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Nematodes of the Turkey *Meleagris gallopavo* (Galliformes: Phasianidae) from Al-Nasiryah, Iraq

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Abstract

One of nine alimentary canals (11.11%) of the turkey, *Meleagris gallopavo* from Al-Nasiryah city in 2015, was found infected with seven *Heterakis gallinarum*. Infection rate, description of some morphological characters and a comparison between measurements for males and females of *H. gallinarum* have been presented in this paper. The relation between infection with *H. gallinarum* and the food contents of the turkey was discussed.

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Introduction

The economic importance of the turkey, *Meleagris gallopavo* Linnaeus, 1758 increased in the world as a major source of protein (Ammar, 2015). Its population was considered in increasing in Iraq (Al-Alousi *et al.*, 1993).

The studies about parasitic helminthes of *M. gallopavo* in Iraq are few, Shamsuddin and Jasim (1981) reported *Eimeria* spp.; Butty (2009) and Al-Mayali *et al.* (2014) reported *Toxoplasma gondii*; Suleiman (2012) recorded *Aegyptianella* spp.; Al-Dulaimi (2013) isolated *Heterakis* sp. and Flayyih (2014) reported *Histomonas* spp. and *plasmodium* spp.; the chewing lice *Goniocotes gallinae* and the hard tick *Hyalomma* spp.

The caecal nematode *H. gallinarum* has a wide geographical and host distribution (Brenner *et al.*, 2006). It is one of the commonest parasites of domestic poultry (Baylis, 1936). Infection with it poses the danger through ingesting the flagellate *Histomonas meleagridis*, the agent of the blackhead disease, and releasing it into the environment within its eggs (Graybill and Smith, 1920 ; Papini and Cacciuttolo, 2008 ; Nnadi and George, 2010), which

might cause reduced growth, egg production and leads to losses of turkeys and poultry (Schou and Permin, 2003).

This study aims to provide information on the incidence, infection rate and measurements of males and female of *Heterakis gallinarum* found in *Meleagris gallopavo* collected in Al-Nasiryah City.

Materials and methods

Nine alimentary canals of 6 months aged turkeys, *Meleagris gallopavo*, were preserved in 70% ethyl alcohol and brought to the laboratory in 2015. They were dissected. Nematodes were removed from the caeca, cleaned, cleared by lactophenol and identified according to Cram (1927) and Baylis (1936). Photomicrographs were taken with digital camera Infinity lite-K100 attached to compound microscope Micros MCX100. All measurements were given in millimeter.

Results

Seven specimens of *H. gallinarum* (six males and one female) were isolated from the caecum of one alimentary canal of *M. gallopavo* in the present study.

Table 1. Measurements for males and female of *Heterakis gallinarum*.

Measurements	Males (Mean)	Female
Body length	10.02	13.2
Maximum body width	0.33	0.37
ventriculus length	0.23	0.24
Oesophagus length	0.93	0.92
Diameter of the bulb	0.21	-
left spicule length	0.87	-
Right spicule length	2.06	-
Distance of cloaca from posterior extremity	0.41	0.953
Diameter of precloacal sucker	0.07	-
Distance between sucker and cloaca	0.15	-
distance of vulva from anterior extremity	-	6.90
distance of vulva from posterior extremity	-	6.30
Eggs long	-	0.07
Eggs width	-	0.04

Heterakis gallinarum (Shrank, 1788) Figs (1A; B; C and D).

Synonyms

H. gallinae Gmelin, 1790; *H. papillosa*, *H. vesicularis* (Madsen, 1950).

Description

The body white, small, with fine striations and two lateral flanges. Oesophagus with short pharynx and ends with a well-developed bulb.

Male

The body small with a well-developed precloacal chitinized sucker. There are 12 pairs of papillae: 4 pairs between the cloaca and the posterior end of the body, 4 pairs of ray-like papillae, 2 pairs of sessile papillae near the cloaca, 2 pairs of ray-like papillae near the precloacal sucker. The straight tail with two

large lateral bursal wings. Spicules unequal and dissimilar.

Female

Larger than male. Vulva posterior to the middle of the body. The tail is long, tapering, and sharply pointed. Eggs thick-shelled and ellipsoidal. Differences in measurements of some features between males and female showed in Table 1.

Discussion

Description of *H. gallinarum* in the present study almost fit with that of Baylis (1936) who put this nematode under the name *Heterakis gallinae*, with some differences in measurements, also some differences found with those of Mohammad (1990). These differences may be related to different hosts or to the smaller sample size used in the present study.

