INVESTIGATION OF INTERNAL PARASITES OF SLAUGHTERED CATTLE (*Bos Primigenius*) IN IJEBU IGBO ABATTOIR

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MATRIC NO: 12/06/2116

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CERTIFICATION

This is to certify that this project work was carried out by **FORSTER, Ebunoluwa Peace** with matriculation number **12/06/2116** in the Department of Science Laboratory Technology, School of Science, Abraham Adesanya Polytechnic, Ijebu-Igbo, Ogun State, Nigeria.

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DEDICATION

This project is dedicated to the Almighty God, for His immeasurable Love, Grace, and Wisdom in making this research work a success story and for guiding me throughout my tenure in the polytechnic and its environments.

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I cannot find enough words to thank Almighty God for His mercies, and inspiration throughout the period of my academic pursuit.

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ABSTRACT

The presence and occurrence of internal parasites egg and larva in the feaces of slaughtered cattle in Ijebu-Igbo abattoir was investigated in order to assess the prevalence of parasites in the meat supplied to the consumer market in ijebu igbo. Different types of internal parasites were found and identified, *Fasciola gigantic, Ostertagia ostergia, Coccidiosis, Taenia sagnita, Nematodirus spathiger*. A total number of 80 specimen (cattle dung) were collected and examined for parasites eggs and larvae of these which 10(12.5%) were found positive for the larvae of *Nematodirus spathiger* 7(8.7%) for eggs of *coccidia* 13(16.3%) for larvae of *whipworm* while 50(62.5%). This study area shows that prevalence of parasites is very low in this area because there is low rainfall. It was recorded by OLUSI (1991) that their result was high because of heavy rainfall which is an indication that the cattle slaughtered in this area are in good conditions.

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CHAPTER ONE

1.0 INTRODUCTION

Internal parasites are organisms that live inside another organism, some parasitic diseases constitute of global problem and it is thus considered as major obstacle in the health and performance of animals, internal parasites can cause significant production losses in cattle, resulting in substantial economic losses for owners, (Okoli, 2001), a parasitic relationship exists when one organism (the parasite) benefits at the expense of another organism (the host), the parasite may cause harm to the host and enough to kill it if not properly controlled (Olusi,1999).

Production losses are subclinical and unnoticed but severe infestations can cause disease and even leads to death, Subclinical production losses caused by internal parasites include reduced milk production, reduced weaning weights, delayed puberty and decreased fertility in replacement heifers, reduced pregnancy rates in mature cows, and reduced feed intake, reduced feed efficiency and immune suppression in all classes of cattle, (Ndarathi, 2009).

Parasites can damage and irritate stomach and intestinal linings or mucosae, resulting in reduced digestion and absorption of nutrients from the intestine as well as bleeding and protein loss from the gut. Parasites are normally host-specific, and cattle serve as hosts for a variety of parasites,

Wagghela *et al* (1999), the major threat to cattle health and performance comes from internal parasitic nematodes (worms), especially those found in the stomach and intestines (gastrointestinal parasites). Pasture management is a critical component of effective parasite control.

Cattle production relies on the efficient use of grazing for cost-effective weight gains; however, grazing exposes young cattle to large numbers of parasite larvae if pasture parasite contamination is not controlled also most of the internal parasites of cattle are found in the abomasums (true stomach) or small intestine, *Ostertagia* species are common internal parasites of cattle and can cause significant production losses, severe disease and even death in all classes of cattle (Olusi *et. al.* 2006).

1.1 AIMS AND OBJECTIVES OF THE STUDY

Parasitic diseases constitute a global problem and thus considered as major obstacle in the health and performance of cattle, so it is necessary to know the particular parasite in a cattle in order to prevent them. Hence this research study aims to know the internal parasites in cattle's fecal, slaughtered at Iga abbatoir in Ijebu-Igbo, Ogun State.

1.2 JUSTIFICATION OF STUDY

Parasitic diseases constitute a global problem and thus considered as major obstacle in the health and performance of cattle, so it is necessary to know the particular parasite in a cattle in order to prevent them.

