

# Gastrointestinal Helminth Parasites of Local and Exotic Chickens Slaughtered in Gwagwalada, Abuja (FCT), Nigeria

<sup>1</sup>Matur, B.M, <sup>1</sup>Dawam, N.N and <sup>1</sup>Malann, Y.D

<sup>1</sup>dept of Biological Sciences

University of Abuja,

P. M. B 117, Abuja Nigeria (+234)

malaumatur@gmail.com

## ABSTRACT

Five hundred (500) gastrointestinal tracts of local and exotic breeds of chickens slaughtered at the Gwagwalada Market (the FCT, Abuja) were collected and examined for helminth parasites. Formol-ether concentration technique was used to concentrate the gut content and analysis carried out. Six different gastrointestinal parasites were isolated and identified. Of these parasites, *Ascaris galli* was found to be the most prevalent (51.60%) among the chickens. Other parasites encountered included; *Railleitina echinobothrida* (19.60%), *R. tretragona* (22.20%), *Hymenolepsis carioca* (23.00%), *Heterakis gallinarum* (31.00%) and *Syngamus trachea* (1.80%). There was significant difference ( $\chi^2=6.64$ ,  $df = 1$ ;  $P \leq 0.01$ ) in prevalence rate of infection between the local and exotic breeds of chickens. Parasite preference in respect to sex was also recorded. Females harbored more parasites than males. The significance and socio-economic implications of these parasites are also highlighted. [New York Science Journal 2010;3(5):96-99]. (ISSN 1554 – 0200).

**Key words:** *Gastrointestinal, Helminth, Parasites, chicken*

## INTRODUCTION

The chicken, *Gallus gallus* is believed to have descended from the wild Indian and South East Asian red jungle fowl (Permin and Ranvig, 2001). The bird provides man with high nutritional value and other socio-economic benefits which cannot be over emphasized (Matur, 2002). Besides providing employment and income for small-scale farmers particularly in the off cropping season, poultry integrates very well into other farming activities like cropping and fish farming (Aini, *et al.*, 1990).

A lot of losses in poultry have been linked to disease causing agents such as viruses, bacteria and parasites. It has been estimated that more than 750 million chickens, guinea fowls and ducklings in Africa die each year as a result of various infections (Sonaiya, 1990). Although, somewhat reduction in bird's parasitic infection has been achieved in commercial production system mostly due to improved housing, hygiene and management practices the prevalence of gastrointestinal parasites is still very rampant (Pandey, *et al.*, 1992).

The domestic chicken feeds on a wide range of food substances. This ranged from grains, fruits to insects which may harbour infective stages of parasites thereby predisposing them to parasites infection particularly gastro-intestinal parasites (Oniye, *et al.*, 2001; Frantovo, 2000). Helminth parasites of chickens are prevalent in many parts of the world (Hodasi, 1978). In Nigeria, documented evidences abound from Anambra (Oyeka, 1989), Zaria (Fatihu, *et al.*, 1991;

Oniye, *et al.*, 2001; Luka and Ndams, 2007) to Plateau State (Fabiya, 1972; Pam, *et al.*, 2006).

Helminth parasites of poultry are commonly divided into three main groups; nematodes, cestodes and trematodes. Nematodes constitute the most important group of helminth parasites of poultry both in number of species and the extent of damage they cause; the main genera include *Capillaria*, *Heterakis*, and *Ascaridia* (Jordan and Pattison, 1996). *Ascaris galli* has been incriminated as the most common and most important parasite of poultry (Hodasi, 1978; Pam, *et al.*, 2006; Luka and Ndams, 2007). The cestodes of significant importance are of the two genera *Railleitina* and *Hymenolepsis* (Oniye *et al.*, 2001; Luka and Ndams, 2007). These trematode infections are not very common in domestic chickens as *Prosthogonimus ntowi* has been the only species reported from the forest belt of Ghana (Hodasi, 1978).

The teeming population of the Federal Capital Territory (Abuja) has necessitated certain socio-economic measure towards meeting up with the standard of living which includes increase poultry production and its attendant management practices. Also, paucity of information about helminth parasites of domestic chickens in the FCT and development of new variant species forms of parasites and other disease such as flue; influenza etc is what necessitates this survey.

## MATERIALS AND METHODS

**STUDY AREA:** The Federal Capital Territory (FCT), Abuja is located geographically at the centre of Nigeria. It lies between latitude 8° 02' and 9°25' N; longitude

6°45" and 7°45" E. The FCT falls in the semi-seasonal equatorial climate zone with associated contrasting wet and dry periods.

**SAMPLING:** Five hundred (500) alimentary tracts of local and exotic birds were collected from poultry dressing units in Gwagwalada market. The alimentary tracts were dissected into sections containing respective organs – esophagus, crop, proventriculus, duodenum, small intestine, caeca and rectum and kept separately in Petri dishes containing physiological saline.

