# SURVEY OF INTESTINAL HELMINTHES AMONG DOMESTIC FOWLS IN IJEBU-ODE, SOUTH-WEST NIGERIA

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**Abstract**
*A study was conducted in Ijebu-Ode to determine the prevalence of intestinal helminthes among domestic fowls. A total of 90 gastrointestinal tracts of slaughtered domestic fowls were collected from Oke-Aje Market of Ijebu Ode during the festive period. The samples included gastrointestinal tracts of 15 cockerels, 55 layers and 20 broilers. They were examined for the presence of helminthes using direct saline smear and formol ether concentration technique. The prevalence of helminthes was also studied through questionnaire by respondents who are farmers that sell to the vendors. Four helminth species were observed with overall prevalence of 41 (45.6%). A Cestode, Raillietina echinibothridia; 3 (5.8%) was the least. Ascarid, Capillaria concorta; 5 (9.6%), Heterakis gallinarium; 10 (19.23%) and Ascarida galli; 34 (65.38%) were the predominant species. Layers were the most affected birds 25 (71.4%), followed by Cockerel 8 (53.3%) and the least was broiler 8 (40%) and the differences were statistically significant (P < 0.05). Deduction from it revealed farmers out of curiosity to improve egg laying and introduction of balance diet had poultry feed supplemented with various additives both foreign and local which may have been contaminated with infective stage of worms as a result of non-hygienic practice. Lack of proper veterinary care and unreliable history of strategic anti-helminthes medications as well as poor sanitary conditions may contribute to contaminate poultry feed. Therefore, it is important to educate poultry farmers in the study area, the vital importance of early helminthes prophylaxis, strict disinfection of pen during the growth period of birds to reduce incidence of worms, the use of prescribed larvacide in the cleaning exercise to interrupt the life cycle of the parasite intermediate host.*

**Keywords:** *Helminthes, prevalence, domestic fowl, gastrointestinal*

## Introduction

Poultry is one of the conventional livestock industries kept throughout the world for meat production and animal protein source. Chickens being part of poultry have been kept since ancient Egypt, China and India. Poultry productions are now on a large scale to feed growing human population because of the increase in food demand (James, 1981; Eekeren *et al*., 1995).

Problem of poultry production worldwide has been hinged on low productivity, poor genetic status and high mortality due to microbial infestation which stand first in the list. However, less attention has been paid to worm infestation which comprise internal parasites inhibiting hosts' nutritional status by affecting the intake, intestinal absorption, metabolism and excretion of nutrients (Stephenson, 1989).

The chicken, *Gallus gallus*, is an omnivore which often scratch at the soil in search for food items which exposes them to infection of parasite (Adang, 2008; Oniye *et al*., 2000). Chicken feed on a wide range of diets, a habit that predispose them to parasite infection (Symth, 1976), with many of the parasites serving as intermediate host in chicken that are free ranging (Frantovo, 2000). The gastro intestinal parasites invading

the host possess morphological and physiological features such as small thread like cylindrical body, hooks and hard body cuticle that enhance their adaptation to long living and existence in their host. These parasites constitute a major factor limiting productivity of poultry industries by affecting the growth rate of the host resulting in malfunctioning of organs and eventually death (Soulsby, 1982). Heavy gastrointestinal helminthiasis is characterized by emaciation, mucoid diarrhea, loss of appetite, weakness, paralysis, thickening of gastrointestinal tracts, and death (Fatihu *et al*., 1991).

The prevalence of Nematodes in caecum e.g *H. gallinarium* could be attributed to developed digestive system, thus given greater chances of establishing a host parasite relationship with *A. galli* (Oyeka, 1989).

In commercial egg production system, the most reported species are *A. galli, H. gallinarium and Capillaria* spp. However, only few reports have been recorded with the prevalence and significance of helminthes species in commercial production system. Reports have shown that *A. galli* in heavy infection might cause partial or total obstruction of the duodenum or jejunum leading to death, while the adult worm migrate through the lumina of the large intestine, and incorporated into the body (Macklin, 2013).

The objectives of this study were to determine the prevalence of intestinal worm parasites in the domestic fowls in Ijebu-ode, South West Nigeria, identify the probable source of infection in domestic fowl and to suggest possible control measures for intestinal parasites of domestic fowl.

**Materials and Methods**

Study Area: The study was carried out in Ijebu Ode at the end of the month of December 2015, which coincides with a major festive period.