This infection causes traumatic and toxic damages to the part of the animal's meat that leads to the low productivity, Alonge et al, (2007), also the economic importance of cattle, their association with man and their possible role as carriers of zoonotic parasites necessitates the study of their diseases. (Fabiyi and Adeleye, 1992).

Millions of carcasses and livers are lost due to damages caused by parasitic diseases such as *Fasciola gigantica* infections in cattle. (Okoli et al, 2000).

CHAPTER TWO

2.0 LITERATURE REVIEW

Cattle of all ages are affected by a diversity of internal parasites, among these are the threadnecked (*Nematodirus spathiger*), tapeworms (*Cestodes*), the small intestine, and single-celled protozoan parasites (*Coccidia*) in the lower intestinal tract, Parasitism is a non mutual symbiotic relationship between species, where one species, i.e the parasites benefits at the expense of the other "Host" (Bartel *et al*, 2011).

American pharmaceutical companies estimated that gastrointestinal parasites can cost the producer from $25 to $200 per animal (Smith Kline Beecham Animal Health, 1991), but particularly young cattle are affected by a diversity of internal parasites, this is similar to the research conducted by Tandon *et. al,* (2005) in mountainous regions of Bhutan and Arunachal Pradesh India where he also recorded *Trichuris*, *Heamonchus*, *Moniezia*, *Strongyloides*, *Fasciola*, *Cooperia*, *Ostertagia*, *Eimeria*,*Oesophagostomum*, and *ascaris* to be the most prevalent parasites infecting herbivores (cattle) in Bhutan and Arunachal.

A similar study was carried out in Ethiopia by Regassa et al. (2006), on ruminants and where 7(2.8%) *Ascaris,* 10(3.9%) *Eimeria,* 121(47%) *Strongyle,* 1(0.4%) *Trichuris*, 1(0.4%) tapeworm were recorded in cattle.A slightly similar range of parasites have also been reported from cattle in Burkina Faso by Belem et al. (2001), to be *Cooperia* sp (89%)., *Haemonchus*

contortus (66%), *Moniezia benedeni*, *Trichostrongylus columbriformis*, *Trichuris globulosa*., *Bunostomum phlebotomum*, *Oesophagostomum radiatum* (42.6%).In spite of this there are many who still underestimate or ignore the effects of internal parasites on cattle and health.

Under certain conditions of management, such as with low stocking densities and high levels of nutrition, it is often difficult to demonstrate that control methods for internal parasites are warranted. Parasites are normally host-specific, and cattle serve as hosts for a variety of parasites. The major threat to cattle health and performance comes from internal parasitic nematodes (worms), especially those found in the stomach and intestines (gastrointestinal parasites).

Pasture management is a critical component of effective parasite control. Cattle production relies on the efficient use of grazing for cost-effective weight gains also grazing exposes young cattle to large numbers of parasite larvae if pasture parasite contamination is not controlled (Chenyambuga, *et al* 2009).

The possible reason for these differences observed in the prevalence of the gastrointestinal helminth parasites recorded in this study and that recorded by previous researchers may be because of the variation in locations and management practices Regassa *et al*, (2006) observed a high incidence of these parasites during rainy season and this may possibly be due to high

moisture content and temperature which favours the growth and development of eggs/larvae of these parasites, furthermore, during this season the pastures grow abundantly resulting in increased contact between the host and parasites.

2.1 HARMFUL EFFECT OF INTERNAL PARASITES

The medium stomach worm *(Ostertagia)* can extensively destroy vital digestive cells of the abomasum, resulting in loss of serum albumin from the blood, reduced acidity, and severe diarrhea, Worms in the intestinal tract *(Cooperia, Trichostrongylus, Nematodirus)* causes damage to the intestinal lining when present in large numbers, Liver fluke causes liver condemnation.

Inflammation of the lining tissue of the gastrointestinal tract results in leakage and loss of blood protein into the gut.

