

Investigating of Protozoa Parasites in Some Fish Species in Tigris River- Salah Al-Din Governorate

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ABSTRACT

The currently study was achieved from February 2021 to end January 2022 in order to investigate the external and intestinal parasites in some fish species of Tigris River passing Tikrit city. During the period of this study, 580 fish were collected that belonged to 8 species including *Acanthobrama marmid*, *Alburnus sellal*, *Chondrostoma regium*, *Cyprinion kais*, *Cyprinius carpio*, *Leuciscus vorax*, *Mystus pelusius*, and *Planiliza abu*. Also, it involves 6 species of protozoa as following: *Eimeria sinensis*, *Apiosoma megamicronucleate*, *Chilodonella cyprinid*, *Trichodina domerguei*, *Trichodina elegini* and *Trichodina heterodontata*.

Keywords- protozoa, fish parasite, ciliophora, Eimeria.

I. INTRODUCTION

Fish are very important source for human, which involve as basic of protein, fat, phosphate, iron, calcium, amino acids and vitamins which include soluble in fat and soluble in water (1). Besides, fish make up of ten fundamental amino acids in required concentration for human and meat of fish is very cheap and available. Also, meat of fish consists of 16-29% of protein. Therefore, fish participate as the main source in making many drugs to cure some diseases which are infected with human such as psoriasis and heart diseases are treated with. Millions of people around the world have considered fish are the essential source of food in their life (2).

Fish serve as hosts to a range of parasites that are taxonomically diverse and that exhibit a wide variety of life cycle strategies. The effects of parasites on fish can be summarized as to include nutrient devaluation, alteration of biology and behaviour, lowering of immune capability, induction of blindness, morbidity, mortality, growth and fecundity reduction and mechanical injuries depending on parasite species and load (3).

Spreading parasite diseases among fish in both fresh water and farm fish that lead to be loosed. these loses are divided in to two kinds as appearance and disappearance. Sometimes, parasites don't cause disappearance damages, fish are seen good health. Usually for many reasons, some parasites will be pathogenic and led to damage appearance, varies between the looting of food or feeding its tissues and body fluids or the parasites may cause mechanical injuries to the fish as blockage of some channels or causing wounds, scratches, tissue replacement, rupturing of the tissues and body organs, which in turn become nests for the growth of fungi and viruses, or the fish may be chemically damaged when infected with parasites as a result of the release of toxic substance by the parasites or to resist the host's reactions (4).

II. MATERIAL AND METHODS

2.1 The collecting Samples of Fish

The samples of this study involves 580 fish were collected randomly from four various locations (Baji, Tikrit, Aoenat and Al-Tharthar lake) during the period

from beginning of February 2021 to the end January 2022. Fish were caught randomly by using gillnets to get a live fish. Fish have been fetched weekly.

2.2 Fixation, Preservation and Staining of Parasites

To detect the ectoparasites, it has been worked that fresh smears such as the skin and gills, which mixed with normal slain. While the endoparasites mixed with Lougl iodine. After that a smear was examined with a compound microscope and photographed by a digital camera. parasites were identified according to the following references: (5& 6).

III. RESULTS AND DISCUSSION

3.1. Phylum: Apicomplexa

The Apicomplexa from aquatic environments are understudied relative to their terrestrial counterparts, and the seminal work assessing the phylogenetic relations of fish-infecting lineages is mostly based on freshwater hosts. The taxonomic uncertainty of some apicomplexan groups, such as the coccidia, is high and many genera were recently shown to be paraphyletic, questioning the value of strict morphological and ecological traits for parasite classification. Here, we surveyed the genetic diversity of the Apicomplexa in several commercially valuable vertebrates from the North-East Atlantic, including farmed fish (7).

3.1.1 Eimeria sinensis chen, 1956

This parasite was recorded from gills and skin of three species of fish *A. marmid* and *L.vorax*, with percentage of infection 6.66% , 10.00 % respectively, and intestine of *P.abu*, with a percentage of infection 12.30% (Table 1).

This parasite was reported for the first time in Iraq from skin and gills of *Liza abu* from Tigris River in Salah Al-Din (8). Then this parasite recorded from four fish species in Iraq, were not included from *A. marmid* and *L. vorax* (9). Therefore, these two fish species have been considered new hosts in Iraq are sixth and seventh host. As well as, *P. abu* was the second record of host in the same governorate currently.

3.2. Phylum: ciliophora

Ciliates are highly evolved protists comprising a phylum of diverse species, many of which are Holotricha or Peritricha parasites. recorded five species in this study.

Among epizotic protozoa, there are important pathogens of wild and hatchery-reared fish. The most frequently observed ectoparasitic protozoans are motile (mobile) and nonmotile (sessile) ciliates affecting the gills and skin of aquatic animals (10). Ectoparasitic protozoan often cause several problems in intensive fish culture they can rapidly multiply and be directly transmitted in such conditions. 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 (11). Recorded five species in this study.

