



PARASITIC NEMATODE INFECTIONS IN GUINEA FOWL *NUMIDIA MELEAGRIS* IN SOKOTO, NIGERIA

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ABSTRACT

This study was carried out on gastrointestinal nematode infection in guinea fowl sold in central market locally. Guinea fowls are cheap and important sources of meat because their meat is tastier than other birds' meat and high in protein and low in cholesterol. Gastrointestinal parasites cause loss of protein in gastrointestinal tract and affect overall development and egg laying of the fowl, severe infection may cause death. Samples were purchased from Sokoto central market. Gastrointestinal tract of the sample fowls was removed with the help of sharp scissors and large and small intestines were examined for the nematodes. A high prevalence of 80% (12 infected out of 15) of infection was observed among samples studied. The observed nematodes were *Ascaridia galli* 67%, *Heterakis gallinarum* 40% and *Strongyloides avium* 20%. This high prevalence is alarming because some of these parasites can even affect human beings; therefore, careful processing and proper cooking is necessary.

Keywords: Helminthes parasites, *Numidia meleagris*, *Ascaridia galli*, *Heterakis gallinarum* *Strongyloides avium*

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nematodes that affect fowl health, their growth and development and can be a threat on human health too.

INTRODUCTION

The domestic guinea fowl (*Numidea meleagris*) is an important poultry species reared under extensive management by almost every farmer in this part of world. Guinea fowls serve as a source of protein and income for the farmers (Adam, 2009). The guinea fowl yields firmer and tastier meat than chicken. It can also contribute in income generation, reduce poverty, malnutrition and food insecurity among rural and pre-urban farmers (Alawiye, 1973). Guinea fowls are very good sources of nutrients as their meat is high in protein and low in cholesterol, it is good source of vitamin B6, selenium and niacin; eggs of guinea fowl are considered a delicacy and have a good flavour (Adam, 2009).

The major hindrance in the production of guinea fowl are helminth parasites and insect pests. These helminth parasites cause various problems ranging from gastroenteritis, anorexia, abdominal distension, diarrhoea and emaciation; all result in serious economic losses (Davaine, 1860). Gastrointestinal parasites cause loss of protein in gastrointestinal tracts in the guinea fowl; in turn which results in poor development and delaying in egg laying (Hungerford, 1969). A mixed infection of *Ascaridia galli* and *S. avium* 15.6%, *H. gallinarum* and *S. avium* 15.6%, *H. gallinarum* and *Subulura brumpti* 6.6%, *A. galli* and *H. gallinarum* 6.6 % were observed at the Maiduguri central market. Postmortem examinations of 100 samples, each of trachea and gastro-intestinal tracts revealed an overall prevalence of 90 % (Biu *et al.*, 2012). In the present study, the attention has been focused on

MATERIALS AND METHODS

Study Area

Sokoto State is located in the Sudan savannah zone in the extreme North-west part of the Nigeria, between longitude 4° 8'E and 6° 5' E and latitude 12° 0' N and 13° 54'N (11). Rainfall in this area is between May/June to early October, when the natural water bodies are often flooded (Umar & Ipinjolu, 2001). Annual rainfall in that area ranges between 500 and 1300mm, while the dry season lasts for 7-8 months that is October- May (SSMIYSC, 2010). It shared common boarders with Niger Republic to the North, Kebbi state to the south-west and Zamfara state to the East. The total land area is about 32,000 square kilometers. The settlement areas in the district are mostly low lying with various types of fresh water bodies such as swamps, ponds and rivers.

Sample Collection

Specimens of guinea fowl were bought from Sokoto central market. Each bird was dissected and the gastrointestinal tract removed with the aid of a sharp pair of scissors, and different sections viz. crop proventriculus, small and large intestine and gizzard were cut open and placed in a petridish containing normal saline (NaCl). The open part was then drawn firmly several times between the fingers under water to slip off all the stomach contents and parasites. Each Petri dish was then examined for parasite under dissecting microscope. Parasites found were isolated and washed by shaking in 0.9% saline, then they were picked by forceps and placed in 10(%) formalin solutions for preservation. The parasites were placed in a petri-dish and kept for an hour; after which they were fully

extended with the head free. They were then washed thoroughly under running tap water and stored for identification.

The anterior or head region of the parasites were cut off and placed on slide, mounted in lactophenol, and examined under light microscope for the shape of the head, size, numbers and location of the suckers and scolex. Identification of parasite was done using systema helminthum (Yamaguti, 1958). The total samples of guinea fowl (*Numidea meliagriss*) were subjected to parasitological laboratory for identification and confirmed by a senior parasitologist.

The data collected was analyzed using percentage of infection (%) and chi-square test for the level of infestation of parasites in intestine affected.

RESULTS

The result shows that out of a total of 15 specimen examined, 12 were infected with helminthes parasites which shows an infection of 80%. Helminth parasites recovered were nematodes.

Table 1: Prevalence of intestinal helmintheasis in guinea fowls *Numidea meleagriss*.

No. of fowl examined	No. Of fowl infected	Prevalence (%)
15	12	80

A total of 15 fowl were examined, out of which 12 were infected with cestode parasites, showing a total prevalence of 80%.

Table 2: Prevalence of various nematode species recovered from guinea fowl

Name of parasite	No. of fowl examined	No. of fowl infected	Total prevalence
<i>Ascaridia galli</i>	15	10	67.0%
<i>Heterakis gallinarum</i>	15	6	40.0%
<i>Strongyloides avium</i>	15	3	20.0%

DISCUSSION

It is clear from result that guinea fowl *Numidia meleagriss* has a very high infection of nematodes in this locality. So many nematodes parasites were recorded, this may be due to the fact that some of them are transmitted by the commonest insect vector *musca domestica* (Lavine, 1961). As a bird, guinea fowl feeds on the ground on crawling insects, slugs and various types of seeds.

Ascaridia species, the largest internal nematodes that infest the small intestine, can cause poor body condition and intestinal impaction. Heavy infestations can cause death. *Ascaridia* and *Heterakis* are causes of nonspecific signs as general unthriftiness, inactivity, depressed appetite, and retarded growth; death may result. A mere few ascarids may depress weight, and larger numbers may block the intestinal tract. Ascarids may migrate up the oviduct (via the cloaca) to become enshelled later within the egg (MVM, 2012).

H. gallinarum, a mild pathogen, in large numbers may cause thickening, inflammation, or nodulation in the cecal walls. Infection with *H. gallinarum* has been associated with cecal and hepatic granulomas. *Heterakis* highly pathogenic in pheasants, may cause 50% mortality. *H. gallinarum* carries *Histomonas meleagridis*, the protozoan that causes histomoniasis (MVM, 2012). The chief economic importance of the caecal worm lies in its role as a carrier of the blackhead organism *Histomonas meleagridis*. The protozoan parasite is found incorporated in the worm egg and its presence identified in the gut wall and in the reproductive systems of the male and female and in the developing eggs of this caecal worm. Earthworms may also ingest the eggs of the caecal worms and may be the means of causing infection in poultry when ingested.

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