2.2 RECOGNITION OF INTERNAL PARASITE AS PROBLEM

Internal parasites can also be recognized in a cattle when there is poor conception rate, depressed milk production, delay in attainment of breeding age and lighter calves, the sign of severe pains, weight loss, diarrhea, rough air coat, bottle jaw and anemia are ways to figure out infected cattle.

2.3 FASCIOLA GIGANTICA

This is a parasitic flatworm of the class Trematoda, which causes tropical *fascioliasis*, It is regarded as one of the most important single *platyhelminth* infections of ruminants in Asia and Africa. Estimates of

infection rates are as high as 80-100% in some countries. The infection is commonly called *fasciolosis.*

The prevalence of Fasciola gigantica often overlaps with that of Fasciola hepatica, and the two species are so closely related in terms of genetics, behavior, and morphological and anatomical structures that it is notoriously difficult to distinguish them, therefore, sophisticated molecular techniques are required to correctly identify and diagnose the infection.

Scientific classification

Kingdom: *Animalia*

Phylum: *Platyhelminthes*

Class: *Trematoda*

Subclass: *Digenea*

Order: *Echinostomida*

Suborder: *Echinostomata*

Family: *Fasciolidae*

Genus: *Fasciola*

Species: ***F. gigantica***

Binomial Name

Fasciola gigantica

2.3.1 LIFE CYCLE

The life cycle of *Fasciola gigantica* is as follows: eggs (transported with feces) → eggs hatch → miracidium → miracidium infect snail intermediate host → (parthenogenesis in 24 hours) sporocyst → redia → daughter redia → cercaria → (gets outside the snail) → metacercaria → infection of the host → adult stage produces eggs.

2.3.2 INTERMEDIATE HOSTS

As with other trematodes, Fasciola develop in a molluscan intermediate host. Species of the freshwater snails from the family *Lymnaeidae* are well known for their role as intermediate hosts in the life cycle of *Fasciola gigantica*; however, throughout the years an increasing number of other molluscan intermediate hosts of *F. gigantica* have been reported. It has been reported that the *Lymnaeid* intermediate hosts of *Fasciola gigantica* are distinguishable from those of *F. hepatica*, both morphologically and as to habitat requirement.

The most important intermediate host for *F. gigantica* is *Radix auricularia*. However, other species are also known to harbour the fluke including *Lymnaea rufescens* and *Lymnaea acuminata* in the Indian Subcontinent; *Radix rubiginosa* and *Radix natalensis* in Malaysia and in Africa respectively; and the synonymous *Lymnaea cailliaudi* in east Africa. Other snails also serve as natural or experimental intermediate such as

Austropeplea ollula, Austropeplea viridis, Radix peregra, Radix luteola, Pseudosuccinea columella and *Galba truncatula,* (Durand *et. al.*, 2010).

2.3.3 INFECTION AND PATHOGENICITY

Infection with Fasciola species occurs when metacercariae are accidentally ingested on raw vegetation. The metacercariae exist in the small intestine, and move through the intestinal wall and peritoneal cavity to the liver where adults mature in the biliary ducts of the liver. Eggs are passed through the bile ducts into the intestine where they are then passed in the feces, (Soliman *et. al.*, 2008).

2.3.4 DIAGNOSIS

Despite the importance to differentiate between the infections by either *fasciolid* species, due to their distinct epidemiological, pathological and control characteristics, there is, unfortunately, coprological (excretion-related) orimmunological diagnosis are difficult. Especially in humans, specific detection by clinical, pathological, coprological or immunological methods is unreliable. Molecular assays are the only promising tools, such as PCR-RFLP assay, (Mahgoub *et al*, 2012).

2.3.5 TREATMENT

Triclabendazole is the drug of choice in *fasciolosis* as it is highly effective against both mature and immature flukes.Artemether has been demonstrated in vitro to equally effective. (Shalaby *et al,* 2009). Though slightly less potent, artesunate is also useful in human *fasciolosis*.

