Some Parasites From Gills of Five Fish Species and the First Record of the Monogenean *Ligophorus Imitans* Euzet *et* Suriano, 1977 in Iraq

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Abstract

Five fish species were collected from Tigris river at Al-Adhamiyah region, Baghdad during the period from September to December 2011. These fishes were examined for ectoparasites. They were infected with 13 species of parasites which included one species of ciliated protozoans and 12 species of monogeneans. Among such parasites, *Ligophorus imitans* Euzet *et* Suriano, 1977 is reported for the first time in Iraq. In addition, eight new host records in Iraq were reported in the present study.

Key words : *Ligophorus imitans*, Monogenea, fishes, Iraq.

Introduction

Fishes in their natural habitats are vulnerable to the infection with various external parasites which affect their lives. Among these parasites are the nonogeneans and the protozoans. Monogeneans are small to medium sized ectoparasites which live on gills and skin of fishes. They complete their life cycle on one host [1]. Monogeneans are well known as important pathogens for their hosts [2].

The first monogenean reported from Iraqi fishes was *Diplozoon kasimii* which was described from gills of *Cyprinion macrostomum* from Tigris river passing through Mosul city [3]. Later on, many monogenean species were described from different parts of Iraq.

The present investigation also deals with record of the monogenean *Ligophorus Imitans* Euzet *et* Suriano, 1977 which parasitizes *Liza abu* (Heckel) in Tigris river in Baghdad city as no previous account was given on the occurrence of this parasite from Iraq according to the index- catalogue of parasites and disease agents of fishes of Iraq [4].

Materials and Methods

Fish samples were collected from Tigris river passing through Baghdad city at Al-Adhamiyah region. Sampling was done during September to December 2011. Fishes were freshly examined for ectoparasites by taking smear from their skin, fins and buccal cavity through slight scraping. Gills were removed and placed in Petri dishes with water and then microscopically examined.

Smears were examined under a light compound microscope after separation of monogeneans from gill filaments by using a fine needle. All parasites were stained with aqueous neutral red and permanent slides were prepared. Drawing was achieved by using a camera lucida. Measurement of parasites was done by using an ocular microscope. Parasites identification was achieved by consulting some concerned taxonomical accounts [5, 6]. The information on the occurrence of these parasite species and the records of new hosts for these parasites were checked with the Index- catalogue of parasites and disease agents of fishes of Iraq [4].

Results and Discussion

A total of 93 fish specimens belong to five fish species were collected from Tigris river at Al-Adhamiyah region. These fishes included *Barbus grypus* (Heckel, 1843), *B. luteus* (Heckel, 1843), *B. xanthopterus* (Heckel, 1843), *Cyprinus carpio* Linnaeus, 1758 and *Liza abu* (Heckel, 1843). Fishes were brought alive to the laboratory. Thirteen parasite species were recorded from these fishes (Table 1). The following is a brief account on the occurrence of the parasites.

***Trichodrina reticulata* Hirschmann *et* Partsch, 1955**

This ciliated protozoan was found infecting gills of the common carp *C. carpio* of the present study with the rate of 33.3% (Table 1). This parasite was described for the first time in Iraq from blood, gills and skin of Asain catfish *Silurus triostegus* from Al-Hammar marshes, Basrah [7]. No more records were reported for this parasite in Iraq [4], therefore, *C. carpio* of this investigation represents a new host for this parasite in Iraq.

***Dactylogyrus affinis* Bykhovskii, 1933**

This monogenean was found on gills of *B. xanthopterus* and *C. carpio* with the rate of 40% and 58.3%, respectively in the present study (Table 1). This species was reported for the first time in Iraq from both *B. xanthopterus* and *B. esocinus* from Dokan lake [8]. Later, it was recorded from three other hosts in Iraq [4] which included *C. carpio* from Euphrates river at Al-Anbar province [9].

***Dactylogyrus arquatus* Yamaguti, 1942**

This species was found on gills of *C. carpio* with a rate of 41.7% (Table 1). The first occurrence of this parasite in Iraq was reported from the skin, buccal cavity and gills of the same host from fish pond in Suwairah and Latifiyah southeast of Baghdad [10]. So far, this species has six hosts in Iraq [4].

