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Isolation and identification of Trichodina strelkovi Chan, 1961 for the first time in Iraq from gills of the mugilid fish Liza abu

عزل وتصنيف Trichodina strelkovi Chan, 1961 لاول مرة في العراق من غلاصم أسماك الخشني Liza abu

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Abstract

A total of 123 specimen of the mugilid fish *Liza abu* were collected from fish markets in Baghdad city during the period from November 2012 to the end of March 2013. The inspection of skin, fins and gills revealed the infection of these fishes with three species of ciliated protozoans belonging to the genus *Trichodina*. These species included *T. cottidarum*, *T. gracilis* and *T. strelkovi* with prevalence infection of 11.3%, 6.5% and. 9.7%, respectively. Among these parasites, *T. strelkovi* Chan, 1961 is reported here for the first time in Iraq and hence number of *Trichodina* species, so far recorded in Iraq, reached 20 species. In addition, *L. abu* is considered as a new host in Iraq for *T. gracilis*.

الخلاصة

تم جمع 123 نموذجاً من أسماك الخشني *Liza abu* من أسواق مدينة بغداد خلال الفترة من تشرين الثاني 2012إلى نهاية آذار 2013. وقد تبين من إجراء فحص الجلد، الزعانف، الغلاصم والتجويف الفمي إصابة هذه الاسماك بثلاثة أنواع من الطفيليات العائدة للجنس *Trichodina* وهي النوع *T. cottidarum* تضمنت الأنواع المعزولة *T. cottidarum* و *T. gracilis* و*T. strelkovi* بنسب إصابة 11.3% و6.5% و9.7% على التوالي، ما بين هذه الطفيليات تم تسجيل الهدبي *T. strelkovi* لأول مرة في العراق وبذلك وصل عدد أنواع الجنس *Trichodina* المسجلة لحد الآن في العراق إلى 20 نوعا. وفضلاً عن ذلك فقد تم تسجيل سمكة الخشني مضيفا جديدا للنوع *T. gracilis* في العراق.

Introduction

Ectoparasitic protozoan often cause severe problems in intensive fish culture they can rapidly multiply and be directly transmitted in such conditions(1). Among these parasites, the trichodinids are probably the most common encountered ciliophoran protozoan parasites on wild and cultured fishes in marine as well as freshwater environments (2).

Trichodina species belonging to class Ciliophora, order Pertrichoda, family Trichodinidae that includes the genera *Trichodina*, *Paratrichodina*, *Trichodonella*, *Tripartiella* and *Vauchomia.* When viewed from the top, *Tricodina* is circular, side views of the organism reveal a saucer or dome shape. It has three rings of cilia (small and hair projection) encircling its body and oral cavity, which are used for locomotion and feeding. Its body is supported by a rigid ring of interconnected discs called a chitinoid or denticular ring. Each disc has a thorn-like inner ray projecting into the center of the ring. *Trichodina* glides rapidly over the gill and skin surfaces. It is usually found on the gills but also be found on the rest of the body especially when the fish has become weakened. *Trichodina* can infect almost all fish species and directly or indirectly cause a fish's death (3). It is the largest genus of this family about 200 species of *Trichodina* have been described from fish skin, fins, gills and buccal cavity(4).

The disease caused by *Trichodina* species is called trichodiniasis. It causes irritation by feeding on the epithelial layer of cells covering the surface of gills and skin of the fish. This can result in hyperplasia (proliferation) of the epithelial cells, clubbing and even fusion of the gill filaments. This affects the abilities of both gills and skin to maintain optimal respiratory and excretory activities, and the ability of skin to maintain proper homeostatic osmoregulatory properties. Massive infestation of these parasites on fish can also directly result in superinficial to

deep ulcerative skin lesions which then allow for secondary bacterial and fungal infections to develop at the affected site (5).

In Iraq, the first information concerning the genus *Trichodina* in Iraq was on *T. domerguei* which was detected from eight species of fishes brought from different fish markets in Baghdad city (6).Later on,19*Trichodina* species were reported from different freshwater fishes of Iraq(7).The present investigation describes the occurrence of an additional *Trichodina* species,*T.strelkovi* which parasitizes gills of the mugilid fish *Liza abu* from fish markets in Baghdad city. In addition, two other *Trichodina* species, previously known from Iraq, were also found on gills of the same fish.

