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Azhar Ahmed Al-Moussawi
Iraq Natural History Museum-
University of Baghdad, Bab Al-
Muadham Baghdad, Iraq.

The nematode *Dispharynx nasuta* in the white-cheeked bulbul *Pycnonotus leucogenys* in Baghdad city, central Iraq

Azhar Ahmed Al-Moussawi

Abstract

Twenty specimens of the white-cheeked Bulbul *Pycnonotus leucogenys* (Gray, 1835) were collected from Baghdad city, central Iraq during the period from January to March 2015. Only one (5%) out of 20 birds were found infected with the nematode *Dispharynx nasuta* (Rudolphi, 1819). The description, measurements and photomicrograph for females of *D. nasuta* as well as the incidence of infection are given and discussed with the pertinent literatures.

Keywords: White-cheeked Bulbul, *Pycnonotus leucogenys*, Nematoda, *Dispharynx nasuta*, Iraq

Introduction

The white-cheeked bulbul *Pycnonotus leucogenys* (Gray, 1835) has a very large range. It is a subtropical bird known in Asia, found in the two neighboring countries to Iraq, Jordan and Syria^[1] and recorded as a resident bird in the bird lists of Iraq^[2].

Information data on parasitic helminths of *P. leucogenys* in Iraq are partially known, the first study was of Shamsuddin and Jasim^[3] who reported *Isoospora lacazei*. After twenty nine years Gali *et al.*^[4] reported the two trematodes *Mosesia chordeilesia* and *Plagiorchis sp.* and the four cestodes: *Allohymenolepis sp.*, *Haploparaxis sp.*, *Paradicranotinae anormalis* and *Raillietina tetragona*. Mohammad and Al-Moussawi^[5, 6] reported *Plasmodium relictum* and the two protozoan: *Leucocytozoon fringillinarum* and *Leucocytozoon sp.* respectively. Then^[7] recorded *Allohymenolepis sp.*, *Multiuterina sp.* and *Raillietina tetragona*.

Dispharynx nasuta (Rudolphi, 1819) has a wide geographical distribution^[8]. It is a cosmopolitan parasite of the proventriculus of birds^[9]. It has less specificity to the host^[10]. It has been found parasitizing different avian hosts in Columbiformes, Galliformes, Passeriformes and many other birds on all continents except Antarctica^[11].

A survey of the literature on *D. nasuta* in Iraq revealed that it was reported from three birds previously. It was isolated for the first time from *Columba livia* by^[12]. Then recorded from *Passer domesticus biblicus* by Mohammad and Al-Moussawi^[13] and from *Sturnus vulgaris* by Al-Moussawi and Al-Hamdany^[14].

The occurrence of *D. nasuta* in the present study is recorded for the first time in Iraq from the white-cheeked bulbul, *Pycnonotus leucogenys*.

2. Materials and Methods

Twenty birds of *P. leucogenys* were collected in three winter months (January, February and March, 2015). Only one has been found infected with 5 females of the nematode *D. nasuta*. Nematodes were cleaned, fixed and stored in 70 percent alcohol, cleared with lactophenol. Nematodes were identified according to Baylis^[8] and Yorke and Maplestone^[15]. Examination of morphological and metrical characters was done by compound microscope Micros MCX100. Photomicrographs were taken with digital camera Infinity lite-K100 attached to the microscope. All measurements were given in millimeter, range followed by mean in parentheses.

3. Results and Discussions

***Dispharynx nasuta* (Rudolphi, 1819)**

Synonym, *D. spiralis*^[9, 17]

Correspondence

Azhar Ahmed Al-Moussawi
Iraq Natural History Museum-
University of Baghdad, Bab Al-
Muadham Baghdad, Iraq.

Description: Figs (1A; B and C)

The description based on five females of *D. nasuta* isolated from the gizzard of one bird only. The body is relatively stout. The four recurrent wavy cordons originate at the base of the lips and extend for a short distance from the anterior extremity. Lips are small. The small tricuspid cervical

papillae situated a little in front of the posterior limit of the cordons. Buccal capsule transversely striated. Esophagus consisting of two parts, anterior muscular and posterior glandular. Vulva is situated in the posterior half of the body. The tail is conical, with a button-like termination.



A- Anterior extremity.

B-Cordons and buccal capsule.

C- Eggs in uterus.