**EXAMINATION PROCEDURE:** The alimentary canal of each chicken was opened from the esophagus down to the rectum (Fatihu, *et al.*, 1991) and all worms visible to the naked eye were collected using a pair of

forceps. Recovered nematodes were preserved in 70% alcohol while cestodes were fixed with acetic formalin alcohol, stained with haematoxylin and mounted in Canada balsam (Belghyti, *et al.*, 1994; Oniye, *et al.*, 2001). Scrapings from the intestinal mucosa from the upper, middle and lower linings of the intestine and caecum were concentrated using the formol-ether concentration technique (Cheesbrough, 1998).

**IDENTIFICATION:** All adult worms were identified directly under the microscope. The identification keys of Soulsby (1982) and Khali, *et al.*, (1994) were adopted.

**STATISTICAL ANALYSIS:** The result obtained was analyzed using Chi-square statistical test.

## RESULTS

Table 1: Incidence of gastro-intestinal helminth parasites of chicken

Parasites	No infected (n=500)	% prevalence
<i>A. galli</i>	258	51.6
<i>R. echinobothrida</i>	98	19.6
<i>R. tetragona</i>	111	22.2
<i>H. gallinarum</i>	155	31.0
<i>S. trachea</i>	9	1.8
<i>H. carioca</i>	115	23.0

Table 2: Prevalence of gastro-intestinal parasites in relation to sex and breed

Parasites	Local breeds (n=250)		Exotic breed (n=250)		% prevalence
	Male	female	Male	female	
<i>A. galli</i>	83(16.6)	71(14.2)	55(11.0)	49(9.8.0)	51.6
<i>R. echinobothrida</i>	21(4.2)	25(5.0)	09(1.8)	43(8.6)	19.6
<i>R. tetragona</i>	34(6.8)	35(7.0)	20(4.0)	22(4.4)	22.2
<i>H. gallinarum</i>	48(9.6)	57(11.4)	19(3.8)	31(6.2)	31.0
<i>S. trachea</i>	07(1.4)	2(0.4)	-	-	1.8
<i>H. carioca</i>	30(6.0)	38(7.6)	22(4.4)	25(5.0)	23.0

Five hundred gastrointestinal tracts comprising of 250 local and 250 exotic breeds of poultry birds (*Gallus gallus*) were collected from slaughter houses in Gwagwalada market and screened for gastro-intestinal parasites. A total of six different species of intestinal parasites were isolated and identified. The result revealed that *A. galli*, *H. gallinarum* and *H. carioca* had the highest prevalence rate of infection in both the local and exotic breeds. The percentage prevalence recorded was 51.6%, 31.0% and 23.0% respectively.

Parasites preference in relation to sex was also observed. *A. galli* was more prevalent in male chickens while *H. gallinarum* and *H. carioca* had high preference for female birds (11.4% and 7.6%; 6.2% and 3.8% in the local and exotic breeds) than the male

(9.6% and 3.8%; 6.0% and 4.4%) chickens respectively. *S. trachea* happened to be isolated only from the local breed with more infections observed in males (1.4%) than females (0.4%). The total prevalence rate of infection was 1.8%.

*R. echinobothrida* and *R. tetragona* were recovered from both local and exotic breeds with a percentage prevalence of 19.0% and 22.2% respectively. They also showed some degree of preference as regards to sex, with more infection rates observed in females birds than in the males.

## DISCUSSION

The survey of the gastrointestinal helminthes of chickens slaughtered in Gwagwalada area of the

FCT, Abuja is the second report after that of Matur (2002) when the FCT was relocated to Abuja in 1980.

Six species of helminth parasites were encountered in this study: *Ascaris galli* had the highest prevalence rate in both local and exotic breed. This species had been reported in several studies as the commonest and most important helminth infection of poultry (Jordan and Pattison, 1996). Similar reports have been documented from other parts of Nigeria; Jos – Plateau (Fabiyyi, 1972; Pam, *et al.*, 2006) and Anambra South east Nigeria (Oyeka, 1989) and Zaria (Fatihi, *et al.*, 1991; Oniye *et al.*, 200, Luka and Ndams, 2007). These reports incriminated the nematodes and the cestode as very important parasites of birds (Hodasi, 1978; Pam, *et al.*, 2006; Luka and Ndams, 2007). *Syngamus trachea* that was absent in the exotic breed had low prevalence rate in local breed (1.8%) this is in agreement with Pam, *et al.*, (2006); Luka and Ndams, (2007) who reported in their work that this parasite has low prevalence rate of infection compared to the other helminth parasites. Other species that recorded significant level of infection include *Raileithina echinobothrida* (12.6%), *R. tetragona* (22.2%), *Heterakis gallinarum* (31.0%) and *Hymenolepis carioca* (23.0%). The overall prevalence of infection in local breed (90.2%) was significantly higher ( $\chi^2=6.635$ ,  $df=1$ ;  $P\leq 0.01$ ) than the exotic breed (53.0%). This is not uncommon because of their free range mode of management practice which allows them free access to virtually all types of environment and hence, predisposing them to various forms of infections. According to Frantovo, (2000) and Oniye, *et al.* (2001), domestic chickens feed widely therefore, they become more predisposed to infection.

