

**Protozoans infection of *Cyprinus carpio* L. from Bab Al-Muatham fish markets, Baghdad City**

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**Summery**

During the period from November 2007 untill October 2008, a total of 255 specimens of the cyprinid fish *Cyprinus carpio* Linnaeus, 1758, were collected from fish markets east of Baghdad city. Microscopic examination of these fishes revealed that they were infected with five species of ciliated protozoans [*Chilodonella cyprini* with 1.6% percentage of infestation, *Ichthyophthirius multifiliis* (3.5%), *Trichodina domerguei* (21.6%), *Apiosoma piscicola* (0.4%) and *Epistylis solidus* (1.2%)].

*C. carpio* is considered as a new host (third host) in Iraq for *Epistylis solidus*.

**الابتدائيات التي تصيب سمكة الكارب الإعتيادي *Cyprinus carpio* L. من**

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**الخلاصة**

خلال المدة بين تشرين الثاني 2007 وتشرين الأول 2008 جمعت وفحصت 255 سمكة تعود إلى عائلة الشبوطيات، من أسماك المياه العذبة وهي سمكة الكارب الإعتيادي *Cyprinus carpio*، جمعت الأسماك من أسواق بيع الأسماك شرق مدينة بغداد. أظهر الفحص المجهرى للأسماك أنها مصابة بخمسة أنواع من الهدبيات وهي:

[*Chilodonella cyprini* (1.6% النسبة المئوية للإصابة)، *Ichthyophthirius multifiliis* (3.5%)، *Trichodina domerguei* (21.5%)، *Apiosoma piscicola* (0.4%)، *Epistylis solidus* (1.2%)].  
تعتبر سمكة الكارب الإعتيادي في هذه الدراسة الحالية مضيفاً جديداً للطفيلي الهدبي *Epistylis solidus*.

**Introduction**

fish culture is an old branch of animal's husbandry. Fishes are found in fresh and salt waters of the world (1). Common carp *Cyprinus carpio* L. was introduced for the first time to Iraqi water in 1954 (2) in Al-Zaafaraniya fish farm. Polyculture system in Iraq includes culturing of *C. carpio*, *Ctenopharyngodon idella* (grass carp) and *Hypophthalmichthys molitrix* (silver carp), with some other local fish species such as *Barbus grypus*, *B. sharpeyi* and *B. xanthopterus* (3).

All living beings can be in certain circumstances subjected to diseases, and fishes make no exception (4). Fishes can be infected with two types of diseases: infectious and non-infectious diseases (5). Non infectious diseases are caused by

abiotic factors like chemical, mechanical and physical changes. These diseases are called environmental diseases (6 and 5). Infectious diseases are caused by biotic factors such as bacteria, fungi, viruses and parasites. Parasites cause a decrease in fish resistance to other diseases and can be exposed to secondary infections like bacterial and fungal diseases (7 and 8).

### **Materials and Methods**

A total of 255 fishes were collected from Bab Al-Muatham fish markets, east of Baghdad city, during the period from November 2007 till October 2008.

According to fishermen, the samples were caught by gill nets and cast nets, the mesh size was 25mm (length 600m, width 4.5m). Five to ten fishes were collected weekly. These samples were transferred alive or freshly dead to the research laboratory by plastic containers.

Fishes were examined as soon as possible after killing them by pithing method. Total and standard length were taken and fishes were weighted by balance type Mettler PE 3600gm. The range and (mean) of total length was 16-41 (27.5 cm). The range and (mean) of weight was 62-1300 (342.8 gm).

The external surface of the fishes: fins, skin and gills were examined under a magnifying lens (x10), then scrapping of the skin was done by spatula to collect the mucus in Petri dish with normal saline (0.9%) for microscopic examination. Next, the gills were removed from the branchial cavity and placed in Petri dish for microscopic examination under the compound microscope type Novex (Holland), under a power of 100-400 times. The parasites were identified according to the following references of 9, 10, 11 and 12.

Parasites were fixed by 10% formalin (1; 13; 14). After diagnosing of the parasites, they were fixed by methanol for 1-2 minutes and staining by Giemsa stain (one drop of stain for every millilitre of distilled water, pH=7.2), for 10-30 min. Other method for protozoan fixation was directly by putting Canada balsam on the edge of slide and putting a cover slide on. The prevalence of infection was calculated as demonstrated by 15.

$$\text{Prevalence (\%)} = \frac{\text{Number of infested fishes}}{\text{Total number of fishes examined}} \times 100$$

### **Results**

The result of the external examination of these fishes demonstrated that 194 fishes (out of 255 examined fishes) were infected with five protozoan parasites (*Chilodonella cyprini*, *Ichthyophthirius multifiliis*, *Trichodina domerguei*, *Apiosoma piscicola* and *Epistylis solidus*) as shown in table (1). So, the overall prevalence of infection was 76.1% as shown in table (2).

The skin of infected fishes showed hemorrhagic foci with increase of mucous secretion. In some areas, presence of bluish-white areas on the skin was noticed. Also, redness and round areas on the base of fins were noticed. Gills of infected fishes presented hyperemic areas with increase in mucous secretion. Protozoans were very common on gills, skin and fins. They were found alive and remained strongly attached to the gills, skin or fins base.