2.4 BROWN STOMACH WORM *(Ostertagia ostertagi)*

Ostertagia species are common internal parasites of cattle which is found in the lining and in the gastric gland of the abomasums, They cause significant production losses, severe disease and even death in all classes of cattle. The typical *Ostertagia* spp. life cycles are direct.

2.4.1 LIFE CYCLE OF *OSTERTAGIA SPP*

Infected cattle pass eggs in the manure and with favorable weather conditions the eggs hatch and develop into third-stage infective larvae in about 14 days, these larvae move from the manure up moist grass blades and are eaten as the cattle graze, under normal conditions they do not migrate more than a few feet from the manure pile where they hatched, they penetrate the lining of the abomasum and mature into egg-laying adults two to four weeks after they are eaten, Wairu *et al* (2001), the fourth stage of the *Ostertagia* life may vary. Sometimes the immature larvae are able to stay in the stomach glands for up to six months. These are called inhibited or arrested larvae.

2.4.1 SYMPTOMS

The type symptoms of *Ostertagia* clinical disease may include diarrhea, reduced appetite, anemia, swelling under the jaw (bottle jaw) or rapid weight loss, with young or malnourished animals being the most susceptible, the symptoms may worsen and even lead to death unless they are treated. Animals of all ages may show symptoms, especially weight loss. (Beriajaya, *et al.*, 1995).

2.4.2 DIAGNOSIS

The Clinical signs, grazing history and season may give a presumptive diagnosis of internal parasite infection in cattle. The diagnosis may be confirmed by finding worm eggs on a fecal exam, Viassoff *et al*, (1999) Some larger worms, such as *Haemonchus,* may be easily seen but *Ostertagia* are smaller and more difficult to see unless they are alive and swimming in the stomach fluid. (Opara *et al.*, 2005).

2.4.3 CONTROL

To be effective, a parasite control program must reduce the numbers of worms in all classes of cattle Andrew *et al* (1990), and control the number of worms on the pasture, they include pasture control, feedlot control, and animal control.

2.4.4 FACILITIES

When deworming treatment is used to rid cattle of internal parasites, good facilities and adequate restraint are a must. Working cattle in an efficient, stress-free manner is determined by the adequacy, design and convenience of the working facilities, they include:

Working facilities should be in a convenient area where cattle are pastured or kept. For convenience, facilities should be in the center of the area using lanes or traps so cattle can be easily penned, Pens and handling areas should be large enough to hold the herd, both in size and strength of structure, and may including shade or covering.

Crowding pens and chutes should be adequate to handle all size cattle with minimum turning around and piling on, When pour-on dewormers are used, cattle do not need to be restrained in a head catch but should be run into a chute where accurate dosage can be poured on the back.

2.5 COCCIDIOSIS

Coccidiosis is a disease affecting the intestinal tract of cattle, it is a microscopic parasite that infects the lining cell of a lymphatic blood vessel. It is collectively referred to as *Eimera bovis*. It is caused by a tiny, one-celled organism and is a very serious parasitic problem in cattle under one year old. (Berajaya *et al.*, 1995).

The parasites can damage intestinal epithelial cells, thereby causing blood and tissue loss and reducing food absorption and the ability to resist other infections. It can cause death in young cattle.

2.5.1 LIFE CYCLE

Coccidia produce eggs (oocysts) in very large numbers, and the complete life cycle takes only 21 days, Calves ingest Coccidia "eggs" (called oocysts).The eggs hatch inside the animal and the Coccidia develop through several life stages during which they damage the digestive tract, Mature Coccidia produce eggs that continue the life cycle.

By the time symptoms are noticed in calves, the disease is already widespread. Unlike other internal parasites, eggs may be picked up by cattle in contaminated forage, water or by licking themselves or other cattle soiled with contaminated manure, eggs are very hardy and will contaminate premises for a long time, Coccidiosis may strike any time of year, but most severe outbreaks occur in stressful weather, especially cool, wet months of fall, winter and early spring, (Wairu *et al.*, 2004).

