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# THE OCCURRENCE OF THREE MONOGENEAN PARASITE SPECIES FOR THE FIRST TIME IN IRAQ ON GILLS OF THE COMMON CARP *CYPRINUS CARPIO* LINNAEUS, 1758 (CYPRINIFORMES, CYPRINIDAE)

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## ABSTRACT

The monogeneans *Gyrodactylus dzhalilovi* Ergens & Ashurova, 1984, *G. magnus* Konovalov, 1967 and *G. matovi* Ergens & Kakachava-Avramova, 1966 were recorded in this study for the first time in Iraq from gills of the common carp *Cyprinus carpio* Linnaeus, 1758 collected from Tigris River in Baghdad city. The description, measurements and illustrations of these parasites were given.

Key words: *Cyprinus carpio*, *Gyrodactylusdzhalilovi*, *Gyrodectylus magnus*, *Gyrodactylus matovi*, Iraq, Monogenea.

## INTRODUCTION

All living organisms, including fishes in nature or farms can be exposed to the infection with the parasites. Fishes in nature are infected with a great variety of parasites, includes protozoans, monogeneans, trematodes, cestodes, nematodes, acanthocephalans and crustaceans (Price and Tom, 2005).

The class Monogenea (Phylum Platyhelminthes) includes ectoparasites on the skin, fins and gills of a largest group of fishes with direct life cycle. Like other flatworms, monogeneans have no true body cavity (coelom), lack respiratory, skeletal and circulatory systems and have a simple digestive system (Hoole *et al*., 2001; Woo, 2006).

*Gyrodactylus* Nordmann, 1832 occur on a wide array of fishes, possess a high degree of host-specificity (Buchmann, 2012). Species of this genus are parasites of freshwater teleosts (Bykhovskaya-Pavlovskaya *et al*., 1962). *Gyrodactylus* species are seen especially in teleost fishes, infect and live ectoparasitically on skin, fins and gills (Koyun and Altunel, 2011).

In the genus *Gyrodactylus*, the ventrally directed opisthaptor is equipped with two median hooks and 16 marginal hooklets. The most prominent character is the uterus in which the embryo develops. The parasite is viviparous which produces a young that may already has its own embryo (Buchmann, 2012).

These worms cause irritation and excessive mucus productions which create an open window for bacterial invasion (Reed *et al*., 1996).

The disease resulting from *Gyrodactylus* infection is called gyrodactylosis which has been reported to be responsible for death of a wide variety of fishes (Szczembarra, 2011).

In Iraq, some reports were available on the description of some *Gyrodactylus* species for the first time in Iraq (Ali and Shaaban, 1984; Ali *et al*., 1988; Salih *et al*., 1988; Abdul-Ameer, 1989; Mhaisen *et al*., 1990; Al-Zubaidy, 1998; Abdullah, 2002; Jori, 2006; Al-Zubaidy, 2007; Mama, 2012; Abdul-Ameer and Al-Saadi, 2013a; 2013b; Abdullah, 2013; Nasraddin, 2013; Al-Salmany, 2015). So, more surveys on fish parasites are needed to recognize more species and for increasing the information on the parasitic fauna of freshwater fishes of Iraq.

In this paper, the occurrence of *G. dzhalilovi* Ergens & Ashurova, 1984, *G. magnus* Konovalov, 1967 and *G. matovi* Ergens & Kakachava-Avramova, 1966 infecting gills of the cyprinidfish *C. carpio* is documented for the first time in Iraq.

## MATERIALS AND METHODS

A total of 61 specimens of the common carp *Cyprinus carpio* Linnaeus, 1758 were collected from different locations along Tigris River near Al-Shawwaka region in Baghdad city. Sampling was done weekly twice during the period from December 2015 to April 2016.

Fishes were transported alive, placed in container containing local river water and immediately transferred to the laboratory of Parasitology, College of Education for Pure Science (Ibn-Al-Haitham). The fishes were identified according to Coad (2010).

In the laboratory, the fishes were examined externally for parasites of skin, fins and buccal cavity. Smears were prepared by slight scraping and examined under a light compound microscope. The gill arches from both sides were separated, placed in Petri dish containing tap water and examined for ectoparasites. Pieces of gill filaments were tiered by needle. Worms (after leaving the gills) were removed from the water by a small pipette and placed on a slide, with a very small amount of water. They were covered with a cover slip with glycerin-gelatin. A piece of melted glycerin-gelatin was dropped with cover slip onto worm. The cover slip was dried with a blotting paper carefully and the worms in glycerin-gelatin were cautiously thickened (Kritsky *et al*., 2004).