*Cyprinus carpio* of the present study is considered as a new host (third host) in Iraq for *Epistylis solidus*.

Table (1): Diagram showing classification of the parasites of *C. carpio* of the present study.

- Phylum Protozoa
  - Class Ciliata
    - Order Holotricha
      - Family Chlamyodontidae
        - Genus *Chilodonella*
          - Species *Chilodonella cyprini* (Moroff, 1902)
      - Family Ophryoglenidae
        - Genus *Ichthyophthirius*
          - Species *Ichthyophthirius multifiliis* Fouquet, 1876
    - Order Peritricha
      - Family Urceolariidae
        - Genus *Trichodina*
          - Species *Trichodina domerguei* (Wallengren, 1897)
      - Family Scyphidiidae
        - Genus *Apiosoma*
          - Species *Apiosoma pisciola* Blanchard, 1885
        - Genus *Epistylis*
          - Species *Epistylis solidus* Solomatova, 1977

Table (2): Percentage incidence of different length groups of *C. carpio* with protozoans.

Fish length groups (cm)	Number of fish examined	Number of fish infected	Percentage incidence (%)
16-25	124	84	67.7
26-35	110	90	81.9
> 35	21	20	95.2
Total	255	194	76.1

Calculated  $\chi^2 = 6.46$

Tabulated  $\chi^2 = 5.99$

$P \leq 0.05$

## Discussion

### *Chilodonella cyprini*

This parasite was recorded for the first time in Iraq from the skin and buccal cavity of *Mystus pelusius* from Tigris river at Baghdad city (16). Afterwards, this parasite was recorded from other six species of Iraqi fishes (17) like common carp in Al-Furat fish farm (18), Al-Zaafaraniya fish farm (19 and 20), Al-Latifiya fish farm (21), Al-Shark Al-Awsat fish farm (22) and Ainkawa fish hatchery in Erbil province (23). This species was also recorded from natural waters like Tigris river (24 and 25) and Al-Qadisiya river (26).

### *Ichthyophthirius multifiliis*

This parasite was recorded for the first time in Iraq from the skin and gills of *Mugil dussumieri* from Tigris river at Baghdad city by (27). Afterwards, this parasite was recorded from other 22 species of Iraqi fishes (17) like common carp in some fish

farmes such as Al-Furat fish farm (18and 26), Al-Zaafaraniya fish farm (14, 28, 19, 29and 20) as well as from some fish farms in the north of Baghdad (30, 31and 32), fish farms in Basrah city (33) Al-Shark Al-Awsat fish farm (34), Ainkawa fish hatchery in Erbil province (23) and the floating cages in Al-Habbaniya lake (35). This parasites was also recorded from *C. carpio* from natural waters in Iraq like Al-Qadisiya dam lake (36) Darbandikhan lake (37) and Diyala river (38).

*Trichodina domerguei*

This parasite was recorded for the first time in Iraq from the skin of *Barbus esocinus*, *B. grypus*, *B. luteus*, *B. xanthopterus*, *B. sharpeyi*, *Cyprinus carpio*, *Liza abu* and *Silurus triostegus*. These fishes were obtained from fish markets of different towns of Iraq (39). Afterwards, this parasite was recorded from other 23 species of Iraqi freshwater fishes (17). Also, it was recorded on *C. carpio* from different fish farms like Al-Furat fish farm (18and 26), Al-Zaafaraniya fish farm (14, 28, 40, 29and 20), Al-Shark Al-Awsat fish farm (22and 34), Al-Amiriya fish farm (41), floating cages in Al-Habbaniyah lake (35), Ainkawa fish hatchery in Erbil province (23) and fish farmes in Al-Basrah province (42and 33). Also, this parasite was recorded in the *C. carpio* from Iraqi natural waters like Tigris river at Al-Zaafaraniya (43), Al-Qadisiya dam lake (44and 36), Al-Madaen drainage (45), Al-Husainia creek (46) and Diyala river (47).

*Apiosoma piscicola*

This parasite was recorded for the first time in Iraqi waters from skin, gills and buccal cavity of *C. carpio*, *Ctenopharyngodon idella* and *Hypophthalmichthys molitrix* in Al-Suwaira and Al-Latifiya fish farm by (24). Afterwards, this parasite was recorded in other four species of Iraqi fishes (17). In *C. carpio*, this parasite was recorded from floating cages in Al-Habbaniyah lake (35), Al-Furat fish farm (18), Al-Zaafaraniya fish farm (28) and from natural waters like Al-Qadisiya river (26). Shul man(48) considered the species *Glossatella piscicola* as a synonym of *Apiosoma piscicola*.

*Epistylis solidus*

This parasite was recorded for the first time in Iraq from the gills of *Barbus grypus* in Al-Zaafaraniya fish farm (28). Afterwards, it was recorded from *Silurus triostegus* from one fish farm south of Baghdad city (49). No more records are available in other hosts (17). So, *C. carpio* is considered as a new host (third host) in the present study for this parasite in Iraq.

In general, protozoans are dengerous fish parasites as they infect different organs (4), and they have a simple life cycle so they may easily transferred in fish ponds (50).

The fluctuation of prevalence of parasites in different length groups of *C. carpio* of the present study demonstrated that the highest prevalence of parasites (95

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