2.5.2 SYMPTOMS

Clinical signs of Coccidiosis include diarrhea tinged with blood and mucus. As the condition progresses, dehydration, anemia and general loss of condition becomes evident, (Schottens et al, 1987), with continued diarrhea,

soiled hindquarters are evident, The calves may continue straining to have bowel movements. Weakened calves are very susceptible to other diseases and may die without treatment. Barajaiye *et al* (1990).

2.5.3 DIAGNOSIS

Young cattle with bloody diarrhea may be infected with Coccidia, especially if they are under stress conditions, in feedlots or close confinement, or living in cold, wet weather. Check stool samples for eggs (oocysts), Bisset *et al*, (1999), the number of eggs are influenced by eggs ingested stage of infection, age and condition of the animal and consistency of the fecal sample. Post-mortem examination of dead animals may reveal intestinal lesions and possibly eggs on samples. (Viassoff *et al.*, 1997).

2.5.4 PREVENTION

Prevention is based on controlling the intake of the eggs by young animals. Some exposure may be beneficial since the calf may develop immunity without having clinical signs of the disease, keep young cattle in large, clean, dry areas and keep feed and water clean and free from manure contamination. Keep stress from weaning, shipping and sudden feed changes to a minimum, especially in young calves in wet, cool weather. (Andrew *et al.*,1990).

The products mentioned for treatment may be used at preventative levels, especially during stress times. Ionophores, Monensin (Rumensin) and

Lasalocid (Bovatec) have been shown to prevent Coccidiosis. (Regassa *et al.*, 2006).

2.5.5 TREATMENT

Some infections may be self-limiting and go away within a week if re-infection does not take place, cattle should be treated early to keep contamination down and shorten the course and seriousness of the disease before secondary infections occurs. (Thienpoint, 1979).

Early-treated calves have less chance of permanent damage to the intestinal tract, which can cause calves to be stunted, Sulfonamides, Amprolium (Corid) and Decoquinate (Decox) are approved for treatment and prevention. In severe infections, fluids and other supportive treatment may be necessary.Good management and prompt diagnosis and treatment are essential to control Coccidiosis. (Updated by WHO, 1991).

2.6 TAPEWORM *(Taenia sagnita)*

Moniezia is a genus of parasitic parasites which means that the adult stage cannot survive from the host, It is classified in the phylum platyhelminthes and sub phylum *cestode*, Junquera, (2014), Head (scolex) of *Moniezia benedeni* with suckers. The most important species are *Moniezia expansa* (the sheep tapeworm, the double-pored ruminant tapeworm, they are more frequent in cattle and are found worldwide with a variable

incidence. In endemic regions more than 50% of the herds may be infected.The disease caused by *Moniezia spp* is called *monieziais, moniezia* tapeworms do not affect dogs or cats. (Fasami, 1989).

2.6.1 LIFE CYCLE OF TAPEWORM (*TAENIA SAGNITA*)

Moniezia spp has an indirect life cycle with ruminants (sheep, goats, cattle, etc,) as final hosts, and oribatid mites (also called "moss mites" and "beetle mites") as intermediate hosts.

The adults of some *Moniezia* species lay eggs already in the intestine of their final hosts that are shed with the feaces. In other species the gravid segments containing the eggs are shed out and release the eggs only outside the host. The eggs are sticky and adhere to the vegetation or soil particles, Depending on the species and the region they can survive for months in the environment and some may survive cold winters, but they are very sensitive to desiccations.

The oribatid mites ingest the eggs, which hatch in their gut and develop to cysticercoids in the body cavity of the mites. They are infective for the final hosts. Cysticercoids can survive for months inside the mites, which on their turn have a live span of up to 18 months.

The final host becomes infected after ingesting contaminated mites while grazing, the mites are digested and release the cysticercoids that attach to the guts wall and develop to adult tapeworms within a several weeks

depending on the worm species and the final host. The adult worms live for up to 18 months inside their final host. (Andrew *et al.*,1990).