Ijebu-Ode is situated in the rain forest zone of South-west Nigeria. It is situated between longitudes $6^0$49 and $6^0$82 and latitudes $3^0$55 and $3^0$92. It is a town with basic and social infrastructure and heterogeneous population.

**Sample Collection and Analysis**

This study was carried out during end of the year festival when inhabitants purchase fowl for the festival. The major food item market was visited prior to commencement of the research to intimate the chicken vendors of the purpose of research.

Total samples of 90 gastrointestinal tracts of slaughtered domestic fowls were collected from butchers in the market. The samples collected were intestinal tracts of 15 cockerels, 55 layers and 20 broilers. The tracts were collected separately into different container with 10% formalin and taken to laboratory for parasite screening.

The guts were dissected longitudinally and gentle scrapping of the content of the guts was done to remove the worms embedded in the mucosa layer of various compartments. The contents were examined macroscopically for the adult worm.

The worms found were identified using the methods of Anderson (1992) and Khalil (1994). They were counted before being preserved in 70% ethanol.

Questionnaire was designed to obtained information on farmers' activities in the poultry which include the education status of farmers, frequency of observation of parasites on birds, seasonality of prevalence of parasites and types of local and improved drugs used by the farmers to treat parasitic infections. Results were analyzed in simple percentage.

**Results**

Forty-one (41) chickens (45.6%) were found to harbour one form of worm or the other. Four helminthic worm species were identified during the examination: *R. echinibothridia, C. concorta, H. gallinarium* and *A. galli* with prevalence level of 5.8, 9.6, 19.23 and 65.38% respectively (Table 1).

Table 2 showed the distribution pattern of worms according to chicken type, broilers had the least prevalent rate of 40% and the highest prevalent was among the layer 71.4%.

Table 3 showed distribution pattern in relation to worm load that inhabit each type of chicken, broilers had the least prevalent of 11.5% and the layers had the highest worm prevalence of 63.6%.

Forty (40) questionnaires were administered to poultry farmers to determine their level of knowledge about worm infestation in chicken. Twenty (55.6%) reported high prevalence of parasitic worms during the rainy season, 16 (44.4%) of the respondents had observed such during the dry season (Table 4).

Treatments that were claimed to be effective by poultry farmers are indigenous and chemotherapeutic in nature. 25% farmers used *Nicotian tabacum* extract to treat infected birds by adding such to drinking water; 22% used *Carica papaya* extract, 16% had employed *Piper nigrum*, 11% used *Allium sativum* and 3% had employed extract of *Aloe vera* (Table 8). Respondent who employed both indigenous treatment and chemotherapy that came in various trade names had 16.7% using piperazine, 16.7% used fembendazole: 8.3% each employed Allium care and leviamisole, 50% used wormer care to treat worm infestation (Table 6).

**Table 1: Prevalence of Intestinal helminthes among slaughtered fowls in Ijebu Ode, Nigeria**

| Worm type | Class | No of parasite found | % |
|---|---|---|---|
| R. echinibothridia | Cestoda | 3 | 5.8 |
| C. contorta | Nematoda | 5 | 9.6 |
| H. gallinarium | Nematoda | 10 | 19.23 |
| A. galli | Nematoda | 34 | 65.38 |
| **Total** | | **52** | **100%** |

**Table 2: Distribution Pattern of worms according to chicken type in Ijebu Ode, Nigeria**

| Chicken type | No Examined | No infected | % infected |
|---|---|---|---|
| Broilers | 20 | 8 | 40 |
| Cockerels | 15 | 8 | 53.3 |
| Layers | 55 | 25 | 71.4 |
| **Total** | **90** | **41** | **45.6** |

**Table 3: Distribution Pattern of chicken type in relation to worm load in Ijebu Ode, Nigeria**

| Chicken type | No Examined | Average No of worms found | % |
|---|---|---|---|
| Broilers | 20 | 6 | 30 |
| Cockerels | 15 | 11 | 73.3 |
| Layers | 55 | 35 | 64 |
| **Total** | **90** | **52** | **57** |

**Table 4: Frequency pattern of Intestinal helminthes among observed fowls in Ijebu Ode, Nigeria**

| Season | No of Respondents | % |
|---|---|---|
| Rainy | 20 | 55.6 |
| Dry | 16 | 44.4 |
| **Total** | **36** | **100%** |

