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# NEW RECORD OF *BRACHYDISTOMUM MICROSCELIS* (YAMAGUTI, 1933) (TREMATODA, DICROCOELIIDAE) FROM HOUSE SPARROWPASSER DOMESTICUS BIBLICUS HARTERT, 1904 IN BAGHDAD, IRAQ

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ABSTRACT

A total of 30 specimens of house sparrow *Passer domesticus biblicus* Hartert, 1904 (15 females and 15 males) were collected from gardens of some houses in Baghdad city; all birds were dissected to identify the parasites in vesicle, gizzard, intestine, gall bladder and caecum. One species of trematodes *Brachydistomum microscelis* (Yamaguti, 1933) was found in the gall bladder and two species of cestodes *Anonchotaenia globata* (von Linstow, 1879) and *Raillietina tetragona* (Molin, 1858) were found in the small intestine of house sparrow. Morphologic and morphometric measurements were considered.

The genus *Brachydistomum* Travassos, 1944 is being recorded for the first time in Iraq in the gall bladder of house sparrow, as it was not previously recorded from birds in Iraq.

Keywords: *Brachydistomum*, Digenia, Gall bladder, House sparrow, *Passer*, Trematoda.

## INTRODUCTION

*Passer domesticus biblicus* Hartert, 1904 is a cosmopolitan bird that distributes in the wide world (Taraschewski, 2006). In Iraq, it is an abundance bird, especially in central Iraq (Allouse, 1962; Salim *et al*., 2006).

Only few previous studies on house sparrow parasites in Iraq were carried out, only two studies about blood parasites were published (Shamsuddin and Mohammad, 1980; Mohammad, 1990). The study of Abdulabas (2005) found that two species of cestodes in the intestine of the house sparrow in Al-Najaf province. Then, Mohammad and Al-Moussawi

(2012) recorded nematodes in gizzard in Baghdad city. Recently, Jenzeel *et al*. (2015) and Al-saadi *et al*. (2016) recorded seven species of cestodes in small intestine of house sparrow in Tikrit city, Iraq.

The aim of the current study is to isolate and identify *Brachydistomum microscelis* from the gall bladder of house sparrow for the first time in Iraq.

## MATERIALS AND METHODS

A total of 30 specimens of house sparrow (15 females and 15 males) were collected by netting traps from gardens of some houses in Baghdad city Iraq, from March 2018 to July 2019. All birds were dissected to identify the parasites in the biological lab in the College of Education for Pure Sciences (Ibn Al Haitham), University of Baghdad. The parasites were fixed in 70% ethanol, and then sent to the Iraq Natural History Research Center and Museum for staining and identifying according to Yamaguti (1958) and Bray *et al*. (2008). All specimens were dyed with the acetocarmine stain and then dealt with ascending concentrations of alcohol passages. Finally, all slides were fixed with Canada balsam following Kinsella and Forrester (1972). All parasites were examined for morphologic and morphometric measurements; examination were performed by digital camera, in addition to the drawing the drawing of the trematode had been done by Lucida camera.

The voucher specimens are stored in Department of Vertebrate- Iraq Natural History Research Center and Museum, University of Baghdad; No. INHM.2019; Trematoda: 1.1.

## RESULTS AND DISCUSSION

Only four of the 30 birds which dissected in the present study (13.33 %), were found infected with two types of parasites, trematodes and cestodes.

The current study revealed that the female of house sparrow was infected with the trematoda *Brachydistomum microscelis* (two specimens) in the gall bladder and three other birds (2 females and one male) were infected with cestodes in the gut *Anonchotaenia globata* (two specimens) and *Raillietina tetragona* (three specimens).

The current study revealed a new record of the trematoda *Brachydistomum microscelis* according to Yamaguti, (1958) and Bray *et al*. (2008) as follow:
Host Order: Passeriformes
Host Family: Passeridae
Host Genus: *Passer*
Host Species: *domesticus biblicus*
Locality: Baghdad, Iraq.
Parasite Group: Trematoda
Parasite Family: Dicrocoeliidae
Parasite Genus: *Brachydistomum*
Parasite Species: *microscelis*
Habitat: gall bladder.