2.6.2 SYMPTOMS OF MONIEZA

Moniezia infections are rather beginning for adult livestock and usually do not cause clinical signs, they compete for nutrients with the host and their presence can negatively affect productivity, It also causes diarrhea, reduced weight gain and intestinal obstruction, However, many studies have failed to show an economic impact of *Moniezia* tapeworms on sheep productivity.

It must be also considered that sheep, goats and cattle are often infected not only with tapeworms, but also and mainly with gastrointestinal roundworms, which are substantially more harmful than tapeworms. In this typical situation it is difficult to determine whether tapeworms significantly worsen the harm due to roundworms or not. (Bisset *et al.*, 2001).

2.6.3 DIAGNOSIS OF MONIEZA SPP

Diagnosis is based on fecal examination for the presence of gravid segments (proglottids) or of eggs with a characteristic morphology, Murty *et al*, (2005), after necropsy the large tapeworms are easily seen inside the gut.

2.6.4 PREVENTION AND CONTROL OF MONIEZA

Adult *Moniezia benedeni* in a calf's gut, (Kaufmann et al, 2014) is not possible to eliminate the oribatid mites in the pastures, the use of insecticides for this purpose is not advisable, because it is more expensive than the potential economic loss due to the infections, and because it detrimental effect on the environment: it would kill not only the oribatid mites, but numerous beneficial insects as well.

In endemic zones with high incidence it is recommended to harvest the hay, to deeply plow the fields (the mites tend to burrow deeply in the soil) and to reseed them. This can reduce the mite population. Nevertheless, some mites will survive in the unplowed borders and will re-infect the pastures in a few years, Since the mites prefer humid pastures and avoid light as well as dryness, they are more active early in the morning and at nightfall. This can be considered for deciding where and when to bring susceptible livestock for grazing. (Edosomwan *et al.*,2012).

Susceptible livestock, particularly lambs can be treated with anthelmintics effective against tapeworms. They contain either broad-spectrum active ingredient (e.g.albendazole, fenbendazole, mebendazole, oxfendazole, etc.). Biological control can also be used in controlling tapeworm by the use of natural enemies. Medicinal plants can be used against internal and external parasites. (Ngatia *et al.*,1993).

2.6.5 RESISTANCE OF MONIEZIA TAPEWORMS TO ANTHELMINTICS

So far there are only very few reports on resistance of Moniezia tapeworms to benzimidazoles (e.g. fenbendazole), but it is certainly not yet a widespread problem.

This means that if an anthelmintic fails to achieve the expected efficacy, chance is very high that either the product was unsuited for the control of Moniezia tapeworms. (Soulsby,1982).

2.7 THREADNECKED (*Nematodirus spathiger*)

Threadnecked infection is an intestinal disease which occasionally spread to the skin, cause by a parasitic roundneck parasite, Adult Nematodirus worms are 1 to 2.5cm long and have a whitish color, whereby females are larger than males, as in other roundworms, the body of Nematodirus worms is covered with a cuticle, which is flexible but rather tough. (Tandon *et al.*, 2005).

The tail of Nematodirus females ends in a conspicuous spine. The worms have a tubular digestive system with two openings, the mouth and the anus. Characteristic for Nematodirus worms is a swallen head preceded by a thin neck, hence their common name thin-necked worms.

The eggs are ovoid and 70-120 x 130-230 micrometers, the largest among the gastrointestinal roundworms of ruminants. They have a thick shell and contain 4 to 8 cells (blastomeres).

2.7.1 LIFE CYCLE OF *NEMATODIRUS SPATHIGER*\

Nematodirus worms have a direct life cycle, i.e. there are no intermediate hosts involved. Adult females lay eggs in the small intestine of the host that are shed with the feces. In contrast with many other gastrointestinal worms, once the eggs are shed the larvae remain inside the eggs where they complete development to infective larvae. This makes them very resistant to cold and dryness: they can survive very cold winters. (Dhuguma *et al.*, 2006)

Development to infective larvae can be completed in 2 to 4 weeks or may take months, depending on the species and the environmental conditions. Infective larvae may hatch quickly or remain inside the eggs until the next spring.

