

Prevalence of Nematodes of Domesticated Guinea Fowl in Maiduguri, Nigeria

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Abstract: A study was conducted to investigate the prevalence of nematodes of domesticated guinea fowls slaughtered at the Maiduguri central market. Postmortem examinations of 100 samples each of trachea and gastro-intestinal tracts revealed an overall prevalence of 90%. Male guinea fowls had a higher prevalence of infection 35.6% compared to the females 64.4% ($p > 0.05$). Parasites identified were *Heterakis gallinarum* with 20%, *Ascaridia galli* 6.7%, *Subulura brumpti* 13.3% *Strongyloides avium* 11.1% and *Capillaria bursata* 2.2%. Mixed infections were those by *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% and *S. avium* and *Sub. brumpti* and *A. galli* and *Syngamus trachea* with 2.2%. These findings indicate that guinea fowls harbor nematodes that are parasitic, and the effect of these parasites on the productivity of the guinea fowls is discussed. Some factors of these parasites are also considered.

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INTRODUCTION

In most African countries, backyard poultry accounts for more than 60% of the Total National Flock (TNF), with an asset value of more than 5.75 US Dollars (Nnadi and George, 2010).

The guinea fowl, with an estimated population of about 54.7 million in Nigeria, is an unimproved avian species common in the northern savannah areas, where it is found both in the wild and backyards domesticated for meat and eggs by peasant farmers (Akinwunmi, 1981; Akinboade, *et. al.*, 1983; Okaeme, 1989) and as a source of income (Biu and Etokwudo, 2004). However, several factors limit poultry production in Nigeria especially those of diseases, particularly coccidiosis, helminthiasis, bacterial and viral diseases resulting in losses due to mortality and morbidity (Ikeme, 1970; Calnek *et.al.*, 1991; Biu and Etokwudo 2004; Luka and Ndams, 2007). Akinboade, *et. al.*, (1983) reported *Ascaridia galli*, *Eimeria* spp. and *Heterakis gallinarum* in guinea fowls around the Kainji game park, Kwara State, Nigeria, and Biu and Etokwudo, (2004) reported a prevalence of 45% for cestode infections in guinea fowls in Maiduguri, however there is dearth of data on nematodes of guinea fowls in this study area hence this paper attempts to define their prevalence in Maiduguri.

MATERIALS AND METHODS

Fresh trachea and gastro-intestinal tracts of guinea fowls slaughtered at the Maiduguri central market was dissected using Myoris scissors. The contents scraped into clean Petri dishes. Both tracheal and faecal scrapings were examined using saturated salt solution and sedimentation techniques for ova, while the adult worms were mounted on glass slides using polyvinyl alcohol and then examined microscopically using the methods described by Sloss and Kemp (1978) and Fleck and Moody (1988). All data collected were statistically tested by the Student's "t" test with "p" values equal to or less than 0.05 regarded as significant (Dibal, 1999).

RESULTS

The results of this study as shown in Table 1 indicate that of the one hundred each of guinea fowl trachea and gastro-intestinal tracts examined, 90% were infested. Male guinea fowls had a higher prevalence of 35.6% compared to the females with 64.4% ($p > 0.05$).

Parasites identified were *Heterakis gallinarum*, *Ascaridia galli*, *Subulura brumpti*, *Strongyloides avium*, *Syngamus trachea* and *Capillaria bursata*. Mixed infections were also present (Table 2).

Table 1: Prevalence of nematodes of guinea fowls based on their sex in Maiduguri, Nigeria

	Number examined	Number (%) infected
Male	34	32(35.6)
Female	64	58 (64.4)
Total	100	90 (90.0)

Table 2: Prevalence of nematodes based on species infesting guinea fowls in Maiduguri, Nigeria

Parasites	Number (%) of guinea fowls infested (n=90)
Single infestations:-	
<i>Heterakis gallinarum</i>	18 (20)
<i>Ascaridia galli</i>	6 (6.7)
<i>Subulura brumpti</i>	12 (13.3)
<i>Strongyloides avium</i>	10 (11.1)
<i>Capillaria bursata</i>	2 (2.2)
Mixed infestations:-	
<i>A. galli</i> + <i>S. avium</i>	14 (15.6)
<i>H. gallinarum</i> + <i>S. avium</i>	14 (15.6)
<i>H. gallinarum</i> + <i>S. brumpti</i>	6 (6.6)
<i>A. galli.</i> + <i>H. gallinarum</i>	6 (6.6)
<i>S. avium</i> + <i>S. brumpti</i> + <i>A. galli</i> + <i>Syngamus. trachea</i>	2 (2.2)

DISCUSSION

This study on nematodes of guinea fowls has revealed a very high prevalence of 90 %. This could be attributed to the habit of domesticated fowls feeding on a wide range of diets under poor husbandry, and abundance of beetles, cockroaches and earthworms that could serve as intermediate hosts, predisposing them to parasitic infections (Janet *et al*, 1979; Luka and Ndams, 2007; Onyirioha, 2011). As observed in this study, multiple or mixed helminthiases has been reported as most common in poultry kept extensively (Nnadi and George, 2010). The finding of *H. gallinarum* in this study is significant due to its association with the protozoan *Histomonas meleagridis*, the causal agent of blackhead of domesticated fowls (Dunn, 1978; Calnek, *et al*, 1991; Tibor, 1999; Nnadi and George, 2010); as such guinea fowls could act as reservoirs of infection to locally domesticated chickens in this study area. More males were infected than female guinea fowls in this study. Observations have been made that multiple genetic factors seem to control disease resistance and that sex is not a determinant for helminth infection but nutritional status of the

host and availability of infective parasitic stages (Biu and Lillian, 2004).

In conclusion improved management that focuses on nutrition, sanitation and regular deworming could go a long way in boosting guinea fowl production in Nigeria.

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