The goal of this research is to know the trichodinid ectoparasites that infect *L.abu*. Which received little attention, and this present study is one in series of trial aiming to throw some light the parasitic fauna of fishes in this farm.

Material and Methods

A total of 123 fresh specimen of *Liza abu* were brought from fish markets in Baghdad city during the period from November 2012 till March 2013. The fishes were transported to the laboratory Department of Biology, College of Education for Pure Sciences (Ibn Al-Haitham), University of Baghdad and examined by taking smears from skin, fins, gills and buccal cavity. Gills were removed and placed in Petri dish with water and then microscopically examined.

All smears were examined by low high magnification power under a light compound microscope. Parasites were stained with aqueous neutral red and permanent slides were prepared by glycerin. Parasites identification was done according to Bykhovskaya-Pavlovskaya *et al.*, 1962 (8) and Gusev, 1985(9). Drawings were done by using camera Lucida. Measurement of the parasite was done by using an ocular microscope. All measurements are given in micrometers (mm).

The information on the occurrence of *Trichodina* species and records of new hosts for these parasites were checked with the index-catalogue of parasites and disease agents of fishes of Iraq(7).

Result and Discussion

During the period of the present study, a total of 123 specimen of *L. abu* were collected. Their total length varied from 12-18 cm and total weight from 65-105 gm.

Upon inspection of these fishes, three species of *Trichodina* were found on gills of some fishes. These parasites were *T. cottidarum*, *T. garcilis*and *T. strelkovi* (Table 1).The following is a brief account on these parasites.

***Trichodina cottidarumf. Cyclopteri* Polyanskii, 1955:**

This ciliated protozoan was found on gills of *L. abu* with an 11.3% prevalence of infection. This protozoan was described for the first time in Iraq by Abdul-Ameer (10) from *Cyprinus carpio* from a man-made lake in Al-Zawra Park in Baghdad city. Later on, it was reported from five other hosts in Iraq (7) which included *L. abu* (11,12,13).

***Trichodina gracilis* Polysukii, 1955:**

This parasite was recorded on the gills of *L. abu* with 6.5% prevalence of infection. The first occurrence of this parasite in Iraq was reported from *C.carpio*in Al-Shrak Al-Awsat fish farm in Babylon province (14) **.** Therefore, *L. abu* of this study is considered as a new host for this parasite in Iraq.

***Trichodina strelkovi* Chan, 1961 (Fig.1):**

The parasite was reported on gills of 12 specimens of *L. abu* with 9.7% prevalence of infection. As this parasite was not recorded earlier in Iraq(7), its brief description, measurements (mm) and illustrations are given here (Fig. 1). These measurements were based on eight specimens.

Table (1): Protozoan parasites with their fish hosts and prevalence of infection

Parasite species*	Fish host	No. of fishes infection	Prevalence of infection (%)
Trichodina cottidarum f. cyclopteri	*Liza abu*	14	11.3
T. gracilis	*L. abu***	8	6.5
*T. strelkovi***	*L. abu*	12	9.7

*Sites of infection are gills
**New parasite record in Iraq.
***New host record in Iraq.

Diameter of the body 37.23-90.61 (63.92), attaching disk 33.21-58.10 (40.27) in diameter, corona 20.71-59.23 (39.97) in diameter. Large teeth with slightly curved and elongated conical center. External processes form extremely board, crescent lobes with denser axial part, length 3.13-7.19 (5.16). Slender, slightly curved spine like, distally tapering internal processes arise slightly away from end of internal side of central part of teeth, length 4.20-10.89 (7.54). Number of teeth in corona 25-28. Macronucleus with thick free ends, diameter 24.98-58.73 (41.85), and micronucleus is not clear.

The measurements of the present parasite are in agreement with those of the holotype of *T. strelkovi* given by Bykhovskaya-Pavlovskaya *et al*., 1962 (8).This is the twentieth *Trichodina* species so far recorded from fishes of Iraq(7). The previous records included *T. acuta*, *T. anguilli*, *T. borealis*, *T. cottidarum*, *T. domerguei*, *T. elegini*, *T. erbilensis*, *T. gracilis*, *T. heterodentata*, *T. kurdistani*, *T. murmanica*, *T. mutabilis*, *T. nigra*, *T. nobilis*, *T. ovonucleata*, *T. pediculus*, *T. prowazeki*, *T. ranae*and *T. reticulate*. Among these trichodinid species .*L. abu* is so far recorded as a host for only seven species (7). These are: *T. cottidarum*, *T. domerguei*, *T. elegini*, *T. gracilis*, *T. murmanica*, *T. nigra* and *T. strelkovi*.

