



# First Record of the Monogenean *Gyrodactylus lavareti* Malmberg, 1957 in Iraq on Gills of the Common Carp *Cyprinus Carpio*

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**Received on : 23 December 2012 , Accepted on : 8 April 2013**

## **Abstract**

The monogenean *Gyrodactylus lavareti* Malmberg, 1957 is recorded here in the present study for the first time in Iraq from gills of the common carp *Cyprinus carpio*. This is the twentieth gyrodactylid species to be recorded from fishes of Iraq. The description and measurements of this parasite as well as its illustration were given.

**Key words:** Monogenea, *Gyrodactylus lavareti*, *Cyprinus carpio*, Iraq

## Introduction

Species of the monogenean genus *Gyrodactylus* Nordmann, 1832 are ubiquitous ectoparasites of marine and freshwater teleosts worldwide, and, depending on the species, infect fish skin, fins and gills [1]. This directly transmitted viviparous gyrodactylid genus has high species richness but low morphological and biological diversity [2]. There are 409 potentially valid species named within this genus [3], but according to MonoDB [4], there are 518 nominated species of *Gyrodactylus*. Species of this genus were recorded from 400 host species in a wide variety of fish families and orders [3]. However, individual species range from narrowly specific to extremely catholic as 71% of described species were recorded from a single host while *Gyrodactylus alviga* was recorded from 16 hosts [2]. According to Mhaisen [5], *G. elegans* was reported from 22 different hosts in Iraq. The high transmission potential of *Gyrodactylus* spp., coupled with their high fecundity, allows them to rapidly colonize new hosts and to increase in number [6]. Few species of *Gyrodactylus* were likely to be significant pathogens, *G. salaris* Malmberg, 1957, has been responsible for devastation of Atlantic salmon (*Salmo salar*) population in a number of Norwegian rivers [6,7].

In the genus *Gyrodactylus*, the ventrally directed opisthaptor is equipped with two large median hooks and 16 marginal hooklets and the most prominent character is the uterus in which the embryo develops. The parasite is viviparous which produces a young that may already have its own embryo [8]. The species identification of *Gyrodactylus* relies mostly on the shape and size of hard parts of the haptor [9].

In Iraq, many studies on parasites of fishes from different water bodies resulted in recognition of only 22 species belonging to the genus *Gyrodactylus* [5]. So, more surveys on fish parasites are needed to recognize more species and increasing information on the parasitic fauna of freshwater fishes of Iraq.

In this paper, *G. lavareti* Malmberg, 1957, a monogenean infecting gills of the cyprinid fish *C. carpio*, is described for the first time in Iraq.

## Materials and Method

During the period from November 2011 till March 2012, a total of 63 specimens of the common carp *C. carpio* were collected from different fish markets in Baghdad city. The fishes were brought alive to the laboratory of College of Education for Pur Science Ibn Al-Haitham, University of Baghdad and freshly examined. External examination of fins and skin were carried out. Skin and gill smears were microscopically examined. Parasites were isolated and then stained with aqueous neutral red and permanent slides were prepared with glycerine. Drawing was done by using a camera lucida. Parasites identification was mainly done on basis of two taxonomical accounts [10, 11]. The information on the previous account records of parasites were checked with the index-catalogue of parasite and disease agents of fishes of Iraq [5].

## Results and Discussion

The present study showed the occurrence of the monogenean *G. lavareti* Malmberg, 1957 infecting the gills of two specimens of *C. carpio*. The measurements were based on four specimens of this helminth. The following is a brief description and measurements of this parasite (in mm) as shown in Fig. (1):-

Small worm, length 0.35- 0.4 (0.37), width 0.08-0.1 (0.09). Overall length of median hooks (shaft) 0.052-0.056 (0.054), point 0.03-0.06 (0.045), basal median hook length 0.04-0.047 (0.043). Ventral bar 0.006-0.009 (0.007) × 0.02-0.024 (0.022). Length of membranoid extension 0.011-0.015 (0.013). Marginal hooks total length 0.22-0.26 (0.24), shaft 0.016-0.018 (0.017), sickle 0.004-0.005 (0.0045) and length of filament loops 0.007-0.009 (0.008).