Drawings of the sclerotized pieces of the haptor were made by using a camera Lucida. Measurements of the parasites were done by using a micrometer. Parasites identification was performed according to three taxonomical accounts (Bykhovskaya-Pavlovskaya *et al*., 1962; Gussev, 1985; Pugachev *et al*., 2010). The information on the previous account records of parasites were checked by using the index-catalog of parasites and disease agents of fishes of Iraq (Mhaisen, 2016).

## RESULTS AND DISCUSSION

Out of the 61 common carps, one fish was infected with the monogenean *G. dzhalilovi* so, the prevalence of infection was 1.6% and the mean intensity was 1; one fish was infected with *G. magnus* so, the prevalence of infection was 1.6%and the mean intensity was 2 and one fish was infected with *G. matovi*,so, the prevalence of infection was 1.6% and the mean intensity was 1. These parasites were found on the gills of examined fishes. The following is a brief description and measurements of these parasites (in mm) as shown in figures (1-3).

***Gyroductylus dzhalilovi* Ergens & Ashurova, 1984 (Fig. 1):**

Small worms, body length 0.5. Total length of marginal hooks 0.030, hooklet 0.005. Overall length of median hook 0.059, main part 0.045, point 0.021, inner root 0.019. Size of ventral bar 0.004 x 0.020. Size of dorsal bar 0.0009 x 0.010.

***Gyroductylus magnus* Konovalov, 1967 (Fig. 2):**

Small worms body length 0.53-0.66 (0.60). Total length of marginal hooks 0.042-0.056 (0.049), hooklet 0.009-0.011 (0.010). Total length of median hooks 0.071-0.079 (0.075), main part 0.067-0.078 (0.073), point 0.040-0.044 (0.042), inner root 0.028-0.033 (0.031). Size of ventral bar 0.010-0.015 (0.013) x 0.037-0.044 (0.041), membrane 0.020-0.023 (0.022). Size of dorsal bar 0.003-0.006 (0.005) x 0.024-0.036 (0.030).

***G. matovi* Ergens & Kakacheva-Avramova, 1966 (Fig. 3):**

Small worms, body length 0.36. Total length of marginal hooks 0.032, hooklet 0.005. Total length of median hook 0.063, main part 0.044, point 0.028, inner root 0.022. Size of ventral bar 0.005 x 0.028, membrane 0.012. Size of dorsal bar 0.002 x 0.024.

The measurements of the present parasites *G. dzhalilovi*, *G. magnus* and *G. matovi* are in agreement with these of the holotypes of these parasites (Gussev, 1985; Pugachev *et al*., 2010).

In this paper, *G. dzhalilovi*, *G. magnus* and *G. matovi* infecting gills of the cyprinid fish *C. carpio*, are described for the first time in Iraq.