***Dactylogyrus barbuli* Gussev, Ali, Abdul-Ameer, Amin *et* Molnár, 1993**

This parasite was recorded from gills of *B. luteus* of the present study with a rate of 17.6% (Table 1). It was described as a new species from *B. barbulus* from Tigris river near Baiji, Iraq for the first time in Iraq [11]. Therefore, *B. luteus* of present study represents a new host for this parasite in Iraq which is the fifth host in Iraq [4].

***Dactylogyrus bocageii* Alvarez Pellitero, Vicente *et* Gonzalez Lanza, 1981**

This parasite was detected from gills of 30% of *B. xanthopterus* of the present study (Table 1). It was reported for the first time in Iraq from gills of *Aspius vorax* from Diyala river [12]. So, *B. xanthopterus* of the present investigation now adds the second host for this parasite in Iraq [4].

***Dactylogyrus carassobarbi* Gussev, Jalali *et* Molnár, 1993**

This parasite was present on the gills of *B. xanthopterus* of the present study with the rate of 30% (Table 1). This worm was reported for the first time in Iraq from the gills of *B. luteus* from Shatt Al- Arab river at Basrah [13]. Therefore, *B. xanthopterus* in this study is considered as a new host for this parasite in Iraq which is the third hosts in Iraq [4].

***Dactylogyrus deziensis* Gussev, Jalali *et* Molnár, 1993**

This parasite was found on gills of 10% of *B. xanthopterus* of the present study (Table 1). It was described for the first time in Iraq from gills of both *B. barbulus* and *B. kresin* from Bahdinan river in Kurdistan region-Iraq by Bilal [14]. Therefore, *B. xanthopterus* of the present study represents a new host record for this parasite in Iraq which is the third host [4].

***Dactylogyrus extensus* Müller *et* Van Cleave, 1932**

This parasite was found on gills of *B. grypus* and *C. carpio* of the present study with a rate of 22.2% and 25%, respectively (Table 1). It was reported the first time in Iraq from the buccal cavity and gills of *C. carpio* from fish ponds in Suwairah and Latifiyah southeast of Baghdad [10]. Now, this parasite has 16 hosts in Iraq [4] which include both *B. grypus* and *C. carpio* of the present study.

***Dactylogyrus inexpectatus* Izumova, 1955 in A. Gussev, 1955**

This parasite was found on gills of *B. grypus* of the present study with the rate of 22.2% (Table 1). It was reported for the first time in Iraq from the skin and gills of grass carp *Ctenopharyngodon idella* from fish ponds in Suwairah and Latifiyah southeast of Baghdad [10]. Therefore, *B. grypus* of this investigation represents a new host for this parasite in Iraq which is the fifth host (4).

***Dactylogyrus lenkorani* Mikailov, 1967**

This parasite was recorded from the gills of the *B. xanthopterus* of the present study with the rate of 20% (Table 1). It was reported for the first time in Iraq from gills of *B. sharpeyi* from Diyala river [12]. No more reports are available on this parasite from fishes of Iraq (4). Therefore, *B. xanthopterus* of the present study is considered as a new host record for *D. lenkorani* in Iraq.

***Dactylogyrus macrostomi* Gussev, Ali, Abdul-Ameer, Amin *et* Molnár, 1993**

The parasite was present on gills of *C. carpio* of the present study with the rate of 33.3% (Table 1). It was recorded for the first time in Iraq from gill of *Cyprinion macrostomi* from Tigris river near Biji, Iraq [11]. No more hosts are known for this parasite in Iraq (4). Therefore, *C. carpio* of the present study is considered as a new (the second) host for this parasite in Iraq.

***Dactylogyrus pavlovskyi* Bychowsky, 1949**

This species was detected from gills of *L. abu* of the present study with the rate of 13.3% (Table 1). It was described as a new species for the first time in Iraq from both *B. grypus* and *B. sharpeyi* from Tigiris river, near Baiji, Iraq [11]. So far, this species has five hosts in Iraq (4) which included *L. abu* as it was recorded from this fish from Euphrates river at Al-Musaib city [15].

