

A SURVEY OF GASTRO INTESTINAL HELMINTHES OF GREY-BREASTED HELMET GUINEA FOWLS (*NUMIDA MELEAGRIDIS GALEATA PALLAS*) IN SOKOTO, NIGERIA

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Abstract- A survey of gastro-intestinal helminthes parasites of domesticated grey-breasted helmet guinea fowl (*Numida meleagridis galeata pallas*) was carried out between 1st to 30th November 2014. Postmortem examinations of 100 samples of gastro-intestinal tracts of guinea fowls slaughtered and processed at Sokoto meat and vegetable market, revealed an overall prevalence of 100%. Cestodes were identified in 35% and Nematodes in 95% of the samples examined. The nematodes found were *Ascaridia galli* 80 (80%), *Heterakis gallinarum* with 30 (30%), *Cheilospirura spp.* 30 (30%) and *Dispharyns (Acuria) spp.* The only cestode identified was *Ralleitina sp.* with the prevalence of 30 (30%). Mixed infections occurred in 50% of the infected birds. These finding indicate that guinea fowls harbor helminth parasites (Nematodes and cestodes) that are parasitic, and the effect of these parasites on the productivity of the guinea fowls is discussed. The need for pre-market treatment as a means of improving the survival rate and market value of this game bird is recommended.

Index Terms: Guinea fowl, Helminthes, Parasites, Avian, Birds

I. INTRODUCTION

The grey-breasted helmet guinea fowl (*Numida meleagridis galeata pallas*) is an abundant specie in the guinea savannah zone of Nigeria is an important source of animal protein [1]. The guinea fowl, with an estimated population of about 54.7 million in Nigeria, is an unimproved avian species common in the northern savannah areas, where it is found both in the wild and backyards domesticated for meat and eggs by peasant farmers [2] [3] [4] [5] and as a source of income [6] [7]. Though, Guinea Fowl (*Numida meleagris*) is one of the domestic birds found in many parts of Sokoto State, they are not widely raised commercially; and are mostly kept under backyard system of management. This system is associated with low output and periodic loss of large proportion of the flock due to diseases and predators. Parasitic diseases are among the major cause of decrease productivity in poultry. They are often neglected as they are rarely lethal [8]. *Ascaridia galli*, *Eimeria sp.* and *Heterakis gallinarum* in guinea fowls were reported around the Kainji game park, Kwara State, Nigeria [3]. In Maiduguri, North Eastern Nigeria a prevalence of 45% was reported for cestode infection [6] and 90% for nematodes [7] in guinea fowls; however, there is dearth of information on the level of infestation of gastrointestinal helminthes of guinea fowls in Sokoto State, North Western Nigeria.

II. MATERIALS AND METHODS

Sample Collection

One hundred fresh gastro-intestinal tracts (GIT) of guinea fowls slaughtered at the Sokoto meat and vegetable market were collected in a labeled sample bags separately, and then immediately taken to the Parasitology Laboratory, of the Faculty of Veterinary Medicine, Usmanu Danfodiyo University, Sokoto for examination.

Examination of Gastro Intestinal Tract

At the laboratory, each sample (GIT) was washed and a Myoris scissors was used to dissect the sample, each segment of the gastrointestinal tract was ligated and then examined by scrapping the contents into clean Petri dishes. The parasite found from each segment were collected and preserved in a labeled sample bottles containing 70% alcohol as a preservative.

Identification of Helminthes

Faecal scrapings were examined using saturated salt solution and sedimentation techniques for ova, while the adult worms were mounted on glass slides using polyvinyl alcohol and then examined microscopically [9] [10],

Data Analysis

Data was analyzed using proportion and simple percentage methods.

III. RESULTS AND DISCUSSION

Intestinal helminthes are reported to constitute a serious problem in all classes of livestock and poultry in Nigeria resulting in colossal economic losses [11]. Intestinal helminthes leads to malfunction of the gut due to physical damage, interference with the gut motility, alteration of intake of water and food, permeability changes and decrease absorption of nutrients leading to poor utilization of food and retarded growth [4] [12]. It is evident that, high prevalence (100%) of gastrointestinal helminthes in guinea fowl slaughtered in Sokoto State was found in this study. The high prevalence of gastro-intestinal helminthes of guinea fowls as seen in the study area could be attributed to the fact that, most of the farmers provides some shelter in form of mud house where the birds stayed at night also at a live birds markets (LBM) where same birds stayed for weeks before sale which allow transmission between infected and susceptible birds. Similar findings were observed in Zimbabwe [13]. *Ascaridia galli* has the highest prevalence (80%), followed by *Ralleitina sp.* (35%), and *Heterakis gallinarum* (30%).

