

## The First Record of Three Species of *Dogielius* (Monogenea) From Three Cyprinid Fishes From the Greater Zab River, North of Iraq\*

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### Abstract

A total of 352 freshwater fishes, belonging to three species of the family Cyprinidae were collected from the Greater Zab river in north of Iraq during the period from November 2000 to the end of November 2001. The inspection of their gills revealed the infection of these fishes with three species of monogenetic trematodes belonging to the genus *Dogielius*. These species included *D. mokhayeri* from *Aspius vorax* with a percentage incidence of 37.5%; *D. molnari* from *Cyprinion macrostomum* (33.3%) and *D. persicus* from *Barbus luteus* (41.2%). The record of this genus and its three above-named species of the present study are considered as the first record on fishes of Iraq.

### Introduction

The monogenetic trematodes include flukes which parasitize skin and gills of fishes. These are characterized by marked specificity for their hosts and many of them are known for their deleterious effects upon their hosts (1).

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\* part of the Ph. D. thesis of the first author.

The first monogenean reported from Iraqi fishes was described by Rahemo (2) who described *Diplozoon kasimii* from the gills of *Cyprinion macrostomum* from river Tigris passing through Mosul city. Later on, many monogenean species were reported from different parts of Iraq. According to Abdullah and Mhaisen (3), the number of these species reached 58 belonging to eight genera not including *Dogielius*. However, this number is increasing due to the record of additional species (4). The present paper reports for the first time in Iraq the occurrence of three species of the monogenetic genus *Dogielius*.

### **Materials and Methods**

A total of 352 fishes belonging to three species of the family Cyprinidae were collected from the Greater Zab river near Iski-Kalik town, about 40 km west of Erbil city, north of Iraq during the period from November 2000 until November 2001.

Inspection of fishes for parasites was undertaken as soon as possible. Smears of skin, fins and gills were freshly examined. All parasites were stained with aqueous neutral red and permanent slides were prepared. Photography was done by photomicroscope type Olympus and drawing was achieved by using a camera lucida. Measurements of parasites were done by using an ocular micrometer. Scientific names of fishes followed Coad's (5) list.

### **Results and Discussion**

The inspection of fishes revealed their infection with three species of the genus *Dogielius* for the first time in Iraq. *Dogielius* of the family Dactylogyridae is characterized with a haptor consisting of seven pairs of hooklets (marginal hooks) and two median hooks with one connecting bar. Median hooks with spikes not extending dorsally in parallel lines as in *Dactylogyrus* but to median lines of body (towards each other). Transition from base of hook to spike not in form of gradual emerging but as characteristic abrupt "break" or displacement. Four eyes present. Genital pore lying beneath one of the intestinal trunks, i.e., displaced

laterally to median line. Testes lateral to median line and ovary (1). The following is an account on measurements of the three species of *Dogielius* recorded in the present study.

**1- *Dogielius mokhayeri* Jalali et Molnár, 1990 (Fig. 1):** This species was found on the gills of six specimens of *Aspius vorax* out of 16 examined specimens. Small worms, length 0.3 - 0.4 mm, width 0.085 mm. Length of hooklets 0.02 - 0.025 mm. Median hooks with relatively developed outer and less developed inner roots, total length of median hooks 0.05 - 0.055 mm, length of the blade of the spike 0.007 - 0.008 mm. Length of connecting bar 0.04 - 0.045 mm. Copulatory organ consists of a slightly bent sclerotized cirrus and a complicated accessory piece. Length of copulatory organ 0.03 - 0.035 mm, width 0.004 mm. The present measurements of *D. mokhayeri* are similar to those reported by Jalali and Molnár (6) for the original *D. mokhayeri* from the same fish (*A. vorax*) from river Dez of Iran.

**2- *Dogielius molnari* Jalali, 1992 (Fig. 2):** This species was found on the gills of 40 out of 120 specimens of *Cyprinion macrostomum*. Small worms, length 0.45 - 0.5 mm, width 0.1 mm. Length of hooklet 0.015 - 0.02 mm. Median hooks with less developed outer and inner roots, total length of median hooks between 0.06 - 0.065 mm, length of the blade of the spike 0.008 mm. Length of connecting bar 0.07 - 0.09 mm. Copulatory organ consists of an elongated tube, with a basal part having an elongated process and a pincers-like accessory part. Length of copulatory organ 0.025 - 0.03 mm. The present measurements are similar to those of *D. molnari* described by Jalali (7) from *C. macrostomum* from river Dez of Iran.