The duration for the local breed to reach table size is much longer compared to the exotic breeds which are fed usually on artificial diets. This of cause could be the likely reason for the higher infections in the local breeds which continue to accumulate parasites in the system as well as the poor management practices inherent in free range system.

The study revealed that female birds were more infected with helminth parasites than the males in both local and exotic. This might not be unconnected to their feeding. Female birds are known to be more voracious in their feeding habits especially during egg production than the males which remain largely selective (Sonaiya, 1990).

In conclusion, more attention should be focused towards the improvement of the poultry management and care of local breed of chickens which are usually free ranging. There is therefore, the need to supplement scavenging poultry with energy sources (Obi and Sonaiya, 1995).

#### Correspondence:

Matur Bernard Malau

Department of Biological sciences, University of Abuja, Nigeria P. M. B 117, Abuja, Nigeria

Cellular phone +2348036843775

Email: malaumatur@gmail.com

#### REFERENCES

- Aini, I. (1990): Indigenous chicken production in South East Asia. *World's Poultry Science Journal*, 46:51-57.
- Belghyti, D., Berrada – Rkhami, O., Boy, V., Aguesse, P., Gabrion C. (1994): Population Biology of two helminth Parasites of Flat fishes from the Atlantic coast of Morocco. *Journal of Fish Biology*, 44: 1005-1021.
- Cheesbrough, M. (1998): *District Laboratory Practice in Tropical Countries Part I*. Cambridge University Press, U k, pp 193-199.
- Fatihi, M.Y., Ogbobu, V.C., Njoku, C.U. and Sarror, D.I. (1991): Comparative studies of gastrointestinal helminth of poultry in Zaria, Nigeria. *Revue d'e' elevage Medicine Veterinarian Pour pays Tropicaux*, 44 (2): 175-177.
- Fabiyyi, J.P. (1972). Incidence of helminth parasites of the domestic fowl in the Vom area of Benue – Plateau state, Nigeria. *Bulletin of Epizootic Diseases of Africa*, 20:229-234.
- Frantovo, D. (2000): Some parasitic nematodes (Nematoda) of birds (Aves) in the Czech Republic. *Acta Societatis Zoologicae Bohemicae*
- Hodasi, J.K.M. (1969): Comparative studies on the helminth fauna of Native and introduced domestic fowls in Ghana. *Journal of Helminthological*, 43:35-52.
- Jordan, F.T.M., and Pattison, M. (1996): *Poultry diseases*, 4<sup>th</sup> edition, Pp 283-286.
- Khalil, L.F., Jones, A., Bray, R.A. (1994): *Keys to the cestodes parasites of vertebrates*. International Institute of Parasitology (an Institute of CAB International)
- Luka, S.A., and Ndams, I.S. (2007): Gastrointestinal parasites of domestic chickens *Gallus gallus domesticus* Linnaeus 1785 in Samaru Zaria, Nigeria *Science World Journal*, 2(1): 27
- Obi, O.O. and Sonaiya, E.B. (1995): Gross Margin analysis of small

- holder rural poultry production in Osun state. *Nigerian Journal of Animal Production*, 22:97-105.
- Matur, B. M (2002): Prevalence of some gastrointestinal parasites in pullets of chickens (*Gallus gallus domestica*) in the Federal Capital Territory Abuja, Nigeria *Journal of tropical Biosciences*, vol. 2(1): 78-82
- Oniye, S.J., Audu P.A., Adebote, D.A., Kwaghe, B.B., Ajanusi, O.J. and Nfor, M.B. (2001): Survey of Helminth Parasites of Laughing Dove (*Streptopelia senegalensis*) in Zaria, Nigeria. *African Journal of Natural Sciences*, 4: 65-66.
- Oyeka, C.A. (1989): Prevalence of Intestinal helminthes in poultry farms in Anambra State, Nigeria. *Bulletin of Animal Health and Production in Africa*, 37:217-220.
- Pam, V.A., Daniel, L.N., Brengshak, S., Wai, M.S., Omalu, C.J., Ashi, R.D. (2006): The survey of intestinal parasites of local and exotic chickens slaughtered at Yankari market, Jos, Plateau State. *Journal of Medical and Pharmaceutical Sciences*, 2 (3) 27.
- Pandey, V.S., Demey, F. and Verhulst, A. (1992): *Parasitic diseases: A neglected problem in village poultry in Sub-Saharan Africa*. In: Pandey, V.S and Demey F. (Eds). *Village poultry production in Africa* Rabat, Morocco, Pp 136-141.
- Permin, A and Ranvig, H. (2001): Genetic resistance in relation to *Ascaridia galli* in chickens. *Veterinary Parasitology*, 102(1-2): 101-111.
- Sonaiya, E.B. (1990): The context and prospects for development of Small holder rural poultry production in Africa. *Proceedings CTA International Seminar on small holder Rural Poultry Production. Thessaloniki, Greece*, 1:35-52.
- Soulsby, E. J.L. (1982): *Helminths, Arthropods and Protozoa of Demonstrated Animals*, 7 eds. Bailliere Tindal, London, 809pp.

04/13/2010