Date of Collecting: 15 April 2019
Specimens Deposited: INHM. 2019: Trematoda, No. 1.1

**Taxonomic summary**
The genus *Brachydistomum* belongs to the family Dicrocoeliidae classified as is based on the Catalogue of Life (2018) as follows:
Kingdom: Animalia
Phylum: Platyhelminthes
Class: Trematoda
Order: Plagiorchiida
Superfamily: Plagiorchioidea
Family: Dicrocoeliidae
Genus: *Brachydistomum*, Travassos, 1944
Species: *microscelis,* Yamaguti, 1933

According to the reference Yamaguti (1958) who classified this species as:
Family: Dicrocoeliidae (Odhner, 1911)
Subfamily: Dicrocoeliinae (Looss, 1899)
Tribe: Brachydistomini
Genus: *Brachydistomum* (Travassos, 1944)
Species: *microscelis* (Yamaguti, 1933)

**Macroscopic description (Based on *Brachydistomum microscelis* specimens)**
Body lanceolate, its length is approximately 3.3-3.5 millimeters, transparent, tends to be golden color, the anterior end is flexed ventrally and the posterior end is flexed dorsally, taking a distinctive shape, as in Plate (1).


**Plate (1):** Macroscopic form of *B. microscelis* from house sparrow in Baghdad, Iraq; by digital camera 12 pixels.

**Microscopic description (Based on *Brachydistomum microscelis* specimens):**

The long body glides narrowly until it is exposed in the ventral sucker that represents the breadth area, curving slightly ventrally, and then the body tapers back to the rounded end. This sharply demarcated the main character for the genus *Brachydistomum* (Pl.2). Cuticle smooth, oral sucker subterminal, it seems oval wide opening directly into a small globular pharynx, esophagus short, ceca not reaching to the posterior end of the worm. Ventral sucker (Acetabulum) in the anterior half of the body; it is more extensive and broader than the oral sucker (Pl.3).

Testes are nearly round, diagonal or tandem, close to ventral sucker and one another; both of them lay behind of Actabulum area (Pl.4). Ovary submedian, is close to posterior testis. Cirrus pouch is well- developed pre acetabular; genital pore median.

Vitellaria follicles are comparatively broad, composed of few large follicles forming two bands or clusters in the middle third of body (Pl.4). Uterus is extensive and much coiled occupying most of hind body and intrudes into fore body that distributed the eggs in most of the body, (Pl.2). Eggs are numerous, oval, of golden color and turned to dark brown when mature. Excretory vesicle is simple, long, tubular, appear under 400x as Y shape in the posterior end of the body, excretory pore terminal (Pl.5). Measurements and drawings of the characteristics are clarified in Table (1) and Figure (1).

**Table (1)**: Measurements of the main characteristics of *Brachydistomum microscelis* in house sparrow in Baghdad, Iraq.

| Characteristics | Measurements (mm) |
|---|---|
| Total Body: length | 3.3 |
| Width | 0.45 |
| Oral sucker: length | 0.3 |
| Width | 0.22 |
| Esophagus: length | 0.25 |
| Width | 0.17 |
| Ventral sucker: length | 0.42 |
| Width | 0.25 |
| Testes: length | 0.27 |
| Width | 0.21 |
| Vitellarium follicle: | |
| length | 0.4 |
| Width | 0.42 |
| Excretory vesicle: length | |
| Eggs: length | 0.06 |
| Width | 0.04 |
| | 0.02 |