**Table 5: Types of indigenous treatment used for treatment of poultry in Ijebu Ode, Nigeria**

| Months | Frequency | % |
|---|---|---|
| Carica papaya | 8 | 22 |
| Nicotian tabacum | 9 | 25 |
| Allium cepa | 1 | 3 |
| Piper nigrum | 6 | 16 |
| Allium sativum | 4 | 11 |
| Azadirachta indica | 2 | 6 |
| Aloe vera | 1 | 3 |
| Neem | 5 | 14 |
| **Total** | **52** | **100%** |

**Table 6: Respondent using different types of drugs as chemotherapy in addition to indigenous treatment for poultry in Ijebu Ode, Nigeria**

| Drug | Frequency | % |
|---|---|---|
| Piperazine | 2 | 16.7 |
| Fembendazole | 2 | 16.7 |
| Allium care | 1 | 8.3 |
| Lavamisole | 1 | 8.3 |
| Wormer care | 6 | 50.0 |
| **Total** | **12** | **100%** |

**Discussion and Conclusion**

Intestinal helminthes infection among chicken type namely broilers, cockerels, layers were investigated by determining the prevalence, also to know some factors that made poultry birds vulnerable to worm infestation. The results showed that 41(45.6%) of the birds were positive for at least one form of intestinal helminthes infection, which is in contrast to the report of Luka and Ndam (2007) where 62% of 92 birds in Zaria were infected with gastrointestinal parasites.

Three Nematodes and one Cestode were also found in contrast to Luka and Ndam (2007) with the findings of five species each of Cestode and Nematode. *Ascaris* worm was the most prevalent in the birds examined, which is in agreement with the report of Macklin (2013) and Opara *et al*., (2014); followed by *H gallirannae*. This is however in

contrast to the findings of Ashenafi and Eshetu (2004) where cestode worms were the most prevalent, followed by nematodes.

Broiler had the least infestation of worm 8(40%) probably due to reduced number of months required for its rearing which is between 3-4 months in comparism with cockerels 8(53.3%, layers 25 (71.5%) requiring 6 months and 18-24 months respectively. Also, layers had the highest worm burden 35 (67.3%) followed by Cockerels 15 (21.2%) and broilers 6(11.5%) which conforms to the above as the number of months of rearing determine the worm load as reported by Permin and Hansen (1998).

Exceptionally, the case of layers being the most prevalent in terms of worm infestation and burden may be due to different supplementary additives, both foreign and local. This had been corroborated by Fakae *et al.,* (1991).

Twenty (55.6%) respondents observed parasites mostly during the rainy season. This may be attributed to the fact that such condition is not harsh to infective stage of the worm to infest poultry birds. Sixteen (42%) of the respondents observed worms during the dry season, a reason attributed to the fact that litters get dried up quickly due to high temperature which will not favour the survival of the infective stage of the parasite.

Farmers had resulted into the use of plant extracts as indigenous treatment which was claimed to have been effective by traditional healers as antihelminth in human and animals. 9(25%) had used *N. tabacum*; 8(25%) had used *C. papaya,* 6(16%) used *P. nigrum*, while 3(1%) each had used *A. cepa* and *A. vera*.

Chemotherapy coming in different trade names was not strange to the farmers. 6(50%) administered Worm care, 2(16.7%) each used Piperazine and Fermbendazole while 1(8.3%) each used Allium care and Leviamisole. This conformed to the report of Darre (2008) where similar drugs were used for the treatment of intestinal worms in poultry. However, the challenges faced in the administration of these drugs were the cost of purchase and eagerness by farmer to get rid of the worms and occasionally administering over dose of the drugs.

Conclusively, it is established that intestinal helminthes infection occurred in poultry farming and efforts must be directed towards prevention and control, treatment of poultry birds; affordable veterinary services should be available to farmers by governmental agencies at little or no cost, it is vital for the government extension services on agriculture be easily accessible to farmers, while a quick response by expert in treatment of poultry should be prompt on receiving calls from farmers who would have noticed signs, symptoms that brings discomfort to poultry.

Practice of high level of hygiene, use of approved germicides, larvicides by farmers at an approved dosage and periodic anti-helminthes treatment should be a routine practice in poultry farms such that farmers can optimally produce poultry birds as source of food and animals' protein to feed the growing population of Nigeria.

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