The measurements of the present *G. lavareti* were in agreement with those of the holotype of the parasite [10, 11].

In Iraq, 19 species belonging to the genus *Gyrodactylus* were so far recorded from freshwater fishes. The following is a demonstration of these parasites with the mention of only the first record for each parasite in Iraq as many records exist for each species. The first reported species was *G. elegans* from both *C. carpio* and *Liza abu* from Al-Zaafraaniyah fish farm in Baghdad [12], followed by *G. baicalensis* from *C. carpio* from Suwairah and Latifiyah fish ponds south of Baghdad [13], *G. kherulensis* from *C. carpio* from Babylon fish farm Babylon province [14], *G. markevitschi* from *Varicorhinus trutta* from Tigris river in Baiji town in Salah Al-Dien province [15], *G. ctenopharyngodontis* from *Ctenopharyngodon idella* from Babylon fish farm [16], *G. medius*, *G. salaris*, *G. sprostonae* and *G. vicinus* from *C. carpio* from Al-Furat fish farm [17], *G. malmbergi* and *G. paralatus* from both *C. carpio* and *Hypophthalmichthys molitrix* from Al-Furat fish farm [17], *G. gussevi* from *Heteropneustes fossilis* from Greater Zab river, north of Iraq [18], *G. vimbi* from *Silurus triostegus* from Al-Hammar marshes, Basrah province [19], *G. menschikowi* from both *C. carpio* and *L. abu* and *G. derjavini* from *Aspius vorax* both from Hilla river at Babylon province [20], *G. barbi*, *G. cyprini*, *G. gobioninum* and *G. longoacuminatus* from *C. carpio* of both Ainkawa, Erbil province and Lesser Zab river, north of Iraq [21]. The present report of the monogenean *G. lavareti* represents its first record in Iraq accounts for the twentieth gyrodactylid species from fishes of Iraq.

## Acknowledgements

Thanks are due to Prof. Dr. Furhan T. Mhaisen for confirming the identification of *G. lavareti*, permission to use his index-catalogue of parasites and disease agents of fishes of Iraq and his critical reading of the manuscript. Also, thanks are due to Mrs. Azhar A. Al-Moussawi of Iraq Natural History Research Center and Museum, University of Baghdad for her help in using the camera Lucida.

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Fig. (1): *Gyrodactylus lavareti* Malmberg, 1957

1A: Photomicrograph of general shape (Scale bar= 0.03mm.).

1B: Photomicrograph of haptor (Scale bar= 0.01mm.).

1C: Camera Lucida drawing of marginal hook (hooklet) (Scale bar= 0.01mm.).

1D: Camera Lucida drawing of haptor (Scale bar= 0.01mm.).

Dcb= dorsal connecting bar, H= hooklet, M= membranoid extension, Mh= median hook, Vcb= ventral connecting bar.

## التسجيل الأول لأحادي المنشأ *Gyrodactylus lavareti* Malmberg, 1957 في العراق من غلاصم أسماك الكارب الإعتيادي *Cyprinus carpio*

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استلم البحث في : 23 كانون الاول 2012 ، قبل البحث في : 8 نيسان 2013

### الخلاصة

تم في الدراسة الحالية تسجيل أحادي المنشأ *Gyrodactylus lavareti* Malmberg, 1957 لأول مرة في العراق من غلاصم أسماك الكارب الإعتيادي *Cyprinus carpio*. وهذا هو النوع العشرون من أنواع الجنس *Gyrodactylus* التي تسجل من أسماك العراق. أعطيت مواصفات وقياسات هذا الطفيلي فضلاً عن الرسم التوضيحي له.

الكلمات المفتاحية : العراق, *Cyprinus carpio*, *Gyrodactylus lavareti*, احادي المنشأ