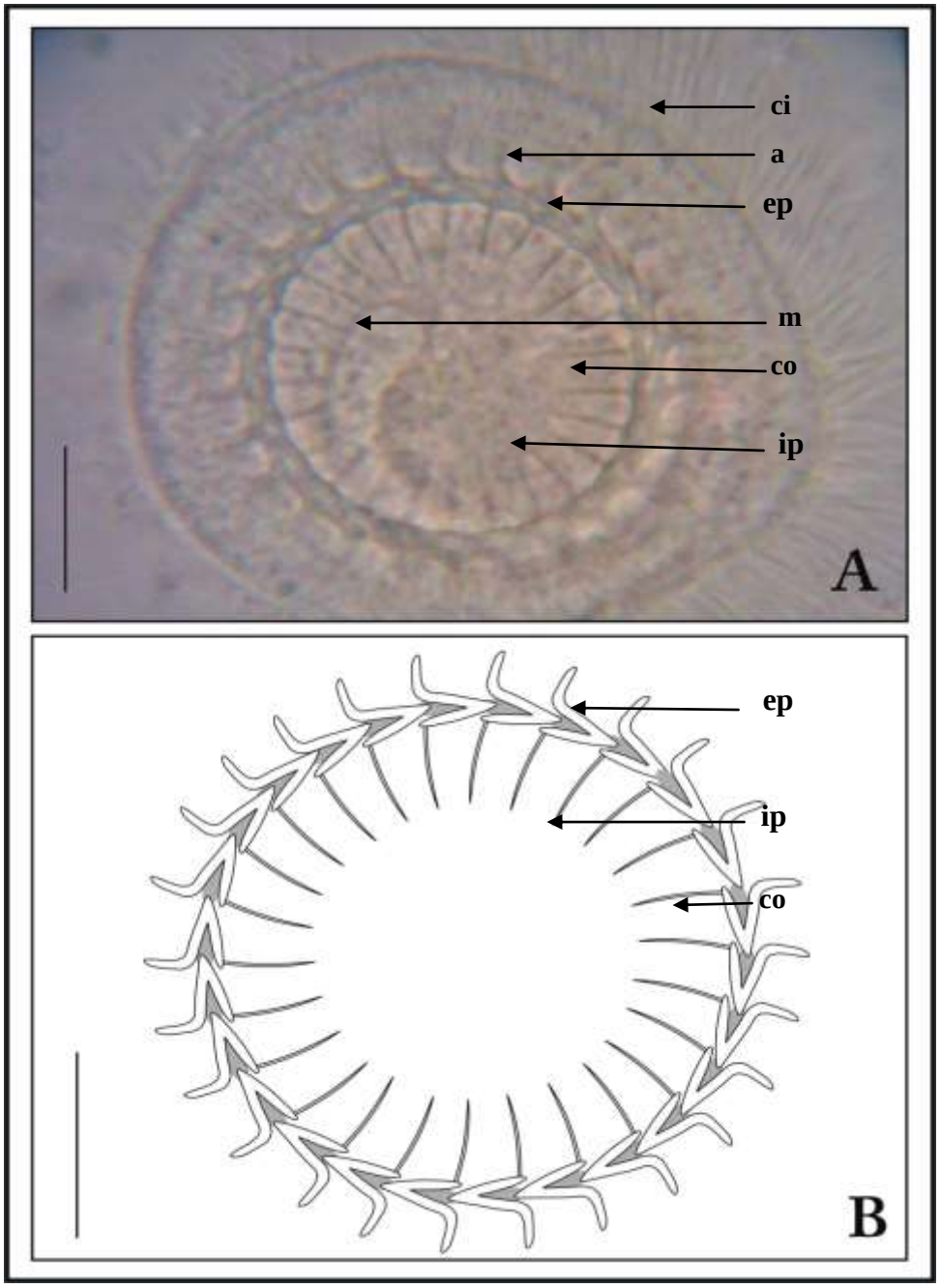

Fig. (1): *Trichodina strelkovi* from *Liza abu*.

A: Photomicrograph (scale bar = 20µm).

B: A camera Lucida drawing(scale bar = 20µm).

a= attaching disk, ci= cilia, co= corona, ep= external process, ip= internal process, m= macronucleus

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