

Screening of seven poultry species for endoparasites in some live-birds markets within Kaduna metropolis

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Target Audience: Veterinarians, Animal Scientist and General Public

Abstract

The study aimed to determine the prevalence rate, the level of endoparasites infestation among breeds of birds and most infested parasite in the birds in some live bird markets. 245 faecal samples were collected from some species of birds in 7 live bird markets in Kaduna metropolis undergo sedimentation and floatation for survey of endoparasites. The result showed that 14 (5.7%) samples were positive for endoparasites. There were prevalence variations among different endoparasites such as *Ascaridia galli* (2%), *Raillietina tetragona* (0.4%), *Subular brumpti* (0.4%) and *Eimeria oocyst* (2.9%). The endoparasites in local chicken revealed *Eimeria oocyst* and *Ascaridia gallias* 5.7% and 14.3% respectively, but layers reported *Eimeria oocysts* 8.6%. While Broilers recorded 2.9% of *Eimeria oocysts*, *Raillietina tetragona* and *Subular brumpti* each. Pigeon also recorded 2.9% of *Eimeria oocysts*. In Checheniya market, 1 (2.9%) was positive for *Ascaridia galli* and in Library market, *Eimeria oocyst* and *Ascaridia galli* had 1 (2.9%), while in Kasuwan Barci, *Eimeria oocyst* and *Raillietina tetragona* had 1 (2.9%), and Kawo market had 1 (2.9%) with *Subbular brumpti.*, Railway market had 2 (5.7%) , with *Eimeria oocyst*, and in Sabo market, *Eimeria oocyst* and *Ascaridia galli* had 1 (2.9%) while in Station market, *Eimeria oocyst* and *Ascaridia galli* had 2 (5.7%). Conclusively, this study observed a less prevalence of endoparasitism of poultry with 5.7% prevalence rate and *Eimeria oocyst* was implicated as the most infested parasite in live bird markets within Kaduna metropolis.

Keywords: Screening, Endoparasites, Live-birds Markets, Species of birds.

Description of Problem

Poultry is considered as one of the most profitable animal production sector, which play role in economic development, source of protein o many small scale farmers in developing nations (1). Poultry production in Nigeria and Africa is known to be divided into commercialized and village extensive units. Commercialized poultry production is characterized with specifically strains either for meat or egg production under intensive management, while village extensive production is made up of free range local

domestic fowls (2).

Parasitism is considered among major factors affecting poultry production (3) causing a drop in egg production, vulnerability to diseases and stunted growth as well as mortality (4). Clinical features include unthriftiness, reduced growth, decreased egg production, and death in severe cases (1). Parasites common in poultry include helminths, lice, mites, ticks, fleas and coccidian (5). Helminth parasites of poultry are divided into nematode, cestode and trematode. Nematodes include *Ascaridia*, *Heterakis* and

Capillaria, while cestodes are Raillietina and Hymenolepsis (6). In Africa, endoparasites of poultry reported prevalence with Ascaridia galli (66.7%), Heterakis spp (90.7%), Capillaria spp (34.3%), Raillietina spp (81.4%), Hymenolepis spp (57.7%) and Tetrameres spp (66.7%) (7).

The live bird markets represent a scenario where birds of different breed, age and source which are reared in different management systems coming together for purchase by consumers (8). This call for a serious concern for veterinarians as this may serve as an avenue for the spread of endoparasites and protozoan to the poultry industry. The need to assess the level of deworming program among various poultry farmers is paramount. Therefore, the aim of this research was to determine the prevalence rate, the level of endoparasites infestation among breeds of birds and most infested

parasite in the birds in some live bird markets in Kaduna metropolis.

Materials and Methods

Study Area

The study was carried out in Kaduna, Kaduna State, located in the Southern Guinea Savannah Zone of Nigeria on latitude 8 and 11.3 North and Longitude 60.109 east A. The mean annual temperature was 34oC with the hottest month, April at 40oC and the coldest period was 13.2oC between July and August. Rainfall varied between 1500mm and 100000mm rainy season lasted for 150 to 200 days and dry season occurred from late October to early April (Ref). Seven live bird markets in Kaduna metropolis which include Checheniya, Kawo, Library, Railway, Sabo, Station and Kasuwan Barci were visited.

Table 1: Prevalence of endoparasites of poultry in Kaduna metropolis live bird markets (n=280)

Parasites	No of infected (n=245)	% Prevalence
<i>Ascaridia galli</i>	5	2
<i>Eimeria oocyst</i>	7	2.9
<i>Raillietina tetragona</i>	1	0.4
<i>Subular brumpti</i>	1	0.4
Total	14	5.7

Table 2: Prevalence (%) of endoparasites among poultry breeds from the seven live bird market within Kaduna metropolis

Poultry	<i>Eimeria oocyst</i>	<i>Ascaridia galli</i>	<i>Raillietina tetragona</i>	<i>Subular brumpti</i>
Local chicken	5.7	14.3	-	-
Layers	8.6	-	-	-
Broilers	2.9	-	2.9	2.9
Pigeon	2.9	-	-	-

Faecal sample collection

Five (5) fecal samples were collected from local chickens, layers, broilers, ducks, guinea fowls, pigeons and turkeys in each of the seven markets visited. A total of 245 fecal

samples were collected in sterilized polythene bags and labeled appropriately. The faecal sample collection lasted for seven weeks, between the months of July to August and birds from the established breeds were keenly

monitored as they defecate and the freshly voided fecal material, at least 10 g was scooped into a sterilized polythene bags and identified appropriately then was stored in a cooler box containing ice packs to achieve 4°C until analysis in the laboratory. The fecal samples were processed using saturated salt (NaCl) and distilled water for simple floatation and sedimentation techniques respectively, which both are qualitative test used for preliminary survey to establish the parasite groups due to difference in effects of specific gravity on egg floatation.