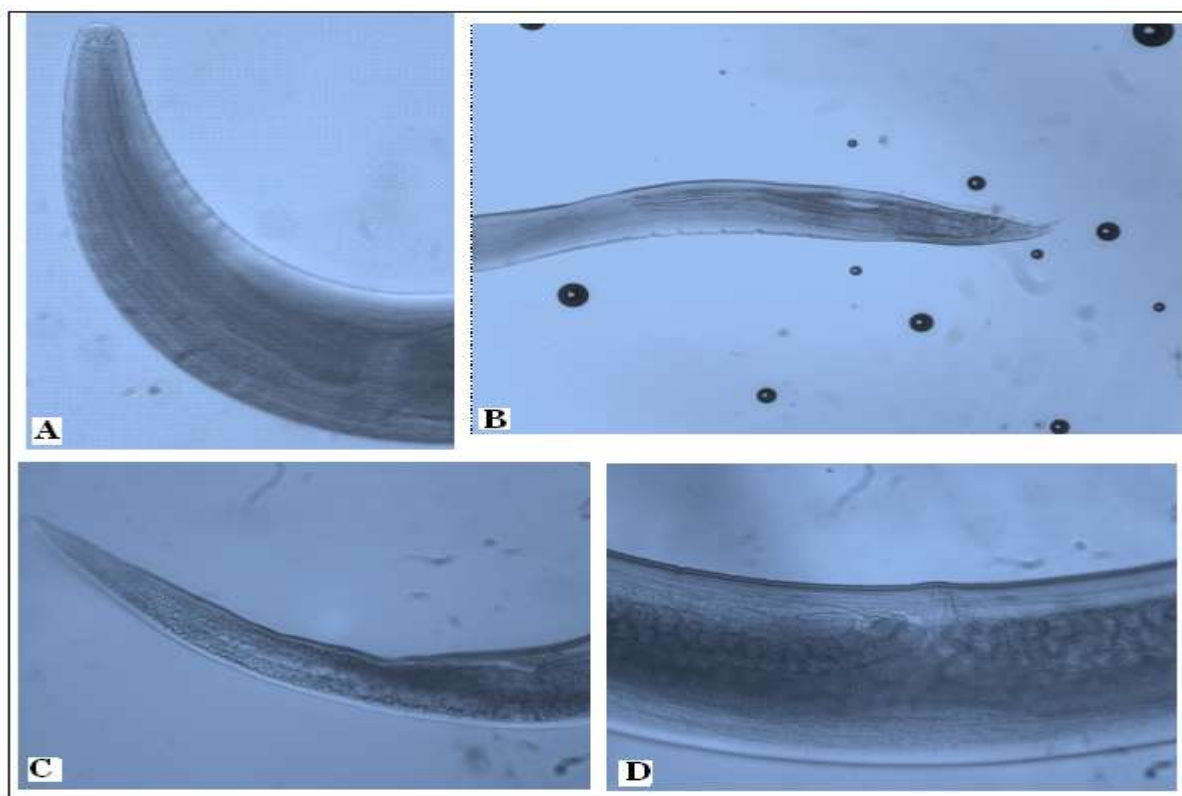


Fig. 1. Photomicrographs of *Heterakis gallinarum* (Shrank, 1788).

A- Anterior extremity.

B- Posterior extremity of male showing spicules; precloacal sucker; cloaca; papillae and tail.

C- Posterior extremity of female.

D- Vulva and eggs of female.

The wild turkey is omnivorous, its diet consists largely of plant foods and insects (Wengert *et al.*, 2009). Insects are of critical importance to young wild turkeys (NRCS, 1999).

They could transfer eggs of *H. gallinarum* to hosts (Frank, 1953). The presence of insect remnants in the food of *M. gallopavo* in the present study clarify being the turkey as a host for this nematode.

The study of Lund *et al.* (1975) revealed the lower infection rates in both wild and domestic turkeys with *H. gallinarum* than they in chickens. This might clarify the low infection rate of *M. gallopavo* with *H. gallinarum* in the present study (11.11%) in comparison with those of the chicken in the previous local studies. This might be related with the different food patterns of the two hosts as Smyth (1976) found that the chicken feed on a wide range of diets.

In Iraq, *H. gallinarum* was reported in *Gallus domesticus* from different localities by: Al-Hubaity and Al-Habib (1979) ; Al-Khalidi *et al.*(1988) ; Al-Alousi (2008) ; Al-Mayali(2009) ; (Shthar, 2010); Karawan (2012) and Abdullah and Mohammed (2013). Earlier, this nematode was isolated from *Francolinus f. arabistanicus* by Mohammad (1990).

To the best of my knowledge this is the first time to record *H. gallinarum* from *M. gallopavo* in Iraq.

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