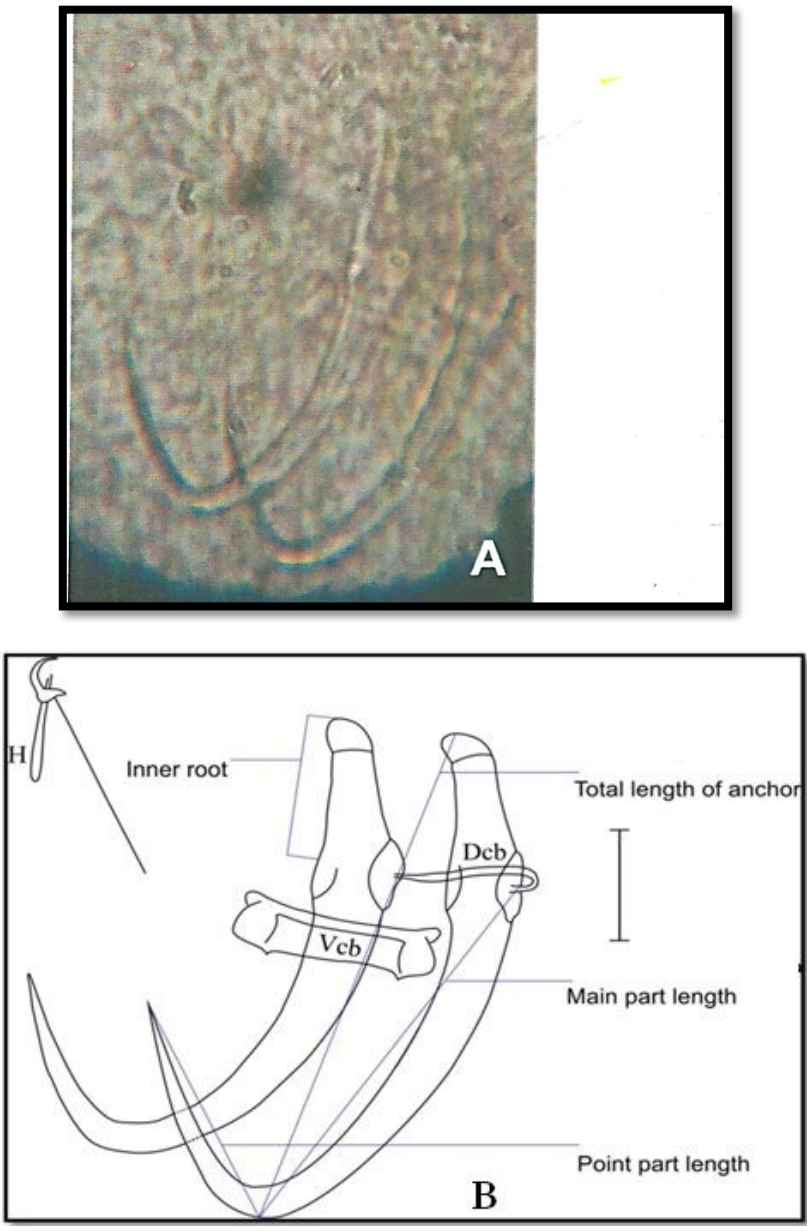


**Figure (1):** *Gyrodactylus dzhalilovi*
A: Photomicrograph of the haptor (40x).
B: Camera Lucida drawing of the marginal hook and haptor.
Dcb: Dorsal connecting bar, H= hooklet,
Vcb: Ventral connecting bar.

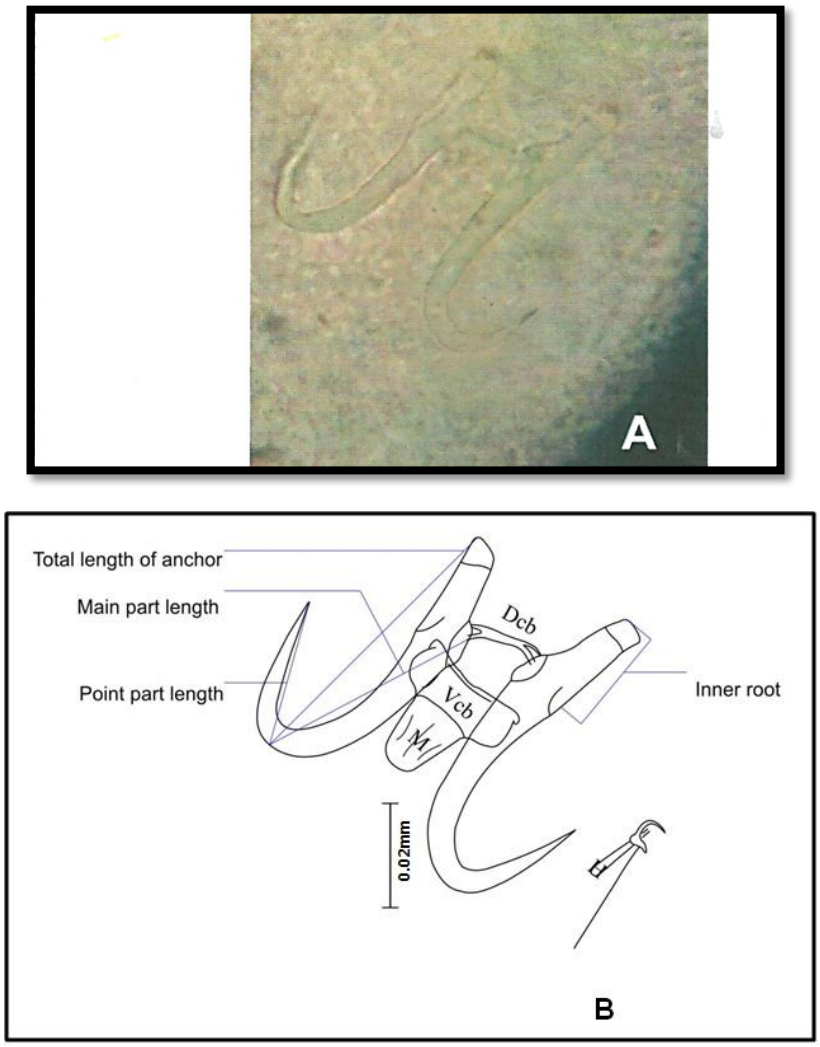


**Figure (2):** *Gyrodactylus magnus*
A: Photomicrograph of the haptor (40x).
B: Camera Lucida drawing of the marginal hook and haptor.
Dcb: Dorsal connecting bar, H= hooklet, M= membranoid extension.
Vcb: Ventral connecting bar.