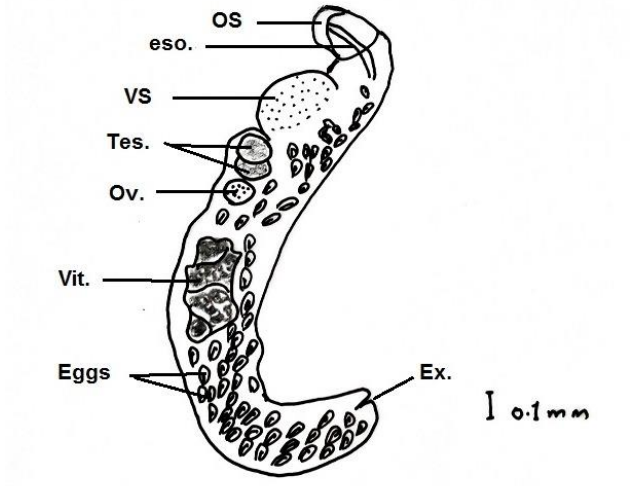


**Figure (1)**: General morphology drawing of *B. microscelis* from house sparrow in Baghdad, Iraq. (Abbreviations: OS = oral sucker, eso. = esophagus, VS = ventral sucker, Tes. = testes, Ov.=ovary, Vit.= vitellarium follicles, Eggs and Ex. = excretory vesicle).


**Plate (2):** Photograph of *B. microscelis* from house sparrow in Baghdad, Iraq (40x).

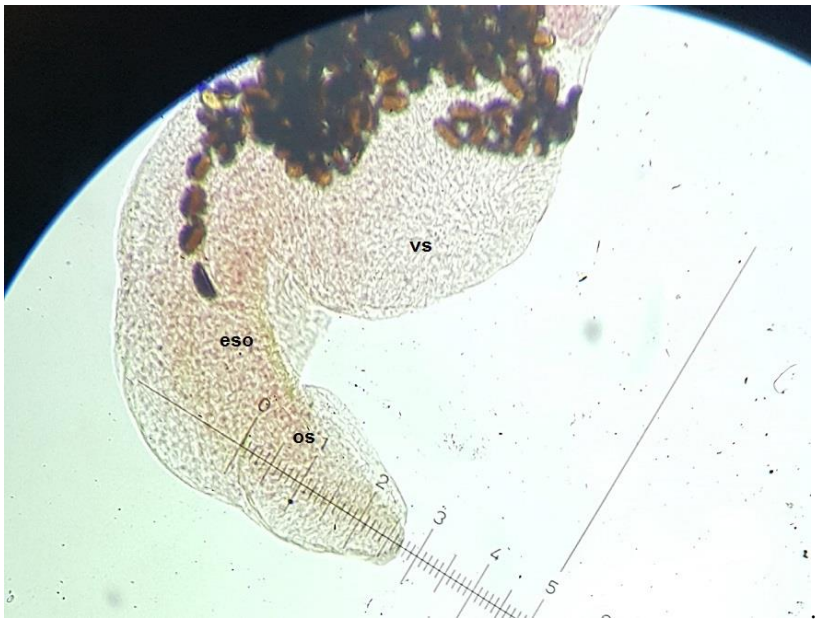


**Plate (3):** Anterior end of *B. microscelis* from house sparrow in Baghdad, Iraq (100x). (Abbreviations: os. = oral sucker, eso. = esophagus, vs. = ventral sucker).


**Plate (4):** Testes, eggs and vitelline follicles of *B. microscelis* from house sparrow in Baghdad, Iraq. 100x. (Abbreviations: tes.=testes, vit.= vitellarium follicles).


**Plate (5):** Posterior end of *B. microscelis* from house sparrow in Baghdad, Iraq (400x). Eggs and excretory vesicle (Ex.).

The results of the current study recorded two cestodes: *Anoncotaenia globata* and *Raillietina tetragona* these results were similar to the results of Jenzeel *et al*. (2015) who recorded *A. globata* with infection rate 1.2% and *R. tetragona* with infection rate 36.1% in house sparrow in Tikrit city, Iraq. Also, previously Mohammad and Al-Moussawi (2013) recorded that the house sparrow in Baghdad was a new host for the cestodes *Raillietina echinobothrida* with 44.6% prevalence of infection.

