

FULL LENGTH RESEARCH ARTICLE

HELMINTHES PARASITES OF LOCAL CHICKENS IN BAUCHI STATE, NIGERIA

YORIYO, K. P.¹, ADANG, K. L.¹, FABIYI, J. P.² & ADAMU, S. U.²¹Department of Biological Sciences
Gombe State University, Gombe, Nigeria²Biological Sciences Programme
Abubakar Tafawa Balewa University, Bauchi, Nigeria*(Corresponding author)
ladang20@yahoo.com

ABSTRACT

The prevalence of helminthes infections in domestic fowls in Bauchi was carried out aimed at providing information on their species composition and prevalence. Two hundred chickens comprising of one hundred males and one hundred females were collected on a weekly basis for eight months and screened for helminthes parasites. A total infection of 87.8% was recorded consisting of the following nematodes and cestodes: *Ascaridia styphlocerca* (4.5%), *Heterakis brevispiculum* (18.0%), *Subulura brumpti* (15.5%), *Gongylonema congolense* (40.5%), *Raillietina tetragona* (38.5%), *Raillietina echinobothrida* (42.0%), *Raillietina cesticillus* (10.5%), *Choanotaenia infundibulum* (3.3%) and *Raillietina magninumida* (8%). There was no significant difference in infection rates between the sexes ($P < 0.05$). Trematode infection was not recorded in this study.

Keywords: Helminthes, Prevalence, Local chickens, Bauchi, Nigeria

INTRODUCTION

In Nigeria, a lot of emphasis has been placed on modern poultry production and management using exotic breeds of chickens. Despite this, most of the chickens consumed in the country are local breed purely raised in the villages as free-rangers, particularly in the northern Nigeria where modern poultry production is not well developed (Gadzama & Strivastava 1986).

Gadzama & Strivastava (1986) found that exotic breeds of chickens appeared to be less tolerable to the high environmental temperature and dry condition of the Northern areas. They further inferred that during hot period, quite a large number of exotic breeds die due to heat stroke while the local breeds have acclimatized to these conditions.

However there are a lot of factors that hinder the development of poultry industry to its full capacity. These factors include poor management systems and diseases. Poultry diseases are the major cause of financial loss in poultry production (Oluyemi & Rober, 1979). Intestinal parasitism is a common problem in poultry especially those reared under extensive systems. Ajayi & Ajayi (1983) found that the major constraint to profitable livestock and poultry production in several countries including Nigeria could be traced to helminthiasis. Fabiyi (1983) also reported that helminth constitutes a serious problem and great economic loss to poultry management. The report of about 11.8 million local chickens and 114 million exotic chickens present in Bauchi State (Akinkumi *et al.* 1979) means the State has great potential for poultry industry. This survey will go a long way in identifying the common helminthic parasites in the area with a view to safeguarding the industry from catastrophe.

MATERIALS AND METHODS

The alimentary tracts of 200 locally slaughtered adult domestic chickens were collected from the dressing units at Muda Lawal and

The collected tracts were kept separately for the two sexes. The specimens were immediately taken to the laboratory for observation and analysis. At the laboratory each gut was spread on a tray and the different segments identified and tied with a thread. Each section of the alimentary tract was then cut and placed in a separate labelled Petri-dish, slit open and the content washed gently into a Petri-dish. Each washed tract was then scrapped to remove the lining membrane. The other organs remaining in the carcass were examined for parasites using binocular dissecting microscope.

All worms collected were preserved in 10% formalin. Thereafter, the worms were cleared and mounted in lacto phenol and identified by examination under the compound microscope.

Identification of *Ascaridia* species followed the criteria of Mozgovi (1953) and Lamaire (1936). That of *Gongylonema* was based on description by Lamaire (1936) and Fain (1955). *Heterakis* and *Subulura* were identified using the criteria adopted by Lamaire (1936) and Soulsby (1965). Tapeworm species were largely determined using the criteria described by Lamaire (1936) and Reid (1962).