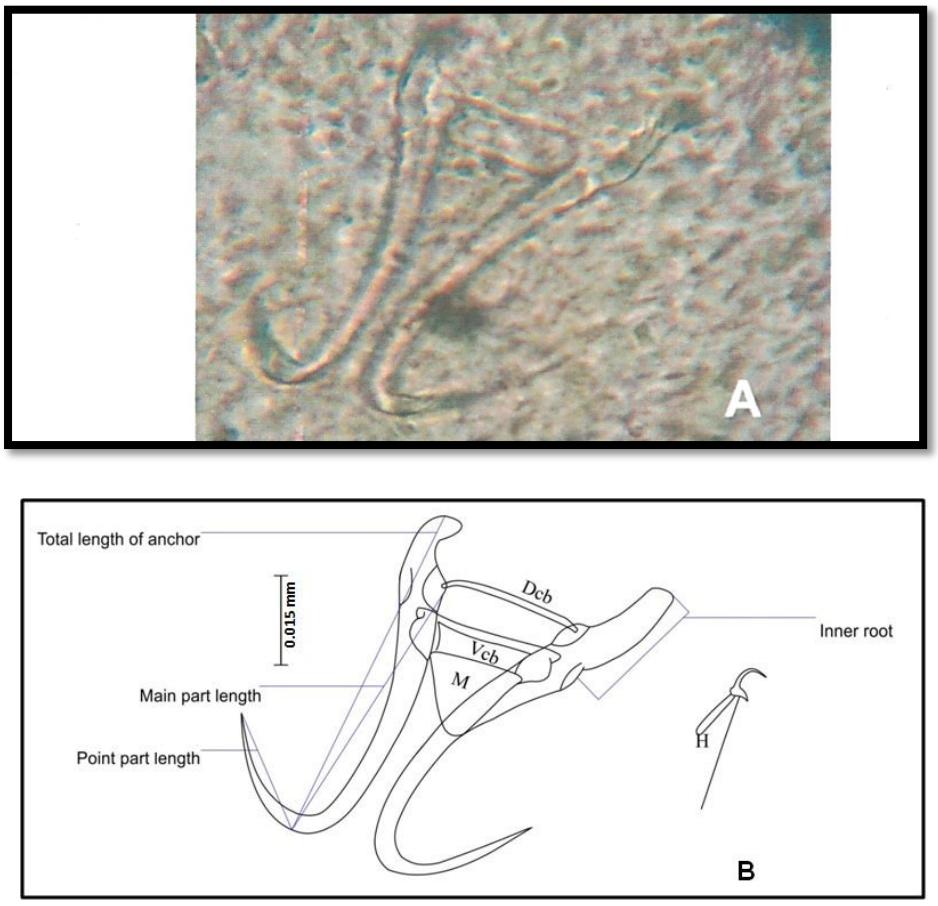


**Figure (3):** *Gyrodactylus matovi*
A: Photomicrograph of the haptor (40x).
B: Camera Lucida drawing of the marginal hook and haptor.
Dcb: Dorsal connecting bar, H= hooklet, M= membranoid extension,
Vcb: Ventral connecting bar.

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# ظهور ثلاثة أنواع من الطفيليات من أحادية المنشأ لأول مرة في العراق من غلاصم أسماك الكارب الإعتيادي*Cyprinus carpio* Linnaeus, 1758 (الرتبة الشبوطية، العائلة الشبوطية)

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## الخلاصة

سجلت ثلاثة طفيليات أحادية المنشأ هي *Gyrodactylus dzhalilovi* Ergens & Ashurova, 1984 و *Gyrodactylus magnus* Konovalov, 1967 و*Gyrodactylus matovi* Ergens & Kakachava-Avramova, 1966 لأول مرة في العراق من غلاصم أسماك الكارب الإعتيادي *Cyprinus carpio* من نهر دجلة في مدينة بغداد. تم إعطاء مواصفات وقياسات هذه الطفيليات بالإضافة إلى الرسم التوضيحي لها.