Fig 1: Photomicrographs of female of *Dispharynx nasuta* (Rudolphi, 1819)

Table. 1: Measurements in millimeter for female of *Dispharynx nasuta* in the present study and other pertinent literature.

| Measurements mm | Pinto <i>et al.</i> (2004) | Dewi <i>et al.</i> (2004) | Rysavy and Ryzhikov (2014) | Syrota <i>et al.</i> (2015) | In the present study |
|--|----------------------------|---------------------------|----------------------------|-----------------------------|-----------------------|
| Total body length | 5.134-6.902 (5.705) | 3.600 – 4.630 | 3.47- 9.21 | 5.4–7.4 (6.7) | 3.998- 5.876 (4.523) |
| Maximum body width | 0.306-0.578 (0.401) | 0.200 – 0.360 | – | 0.376–0.650 (0.497) | 0.252-0.415 (0.371) |
| Buccal capsule length | 0.097-0.119 (0.109) | 0.080 – 0.0120 | 0.09 – 0.14 | 0.089–0.129 (0.099) | 0.094 – 0.127 (0.102) |
| Cordon length | – | – | 0.115- 0.56 | 0.435–0.979 (0.813) | 0.115- 0.227 (0.181) |
| Muscular esophagus length | 0.476-0.700 (0.588) | 0.460 – 0.580 | 0.33 – 1.05 | 0.505–0.772 (0.633) | 0.460-0.576 (0.525) |
| Muscular esophagus width | – | 0.060-0.100 | – | – | 0.062-0.140 (0.089) |
| Glandular esophagus length | 1.302-2.030 (1.646) | 0.96 –1.250 | 1.61 – 1.91 | – | 1.120-1.350 (1.270) |
| Glandular esophagus width | – | 0.080 -0.140 | – | – | 0.100 – 0.150 (0.142) |
| Nerve ring from the anterior extremity | 0.254-0.349 (0.292) | 0.220 – 0.290 | 0.17 – 0.35 | 0.198–0.257 (0.232) | 0.220-0.303 (0.261) |
| Vulva opening from posterior extremity | 0.966-1.386 (1.170) | 0.740 – 0.962 | 1 – 1.66 | 0.97–1.594 (1.269) | 0.756-1.140 (1.114) |
| Eggs length | 0.028- 0.032 (0.0324) | 0.0389- 0.0392 | 0.028 – 0.038 | – | 0.035-0.039 (0.036) |
| Eggs width | 0.0180-0.0216 (0.021) | 0.021- 0.0210 | 0.016 – 0.018 | – | 0.020-0.024 (0.021) |
| Tail length | 0.0828-0.1260 (0.1044) | 0.12 – 0.130 | – | 0.119–0.217 (0.15) | 0.118-0.140 (0.133) |

The morphology of *D. nasuta* isolated from *P. leucogenys* in the present study shows no differences in other bird species. It was recorded by Dewi *et al.* [16] from the yellow vented bulbul *Pycnonotus goiavier* (Passeriformes: Pycnonotid). Pinto *et al.* [10] recorded it from *Phasianus colchicus* (Galliformes: Phasianidae). Rysavy and Ryzhikov [17] isolated it from Galliform and Passeriform hosts. It was isolated from *Grus grus* (Gruiformes: Gruidae) by Syrota *et al.* [11] The differences in measurements of *D. nasuta* in the present study with those of Pinto *et al.* [10], Rysavy and Ryzhikovand [17], Syrota *et al.* [11] as shown in table 1 might be related to either the smaller sample size used here or to the different hosts which are from different avian orders or families, except that of Dewi *et al.* [16] which collected from a pycnonotid host.

Galliformes, Passeriformes and Gruiformes are the final hosts of *D. nasuta* [9, 11]. This nematode uses the isopods *Armadillidium vulgare* and *Porcellio scaber* as intermediate hosts [8, 18], they constitute a part of bird diet. These isopods found in Baghdad city, central Iraq with low rates during the winter [19].

Many passerines change their diets according to the different seasons [20]. Although the bulbul is a frugivorous bird basically, but it takes animal foods depending on their availability in the field and the diet varied seasonally with dominating of plant materials in the winter [21, 22]. This agrees with what has been noticed about the food found in the gizzard of this bird in the present study. This might be caused by the lower temperature in the winter, which is the period of

bird collection in the present study, causing for the low appearance of isopods leading to low prevalence of *D. nasuta* infection up to (5%). This came in agreement with the findings of Hon *et al.* [23] and Forrester *et al.* [24] in being the lowest during the winter.

Locally, *D. nasuta* was recorded at Baghdad city from two passerine hosts before with higher prevalence infection, 5.4% from *Passer domesticus biblicus* by Mohammad and Al-Moussawi [5] and 13.63% from *Sturnus vulgaris* by Al-Moussawi and Al-Hamdany [13]. This might be due to the season and to the short period of bird collection.

To the best of my knowledge, the nematode *D. nasuta* has not been reported in *P. leucogenys* earlier from Iraq.

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