RESULTS

Out of the 200 birds examined for helminth parasites, 174 (87.8%) were infected with different species. The parasites recovered were, four species of nematodes; namely *Ascaridia styphlocerca* Stossich 1904, *Gongylonema congolense* Fain 1955, *Heterakis brevispiculum* Gendre 1911, *Subulura brumpti* Lopez-Neyra 1922 and five species of cestodes; *Raillietina echinobothrida* Megnin 1880, *Raillietina tetragona* Molin 1858, *Choanotaenia infundibulum* Bloch 1779, *Raillietina magninumida* Jones 1930 and *Raillietina cesticillus* Molin 1858 (Table 1). Many of the birds harboured more than one species of helminth parasites.

Prevalence of species

Table 1 shows the percentage prevalence of the species and the location where they occur. *Gongylonema congolense*, *H. brevispiculum* and *S. brumpti* were the most frequently encountered nematodes in the survey, while *Ascaridia styphlocerca* was rare and uncommon.

Cestodes were the most abundant of the helminth parasites. The most species were *R. echinobothrida*, *R. tetragona* and *R. cesticillus* while *C. infundibulum* was a rare species. Presence of *R. magninumida* appears to be the first country report for the species in chickens in Nigeria.

TABLE 1: PREVALENCE OF HELMINTH SPECIES AND SITE OF RECOVERY IN BIRDS EXAMINED.

Parasite	Location	No. of birds infected	% infected
<i>Ascaridia styphlocerca</i>	Intestine	9	4.5
<i>Heterakis brevispiculum</i>	Caeca	39	18
<i>Gongylonema congolense</i>	Crop	81	40.5
<i>Raillietina echinobothrida</i>	Intestine	84	42
<i>Raillietina tetragona</i>	Intestine	77	38.5
<i>Raillietina magninumida</i>	Intestine	16	8
<i>Subulura brumpti</i>	Caeca	31	15.5
<i>Choanotaenia infundibulum</i>	Intestine	7	3.5
<i>Raillietina cesticillus</i>	Intestine	21	10.5

DISCUSSION

This study has shown that domestic fowls in Bauchi are heavily parasitized by a large number of helminth parasites. A feature of this survey was the complete absence of trematodes agreeing with several workers (Fabiya 1972, Gadzama and Strivastava 1986, Oyeka 1989, Fatiyu *et al.* 1991, Luka & Ndams 2000, Yoriyo *et al.*, 2005) in different parts of Northern Nigeria, who similarly found no trematode infestation among the birds examined. The absence of these worms could be due their complex life cycles requiring at least an intermediate host which is aquatic. The absence of water is helping to break the life cycle and hence reducing the spread of the worms.

Davainea proglottina, a common tape worm in many parts of the world was also not encountered during the present survey, a finding similar to those of (Fabiya 1972, Gadzama & Strivastava 1986, Luka & Ndams 2007, Yoriyo *et al.* 2005, Adang *et al.* 2008) even though Oyeka (1989) reported a prevalence of 3.3% of the parasite in chicken in Anambra State. The intermediate hosts of this small tapeworm are certain arionidid and limacidid slugs and hellucilid, zonidid, physidid and succineidid snails (Fabiya 1972). It is possible that these are scarce or do not occur in this part of the country.

Among the nematodes known to occur commonly in chickens, *Capillaria* sp. was also not recorded in this study. This further conforms to the finding of Fabiya (1972), Gadzama & Strivastava (1986), Oyeka (1989), Fatiyu *et al.* (1991), Luka & Ndams (2007) and Yoriyo *et al.* (2005). The reasons for the absence of this parasite could not be explained.

Higher cases of *Ascaridia* and *Heterakis* sp. were observed by Fabiya (1972) than in this report. One reason could be the source of the birds examined by him, and could have originated from deep litter system which favours infection with these species.

The generally high prevalence rate observed in this report could be due to the fact that birds kept under free range nowadays are not normally fed with grains in the morning (which use to be the practice in the early years) before going out for grazing. The lack of this practice could be attributed to the present poor economic condition of the country. This therefore makes the birds intensify their feeding on the invertebrate hosts, thereby increasing chances of becoming infected with those species requiring intermediate host. The high percentage prevalence recorded in most of the cestodes and *Gongylonema congolense* which require dung beetles and cockroaches as intermediate hosts supports this assertion.