3.2.1. Apiosoma megamicronucleata Timofeev,1962

Parasite was recorded from gills of *A. mossulensis*, with percentage of infection 2.50% (Table 1). *A. megamicronucleatum* was recorded from skin of *P. abu* from Tigris River in Salah Al-Din by (8) who did not mentioned this parasite in any species of fish in Iraq (9). So, *A. mossulensi* was considered a new host for this parasite in Iraq, it was also represented as a second host.

3.2.2. Chilodonella cyprinid Moroff, 1902

This parasite was isolated from skin of *C.kais* and from gills of *M. pelusius*, with percentage of infection 8.33% and 7.69% respectively (Table 1). This parasite was reported for the first time in Iraq from skin, buccal cavity and gills of *M. pelusius* from Tigris River at Baghdad (12). So far, 12 fish host species in Iraq (9). So, *Cyprinion kais* is considered as a new host in Iraq and it is fourteen host. This parasite was recorded from *Mystus pelusiu* the first time in Salah al din governorate.

3.2.3. Trichodina domerguei Wallengren, 1897

It was recorded from gills of *C. kais* with percentage of infection 5.00% (Table 1). The first record of *T. domerguei* in Iraq was from skin and gills of eight freshwater fish species from Tigris River, Al-Tharthar lake and fish markets in Baghdad city (15). So far, 29 fish host species (9) and involved *C. kais* was the first time in Salah Al-Din.

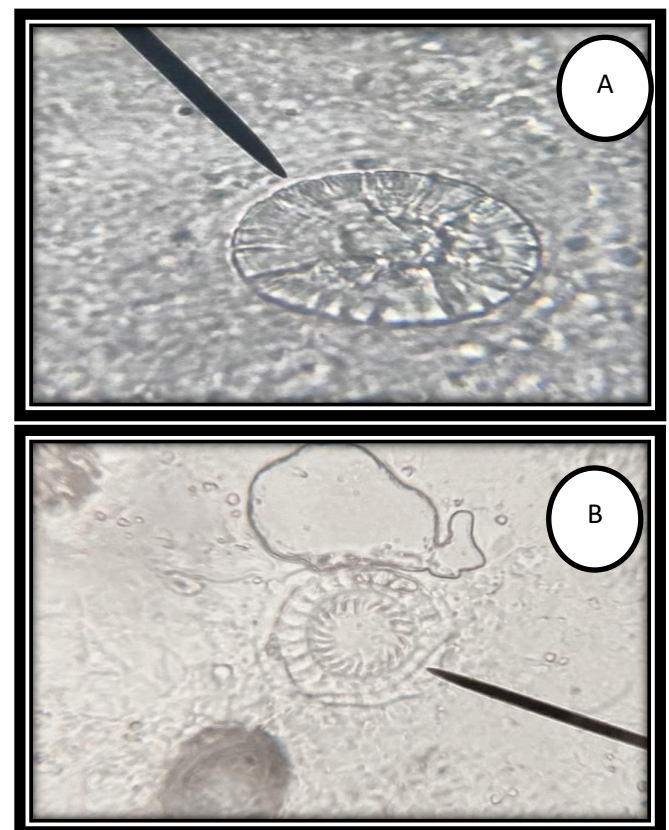


Figure 1: *T. domerguei* in gills .
A-cilia (1000x) B-denticulate ring, adhesive disc, denticulate

3.4. *Trichodina elegini*: Shl' man- Albova, 1950

This parasite was isolated from gills and skin of *C. regium*, with percentage of infection 3.63% (Table 1). This is the first record of *T. elegini* from the skin of *L. abu* fishes from Tigris River in Salahdin in Iraq (13). Then this parasite recorded from eight fish species excluded *C. regium*. This host was the first time recorded in Salah al-din, therefore; it has considered that tenth host.

3.5. *Trichodina heterodentata* Duncan, 197

This type of ciliophora was recorded from gills of *C. kais* and *C.cyprinius*, with percentage of infection 3.33% and 5% respectively (Table 1). This parasite was reported for the first time in Iraq from gills of *C. carpio* in Ain kawa fish hatchery, Erbil (18). Then one fish species has recorded in Iraq exclude *C. kais* (9). It has considered that a new host and represented third host in Iraq.

Table 1: Distribution of protozoa parasites in different sites of infections and their prevalence on fish species of Tigris River at Tikrit city.

Parasite	Fish species	Fish no.		Prevalence %	Infection
		Total	Infection		
<i>Eimeria sinesis</i>	<i>A. marmid*</i>	45	3	6.66	Gills - skin
	<i>L.vorax*</i>	50	5	10.00	Gills - skin
	<i>p.abu</i>	65	8	12.30	Intestine
<i>Apiosoma megamicro nucleata</i>	<i>A. Mossleensis*</i>	40	1	2.50	Gills
<i>Chilodonella cyprinid</i>	<i>C. kais*</i>	60	5	8.33	Skin
	<i>M. pelusius</i>	13	1	7.69	Gills
<i>T.domerguei</i>	<i>C. kais</i>	60	3	5.00	Gills
<i>T. elegini</i>	<i>C. regium*</i>	55	2	3.63	Skin - gills
<i>T. heterodentata</i>	<i>C. kais*</i>	60	2	3.33	Gills
	<i>C.cyprinius</i>	60	3	5.00	Gills

* New host recorded in Iraq.

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