***Ligophorus imitans* Euzet *et* Suriano, 1977 (Fig. 1)**

This monogenean was recorded from gill of 6.7% of *L. abu* of the present study (Table 1). As this record represents the first occurrence of this parasite in Iraq (4), the following is brief description and measurement (in mm) of this parasite. These measurements were based on eight specimens (Fig. 1).

Worm length of median size, 0.70-0.74 (0.72), worm width 0.10-0.14 (0.12), length of marginal hooks 0.011- 0.015 (0.013), overall length of ventral median hook 0.035- 0.040 (0.037), overall length of dorsal median hook 0.036-0.040 (0.038), ventral connecting bar 0.004-0.006 (0.005) × 0.04-0.047 (0.043), dorsal connecting bar 0.01-0.017 (0.013) × 0.042-0.049 (0.045), overall length of copulatory organ 0.08-0.087 (0.083), diameter of tube 0.001-0.0015 (0.0012), and length of supporting bar 0.015-0.017 (0.016).

The above measurements of the present *L. imitans* are in agreement with those of the holotype of this parasite [6]. The first record of *Ligophorus* from freshwater fishes of Iraq was that of *L. acuminatus* from gill of *L. abu* from fish markets of Baghdad [16]. So, *L. imitans* of the present investigation is the second species of this genus so far known from freshwater fishes of Iraq. It is appropriate to mention here that *Haliotrema mugilinus* (Hargis, 1955) reported from gills of both *Liza macrolepis* and *L. subviridis* Khor Al-Zubair estuary, northwest of the Arab Gulf [17] is considered as a synonym of *Ligophorus mugilinus* [18].

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Table (1): The distribution of parasite in sites of fish hosts.

Parasite Species	Host	No. of fishes examined	No. of fishes infected	Rate of infection (%)
Trichodina reticulata	*Cyprinus crpio**	12	4	33.3
Dactylogyrus affinis	*Barbus xanthopterus*	10	4	40.0
	C. carpio	12	7	58.3
D. arquatus	*C. carpio*	12	5	41.7
D. barbuli	*B. luteus**	17	3	17.6
D. bocageii	*B. xanthopterus**	10	3	30.0
D. carassobarbi	*B. xanthopterus**	10	3	30.0
D. deziensis	*B. xanthopterus**	10	1	10.0
D. extensus	*B. grypus*	9	2	22.2
	C. carpio	12	3	25.0
D. inexpectatus	*B. grypus**	9	2	22.2
D. lenkorani	*B. xanthopterus**	10	2	20.0
D. macrostomi	*C. carpio**	12	4	33.3
D. pavlovskyi	*Liza abu*	45	6	13.3
*Ligophorus imitans***	*L. abu*	45	3	6.7

* New host record in Iraq. ** New parasite record in Iraq.