Majority of the positive birds in this study carried single worm specie (55%) Mixed infection with two and three species of helminthes was also found in this study with prevalence of 35% and 15% respectively (Table 2). This is similar to reports by other workers [14] [15] [16].

Furthermore, management practices largely dictate the type and severity of internal parasite infection [17]. The risk of helminthes infection is greater in free range/organic poultry system which might be as a result of continuous exposure of the birds to the free range conditions that facilitate the infection [18]. Local poultry including guinea fowls satisfy their nutrient requirement by roaming from place to place and they seek their food in the superficial layer of the soil which is often contaminated by various organisms including insects and earth worms, abundance of beetles, cockroaches that could serve as intermediate host of the helminthes that infest the poultry [7] [14]. This could be one of the reasons for high prevalence of the helminthes in this study, as most of the guinea fowl in Sokoto State are managed either on free range system or backyard system.

The nematodes are reported to be widely distributed causing non specific clinical signs such as loss of appetite and growth, a general loss of condition and occasionally death [19]. Of particular importance among the nematodes observed in this study is *Heterakis gallinarum* which is a vector of a *Histomonas meleagridis* which causes black head in turkeys and other birds [20]. Other helminthes found in this study are, those in the family of *spiruroidea* and they are *Gongylonema spp* (10%), *Cheilospirura sp.* (5%), and *Dispharynx sp.* (5%), they are parasites of the upper digestive tract having an indirect life cycle with sheep, goats, dogs, cats, pigs and other carnivores or birds as final hosts, and dung beetles (e.g. of the genus *Aphodius*) or cockroaches as intermediate hosts. They are non pathogenic but as humans may become infected by accidental ingestion of beetles; they are of zoonotic importance [21]. *Cheilospirura hamulosa* is found in the nodules under the tough hony lining of the gizzard, where it causes softening of the muscle, sometimes sufficient to cause rupture. It also causes emaciation and anaemia [21], while *Dispharynx spiralis* are mostly found in the proventriculus and oesophagus and sometimes in the small intestines of fowl, turkeys and numerous other domestic as well as wild birds. Symptoms are emaciation and anaemia, sometimes losses can be severe [21]. Their presence could be attributed to the management practices of the guinea fowls that are mainly kept on free range system and scavenged for food in the form of insects, earthworms etc for their nutritional equipments.

Cestodes and nematodes showed high predilection for specific sites in the gastrointestinal tract of birds most of the helminthes parasites were restricted to the small intestine particularly the duodenum, where there is optimum concentration of glucose [12].

IV. CONCLUSION

This study as a follow up to several other studies, established higher prevalence of gastrointestinal helminthes of guinea fowls and throws up the need for further research into diseases and management practices of guinea fowl.

V. RECOMMENDATION

An in depth studies on the epidemiology of these diseases should be carried out and also exposure to parasite should be reduced by improved management practices and ensuring regular deworming and proper biosecurity measures.

Table 1: Prevalence of Gastrointestinal helminthes of Guinea fowls Slaughtered in Sokoto Live Birds Market.

Helminths	No of Sample	No of Positive Sample	Prevalence (%)
<i>Gongylonema sp.</i>	100	10	10
<i>Cheilospirura sp.</i>	100	5	5
<i>Dispharynx sp.</i>	100	5	5
<i>Ascaridia sp</i>	100	80	80
<i>Ralleitina sp.</i>	100	35	35
<i>Heterakis sp.</i>	100	30	30

Table 2: Relative Prevalence of single to multiple helminthes infestation of Guinea fowls Slaughtered in Sokoto Live Birds Market.

Level of Infestation	No of Sample	No of Positive Sample	Prevalence (%)
One Specie	100	55	55
Two Species	100	35	35
Three Species	100	15	15

Table 3: Prevalence of Nematodes, Cestodes and Trematodes in Guinea fowls Slaughtered in Sokoto Live Birds Market.

Helminths	No of Sample	No of Positive Sample	Prevalence (%)
<i>Nematodes</i>	100	95	95
<i>Cestodes</i>	100	35	35
<i>Trematodes</i>	100	0	0

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