**3- *Dogielius persicus* Molnár et Jalali, 1992 (Fig. 3):** This species was found on the gills of 89 out of 216 specimens of *Barbus luteus*. Small worms, length 0.3 - 0.4 mm, width 0.08 mm. Length of hooklet 0.02 - 0.03 mm. Median hooks with relatively developed to well-developed inner and less developed outer roots, total length of median hooks between 0.065 - 0.07 mm, length of the blade of the spike 0.002 - 0.003 mm. Length of connecting bar 0.04 - 0.05 mm. Copulatory organ composed of an elongated tube, an elongated basal part which ends in a

blade and an accessory piece with three processes. Length of copulatory organ 0.02 - 0.028 mm. The measurements of the present species are agreeable with those of Molnár and Jalali (8) for *D. persicus* from *B. grypus*, *B. luteus* and *B. sharpeyi* from Iran.

Coloured photographs of the three species of *Dogielius* of the present study can be found in Abdallah (4). By recording *Dogielius* of the present investigations, the monogenetic trematodes of freshwater fishes of Iraq are now accounted for 74 species (9) belonging to genera *Dactylogyrus* (47 spp.), *Gyrodactylus* (12 spp.), *Diplozoon* and *Dogielius* (3 spp. each), *Ancylo-discoides* (2 spp.), *Ancyrocephalus*, *Discocotyle*, *Haliotrema*, *Haplo-cleidus*, *Mazocraeoides*, *Microcotyle* and *Pseudacolpenteron* (1 sp. each).

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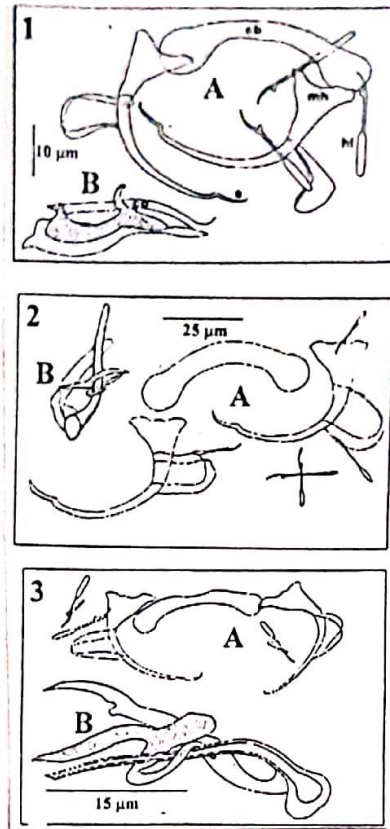


Fig. (1-3): *Dogielius mokhayeri*, *D. molnari* and *D. persicus*.  
 A- Haptor. B- Copulatory organ. cb = connecting bar,  
 co = copulatory organ, hl = hooklet, mh = median hook, s =  
 spike.

أول تسجيل لثلاثة أنواع من المخرّمات أحادية المنشأ العائدة  
للجنس *Dogielius*  
على ثلاثة أنواع من الأسماك الشبوطية من نهر الزاب الكبير  
في شمال العراق \*

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المستخلص

تم جمع 352 نموذجاً من الأسماك النهرية العائدة إلى ثلاثة أنواع من العائلة الشبوطية من نهر الزاب الكبير في شمال العراق خلال المدة من شهر تشرين الثاني 2000 ولغاية نهاية شهر تشرين الأول 2001. لقد تبين من إجراء فحص الغلاصم إصابة هذه الأسماك بثلاثة أنواع من الديدان المخرّمة أحادية المنشأ العائدة للجنس *Dogielius* وهذه الأنواع هي *D. mokhayeri* على أسماك الشلك وبنسبة إصابة 37.5%، والنوع *D. molnari* على أسماك البنيني كبير الفم وبنسبة إصابة 33.3%، والنوع *D. persicus* على أسماك الحمري وبنسبة إصابة 41.2%. يعد تسجيل هذا الجنس والأنواع الثلاثة منه المذكورة أعلاه في الدراسة الحالية بمثابة التسجيل الأول من أسماك العراق.

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\* جزء من أطروحة دكتوراه للباحث الأول.