But regarding the recording of the trematode *B. microscelis* in the gall bladder of house sparrow is considered to be the first time in Iraq from all birds. This result is similar to that recorded by Ozmen *et al*. (2013) who found *B. microscelis* in the gall bladder of *P. domesticus* in Toros Mountains in Burdur, Turkey. Overall, there were few recordings of the genus *Brachydistomum* and their species in the world that summarized in Table (2).

**Table (2)**: Review of references that recording the genus *Brachydistomum* sp. in birds.

| Host order | Host family | Host genus | Host species | Locality | Parasites genus | Parasites species | Site | Reference |
|---|---|---|---|---|---|---|---|---|
| Apodiformes | muscicapidae | *Copsychus* | *saularis* | Vietnam | *Brachydistomum* | *longum* | Liver | Oshmarin (1970) |
| Apodiformes | Apoclidae | *Apus* | *affinissubfurcatiis* | Kasiqui | *Brachydistomum* | *api* | Gall bladder | Fischthal and Robert (1974) |
| Passeriformes | Turdidae | *Turdus* | *specious* | Cherrapunjee | *Brachydistomum* | sp. | Intestine | Soota and Ghosh (1977) |
| Passeriformes | Corvidae | *Corvus* | *macrorhynchos* | Kagoshima (Hirakawa Zoological Park) | *Brachydistomum* | sp. | Gall bladder | Sakamoto *et al.* (1981) |
| Passeriformes | Pycnonotidae | *Hypsipetes* | *amaurotis* | Shizuoka | *Brachydistomum* | *microscelis* | ? | Uchida *et al.* (1991) |
| Passeriformes | Corvidae | *Corvus* | *macrorhynchos japonensis* | Kagoshima | *Brachydistomum* | sp. | ? | Uchida *et al.* (1991) |
| Passeriformes | Pycnonotidae | *Hypsipetes* | *amaurotis* | Oita | *Brachydistomum* | *microscelis* | small int. | Kugi (2004) |
| Passeriformes | Laniidae | *Lanius* | *collurio* | Zähnice, Czech Republic | *Brachydistomum* | *ventricosum* | Gall bladder | Sitko (2013) |
| Passeriformes | Passeridae | *Passer* | *domesticus* | Toros Mountains in Burdur,Turkey | *Brachydistomum* | *microscelis* | Gall bladder | Ozmen *et al.* (2013) |

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# تسجيل جديد للمخرمة *Brachydistomum microsceli* (Yamaguti, 1933) (Trematoda, Dicrocoeliidae) من العصفور المنزلي *Passer domesticus biblicus* Hartert, 1904 في بغداد، العراق

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***تأريخ الاستلام: 2019/10/20، تأريخ القبول: 2020/01/12، تأريخ النشر: 2020/06/24***

الخلاصة

جمعت 30 عينة من العصفور المنزلي (15 اناث و 15 ذكور) من حدائق بعض المنازل في مدينة بغداد ؛ تم تشريح الطيور للتعرف على الطفيليات في الحويصلة والقانصة والامعاء الدقيقة والاعور و كيس المرارة.

عثر على نوع واحد من المثقوبات *Brachydistomum microscelis* (Yamaguti,1933) في كيس المرارة و نوعين من الديدان الشريطية *Anoncohtaenia globata* (von Linstow, 1879)و *Raillietina tetragona* (Molin, 1858) في الامعاء الدقيقة للعصفور المنزلي.

اجريت القياسات المظهرية والمورفومترية،حيث سُجلَ جنس *Brachydistomum* Travassos, 1944 لاول مرة في العراق في المرارة للعصفور المنزلي، اذ لم يسبق تسجيله في الطيور الاخرى في العراق.