Larva development can also be completed indoors and infective larvae can survive inside animal facilities for months, the pre-patent period (time between infection and first eggs shed) is 2 to 4 weeks (without dormancy), (Folorunsho *et al.*, 2000).

2.7.2 HARM CAUSED BY *NEMATODIRUS SPATHIGER*

Nematodirus spathiger are not the most harmful among the gastrointestinal roundworms that affect animal, However, Larvae are the most damaging stage. They feed on the tissue of the gut's wall, which can be seriously damaged in case of massive infections. This causes strong diarrhea

(dark, green or yellow) and dehydration, if left untreated many lambs may die (10% or more), even before having shed eggs, because the larvae had no time to complete development to adult worms.

Calves infected with *Nematodirus helvetianus* or *Nematodirus spathiger* may also become sick after massive infections, but fatalities are seldom. Chronic infections may result in reduce weight gains, loss of appetite, etc.

2.7.3 DIAGNOSIS

This is based on the clinical signs and confirmed after detection of characteristic eggs in the feces. However, as already mentioned, lambs can become seriously sick before larvae have completed development to adults, i.e. before the onset of egg production. Andrew (2005)

2.7.4 PREVENTION AND CONTROL OF *NEMATODIRUS* INFECTIONS

Preventative measures that reduce the contamination of pastures with infective larvae (e.g. pasture rotation) and reduce the risk the animals become infected can reduce the damage caused by Nematodirus and other gastrointestinal worms, this is particularly urgent for this parasite because resistance to almost all available anthelmintics is now widespread in many regions. Such preventative measures are the same for all gastrointestinal roundworms. Viassoff, (1999), Systematic and thorough removal of all

manure, keeping the facilities dry and additional hygienic measures of animal facilities will reduce the risk that housed livestock becomes infected.

2.7.5 RESISTANCE *OF NEMATODIRUS* TO ANTHELMINTICS

There are reports on confirmed resistance of *Nematodirus* worms, mainly in sheep and goats, but the resistance problems are not that critical and widespread as for *Haemonchus* worms. This means that if an anthelmintic fails to achieve the expected efficacy against *Nematodirus* worms, there is a real risk that it is due to resistance to anthelmintics, particularly in cattle. (Olusi 2001).

CHAPTER THREE

MATERIALS AND METHODS

3.0 STUDY AREA

This study was carried out at Ijebu-Igbo, Iga titun abbatoir, Ijebu North Local Government Area, It is located within latitude 6° 58° 0 N and longitude of 4° 0° E of Ogun State.

There are two distinct seasons, the rainy and dry season with the wet or rainy season lasting from March to October with peak rainfall occurring in July and September and short slightly drier spell in August, popularly known as August break, Annual rainfall ranges from 0.0 mm to 2,500 mm; the mean temperature over most of the state is 27 °C.

3.1 SAMPLE COLLECTION

The feacal specimen samples were collected from a number of slaughtered cattle in Ijebu-Igbo, Iga titun abattoir per day, the specimen were collected into a plastic container and it was then transferred to the biology laboratory of science laboratory technology department for analysis.

3.2 SAMPLE ANALYSIS

The feacal sample was analyzed in the laboratory with different methods. Which are simple test tube floatation method, and sedimentation method.

3.2.1 SEDIMENTATION METHOD

3g of cattle feaces was weighed into a container using analytical weighing balance and 50ml of distilled water was added to it, it was mixed thoroughly with stirring rod and was filtered with a tea strainer into container 2. The filtered material was later poured into the test tubes and allow to sediments for 5 minutes.

The supernatant was discarded and another 50ml of water was added and allow to sediments for 5minutes.the supernatant was discarded and the sediment was strained by adding one drop of methylene blue. Then it was transferred to a microslide and covered with coverslip and was viewed under a microscope at magnification of 10x4.