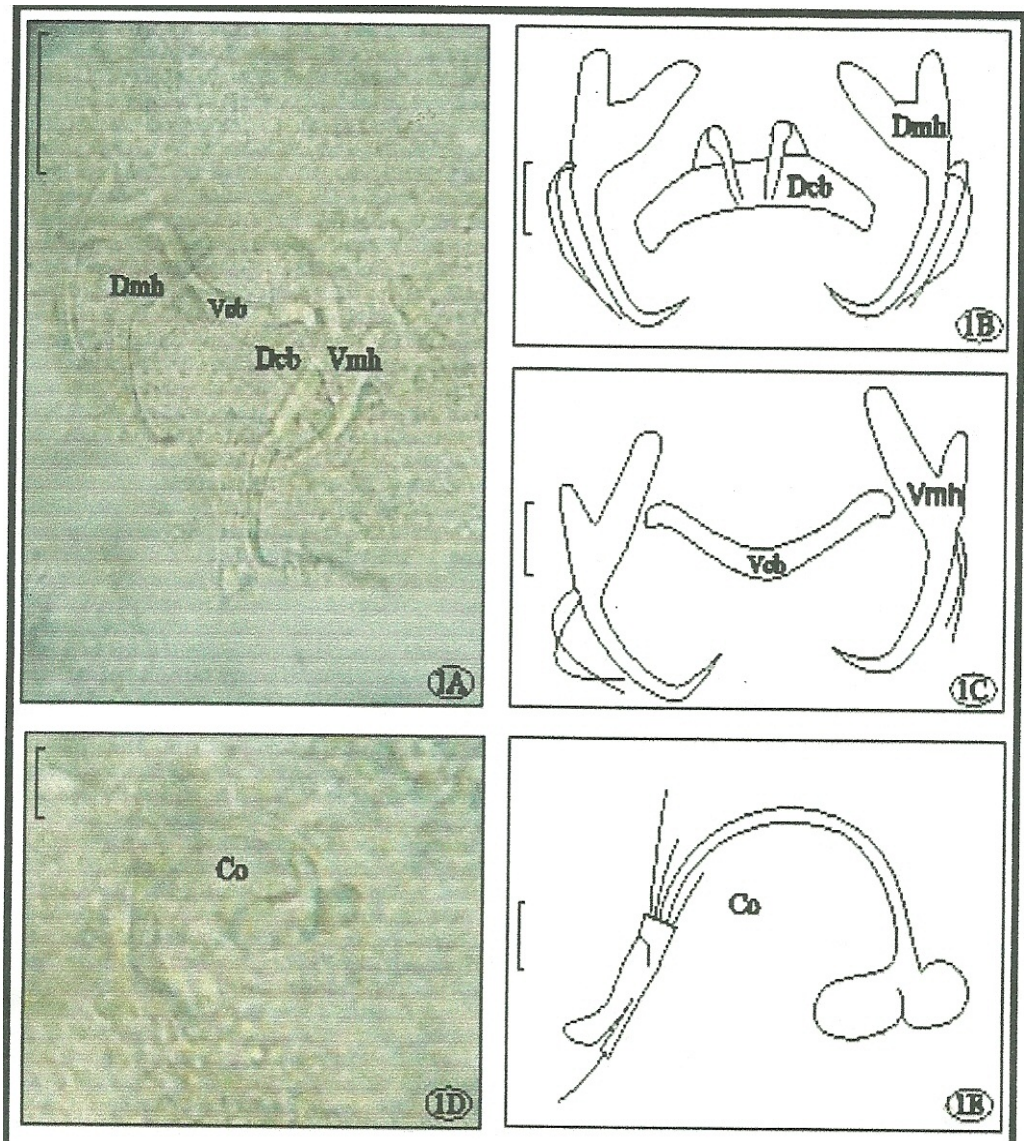

Fig. (1):- *Ligophorus inutans* from *Liza abu*.

1A: Photomicrograph of hapter parts (Scale bar= 0.025mm).
1B: Camera lucida drawing of dorsal midian hook and dorsal connecting bar. (Scale bar= 0.01mm)
1C: Camera lucida drawing of ventral midian hook and ventral connecting bar. (Scale bar= 0.01mm)
Dcb= dorsal connecting bar, Dmh= dorsal midian hook
Vcb= ventral connecting bar, Vmh= ventral midian hook
1D: Photomicrograph of copulatory organ (Scale bar= 0.013mm)
1E: Camera lucida of copulatory organ (Scale bar= 0.01mm)
Co= copulatory organ.

بعض الطفيليات من غلاصم خمسة أنواع من الأسماك مع أول تسجيل للدودة أحادية المنشأ *Ligophorus imitans* Euzet *et* Suriano, 1977 في العراق

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استلم البحث في:6 حزيران 2012 ، قبل البحث في:15 تشرين الاول 2012

الخلاصة

جمعت خمسة أنواع من الأسماك من نهر دجلة عند منطقة الأعظمية، بغداد خلال المدة من شهر أيلول وحتى شهر كانون الأول 2011. فحصت هذه الاسماك للتعرف على إصاباتها الخارجية، وتبين إصابتها بـ 13 نوعاً من الطفيليات، تضمنت نوعاً واحداً من الحيوانات الإبتدائية الهدبية و 12 نوعاً من الديدان أحادية المنشأ (Monogenia). ومن بين هذه الطفيليات تم تسجيل الدودة أحاديـــة المنشأ *Ligophorus imitans* لأول مرة في العراق. فضلاً عن ذلك، فقد أشارت الدراسة الحالية تسجيل ثمانية مضيفات جديدة في العراق.

الكلمات المفتاحية : *Ligophorus imitans*، أحادية المنشأ، أسماك، العراق.