In a study conducted in Ghana, Hodasi (1969) revealed that susceptibility of male and female domestic chickens to infections are equal. However, the lower prevalence observed in females than males in the present study could be due to the fact that female birds reduced their feeding range during incubation period and concentrate more on the grains and food remnants being served to them (as most farmers take good care of them by giving them food and water to compensate for the time spent during incubation), hence reducing the chances of infection. Also, male birds go far in search of food, increasing the possibility of picking infections. Further work is required to support the above reasons. Some of the nematodes and cestodes found require dung beetle, grasshopper, and cockroach as well as crustaceans, earthworm and snail as intermediate hosts and could constitute problems in chickens reared on free range.

AKNOWLEDGMENTS

We appreciate the assistance of Mallam Umar Galadima of Department of Biological sciences, Gombe State University and Mr. Zamani of Abubakar Tafawa Balewa University, Bauchi, Biology Laboratory for observation and identification of the parasites. We also appreciate the assistance of the workers at the dressing unit at Muda Lawal and Wunti Markets Bauchi for collecting the specimens.

REFERENCES

- Ajayi, S. A. & Ajayi, S. T. 1983. Incidence of Blood and Gastro intestinal Parasites in Domestic Animal on Jos Plateau *In proceeding of National Workshop on Disease of Livestock and Poultry held at National Veterinary Research Institute, Vom* 24-27 January pp17-18
- Adang, K. L.; Oniye, S. J.; Ajanusi, O. J.; Ezealor, A. U. & Abdu, P. A. 2008. Gastrointestinal Helminths of the Domestic Pigeons (*Columba livia domestica* Gmelin, 1789 Aves: Columbidae) in Zaria, Northern Nigeria. *Science World Journal* 3 (1):33-37.
- Akinwumi, J. A.; Adegege, A. J.; Olayide, S. O. & Ikpi, A. E. 1979. Report on Economic Analysis of Poultry. *Federal Livestock Department Magazine Lagos.*
- Fabiya, J. P. 1972. Incidence of Helminth parasites of Domestic Fowls in the Vom area of Benue- Plateau Nigeria, *Bulletin of Epizootic Disease in Africa.* 20: 229-243.
- Fabiya, J. P. 1983. Application of Anthelmintics in Control of Nematodes Infection in Livestock and Poultry in Nigeria. *Proceeding of National Workshop in Poultry at National Veterinary Research Institute Vom* 24-27 January pp32.

- Fatih, M. T.; Ogbogu, V. C.; Njoku, C. O. & Saror, D. I. 1991. Comparative Studies of Gastro intestinal Helminths of Poultry in Zaria, Nigeria. *Revue de elevage et de Medicine veterinaire des pays Tropicaux* 44 (2), 175-177.
- Gadzama, E. N. & Strivastava, G. C. 1986. Prevalence of Gastrointestinal Parasites of Market Chickens in Borno State, Zaria *Veterinary* 1:126-128.
- Hodasi, J. K. M. 1969. Helminths fauna of Native Domestic Fowls in Ghana. *Journal of Helminthology* 33-35.
- Lamorde, A. G. 1986. Nigeria Livestock Population Health and Productivity, *Paper presented at the Convocation Ceremony of School of Agriculture, Lafia* June 1986.
- Luka, S. A. & Ndams, I. S. 2007. Gastrointestinal Parasites of Domestic Chickens *Gallus- gallus domesticus* Linnaeus 1758 in Samaru, Zaria, Nigeria. *Science World Journal* 2 (1): 27-29.
- Oluyemi, J. A. & Robert, A. A . 1979. Poultry Production in Warm Wet Climate. Macmillan London
- Oyeka, C. A. 1989. Prevalence of intestinal Helminths in Poultry in Anambra State, Nigeria. *Bulletin of Animal Health & Production in Africa*. 37: 217-220.
- Fain, P. A. 1955. Legenre Gongylonema au Congo Belge et Ruande – Urindi *Annale de Parasitologie* 30 (3): 203-218.
- Yoriyo, K. P.; Fabiyi, J. P.; Panda, S. M. & Adamu, S. U. 2005. Intensities of Helminth Parasites of Free-Ranging Chickens in Bauchi and Environs. *Yankari Journal* 2: 135-139.