3.2.2 SIMPLE TEST TUBE FLOTATION METHOD

3g of cattle dung was weighed using an analytical weighing balance and put into a container A, 50ml of the floatation fluid was poured into container B.

The feaces was poured into container B, and mixed thoroughly using a stirring rod, the fecal suspension was poured through a tea strainer into container B. from the container B the suspension was poured into a test tube supported in a rack, the suspension was filled to the brim till it forms a convex meniscus at the top.

A cover slip was carefully placed on top of the test tube, the test tube was left to stand for 20 minutes after which the cover slip was carefully lifted off the tubes together with the drop of fluid adhering into a microscope slide and examined under the microscope at 10x10 and 10x40 magnifications.

CHAPTER FOUR

4.0 RESULTS

A total of 80 sample (feaces) were collected and analyzed for possible eggs and larvae of internal parasites, out of these 10(12.5%) were found to be positive for *Nematodirus* larvae 7(8.7%) were found to contain coccidia eggs 13(16.3%) contain larvae of whipworm while 50(62.5%) were negative. (Table 1) out of 80 cattle sample examined in the study area, it was observed that 30 was positive and the infection rate is 37.5%, (Table 2), shows the number of parasite positive, the prevalence and the infection rate

Table 4.1: OCCURRENCE OF EGG AND LARVAE OF CATTLE SLAUGHTERED IN IJEBU-IGBO ABBATOIR USING SIMPLE TEST TUBE FLOTATION METHOD

SAMPLE PERIOD	NO OF CATTLE EXAMINED	NO OF POSITIVE	PREVALENCE
1	10	0	0
2	20	0	0
3	10	0	0
4	10	7	8.7%
5	10	10	12.5%
6	20	13	16.3%
TOTAL	**80**	**30**	**37.5%**

4.2: OCCURRENCE OF EGG AND LARVAE OF THREADNECKED (Nematodirus spathiger and other Parasites) USING SEDIMENTATION METHOD

SAMPLE PERIOD	NO OF CATTLE EXAMINED	NO OF POSITIVE	PREVALENCE
1	10	0	0
2	20	0	0
3	10	0	0
4	10	7	8.7%
5	10	10	12.5%
6	20	13	16.3%
TOTAL	**80**	**30**	**37.5%**

CHAPTER FIVE

5.0 DISCUSSION AND CONCLUSION

In this study, a prevalence of 37.5% was observed for internal parasite in cattle while study by Olusi, (1991) observed a different prevalence of 22%, this study may be because of the variation in locations and management practises Tandon *et al*, (2006) and a high incidence of these parasites during rainy season and this may possibly be due to high moisture content and temperature which favours the growth and development of eggs/larvae of these parasites, and during this season the pastures grow abundantly resulting in increased contact between the host and parasites. This is similar to the research conducted by Tandon *et al*, (2005) in mountainous regions of Bhutan and Arunachal Pradesh India where he also recorded *Trichuris, Heamonchus, Moniezia, Strongyloides, Fasciola, Cooperia, Ostertagia, Eimeria, Oesophagostomum, Ascaris* to be the most prevalent parasites infecting herbivores (cattle) in Bhutan and Arunachal. A similar study was carried out in Ethiopia by (Regassa et al, 2006), on ruminants and where 7(2.8%) *Ascaris*, 10(3.9%) *Eimeria*, 121(47%) *Strongyle*, 1(0.4%) *Trichuris*, 1(0.4%) tapeworm were recorded in cattle.

A slightly similar range of parasites have also been reported from cattle in Burkina Faso by Belem et al. (2001), to be *Cooperia sp* (89%)., *Haemonchus contortus* (66%), *Moniezia benedeni, Trichostrongylus columbriformis, Trichuris globulosa., Bunostomum phlebotomum,*

Oesophagostomum radiatum (42.6%) which the prevalence was high because of heavy rainfall.

In conclusion, internal parasites are widespread in cattle and small ruminants and It was also observed that the number of cattle negative for parasite was more than the number of cattle positive in the study area, This means that the cattle in the study area is free from diseases and are in good condition of health.

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