system in eastern Nigeria and reported prevalence of Haemonchus species as (87.1), higher than other helminthes species. It has been suggested that Haemonchus species can acquire resistance faster than any other gastrointestinal nematodes, like Trichostrongylus, because of its high biotic potential (Torres-Acosta et al., 2003). The area of study shows how vulnerable workers in the abattoir and people who consume the intestinal parts of the animals may be vulnerable to infections especially to Taenia and Fasciola which are zoonotic and were observed in course of study. Globally, parasitic and other endemic diseases continue to be a major constraint on profitable livestock production. They are rarely associated with high mortality and easily identifiable clinical signs and their effects are usually characterized by lower outputs of animal products, by products, manure and traction; all contributing to production and productivity losses.

**Conclusion**

Various gastrointestinal parasites have been found in cattle in the study area. Hence, the high prevalence rate of helminthiases in livestock needs to be checked periodically. Regular control measure should be practiced and farmers educated in proper use of anthelminthes. Epidemiological facts suggest that high standard of sanitation in modern animal husbandry will prevent exposure of livestock to graze in deteriorated and environmentally polluted range lands will be effective in controlling disease.

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