Feecal analyses

Sedimentation method

At least 1 to 3 g of faeces was weighed into a container and poured 40 to 50 ml of water into the same container, then the faeces and water were thoroughly mixed and the fecal suspension was filtered through a strainer into another container. The filtered fecal suspension was poured into a test tube and the supernatant was carefully removed using

pipette. The sediment was re-suspended with 5 ml of water then allowed to 15 minutes, where the supernatant was carefully discarded again. Using a pipette, a small drop of the sediment was placed on a slide and covered with coverslip then examined under microscope at 10× magnification (9).

Floatation method

At least 1 to 3 g of faeces was weighed into a container and 50 ml of the floatation solution (saturated NaCl) was poured into the same container. The faeces and floatation solution were thoroughly mixed using a woody applicator and the fecal suspension was poured through a strainer into another container, then the fecal suspension was again poured into a test tube and topped off with more floatation solution. Coverslip was placed on the top of the test and left to stand for 20 minutes then carefully lifted the coverslip off the test tube and placed on a clean slide then examined using a microscope at 10× magnification (10).

Table 3: Percentage (%) of endoparasites of poultry from the seven live bird markets within Kaduna metropolis

Parasites	Checheniya	Library	Kasuwan Barci	Kawo	Railway	Sabo	Station
<i>Eimeria oocyst</i>	-	2.9	2.9	-	5.7	2.9	5.7
<i>Ascaridia galli</i>	2.9	2.9	-	-	-	2.9	5.7
<i>Raillietina</i>	-	-	2.9	-	-	-	-
<i>tetragona</i>	-	-	-	2.9	-	-	-
<i>Subular brumpti</i>							

Data analysis

Data collected on numbers of endoparasites in faecal samples from each live bird market were manually imported into Microsoft Excel and statistically analyzed using simple statistical method such as prevalence rate and Chi square test.

Results

The result of the faecal analyses showed

that of the 245 faecal samples collected, 14 (5.7%) of the samples were collectively positive for helminth eggs and coccidia oocysts. There were prevalence variations among different helminth eggs and coccidia oocysts as shown in Table1. The infestation of endoparasites were high in local chickens among other breeds of birds from the Chencheniya, Library, Kasuwan Barci, Kawo, Railway, Sabo and Station live bird markets

within Kaduna metropolis are shown in Table 2. The *Eimeria* oocyst was observed to be the most infested endoparasites of poultry found in the Chencheniya, Library, Kasuwan Barci, Kawo, Railway, Sabo and Station live bird markets within Kaduna metropolis as represented in Table 3.

Discussion

The overall prevalence of parasite in this study was 5.7%. This showed that poultry farmers in Kaduna metropolis have a good deworming program and the antihelminthics used were effective, which the parasites did not develop drug resistant. There seems to be an improvement on the awareness of poultry farmers on the importance of routine deworming program now because of the low prevalence of 5.7% as compared to the 61.5% (11) 90.2% (6) 81.0% (12) and 81.5% (13).

Local birds had the highest prevalence of endoparasitism in this study, composed of significant percentage from *Ascaridia galli* and *Eimeria* species, similar findings were observed in a reported study (2). This was attributed to the free range and scavenging nature of local birds as they are raised extensively (19).

Eimeria species has the highest prevalence among other endoparasites screened from the live bird market within Kaduna Metropolis, this was supported in a similar study reported Akure (14). This is because *Eimeria* species are ubiquitous and the season which the faecal samples were screened was within the raining season (May to September) in northern Nigeria that support its high prevalence rate (15). *Ascaridia galli* was the commonest nematode revealed, which agrees with some reported studies (2,9,16), but a study reported *Heterakis gallinarum* as dominant (10). Other endoparasites observed from this research include *Raillietina tetragona* and *Subulura brumpti*, while the latter was reported as non-pathogenic parasite (17). *Raillietina tetragona* was observed with very

low prevalence, this could be attributed to non-accessibility of infested snails around the live bird market premises (18).

Conclusions and Applications

1. This study revealed highest infestation in local chickens and endoparasitism in Kaduna metropolis has 5.7% prevalence rate with *Eimeria* been the most infested parasite.
2. The health implication of this study would be reflected from revealing about the good deworming practice in poultry industry which boosts economic benefits and by extension revealing that live birds markets in Kaduna metropolis may not be a major source of infestation of endoparasites due to its low prevalence.

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