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THE EFFECT OF AQUAEOUS EXTRACT OF FRUIT PEEL *Punica granatum* ON A NEWLY RECORDED CILIATE PARASITE *Tetrahymena corlissi* (Hoffman and Glenn, 1978)

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ABSTRACT

The effect of aqueous extract of fruit pell *Punica granatum* was studies against the activity and growth of protozoa ciliate parasite *Tetrahymena corlissi* that infected the eggs and eyes of *Cyprinus carpio* and *Barbus sharpyi* cultural fishes. This parasite is consider as a new record in Iraq. The parasites isolated from hatchery of Marine Science Center.

INTRODUCTION

Tetrahymena spp. are ciliated protozoans which commonly living freely in the aquatic enviroment and in some cases they behave as a parasite especialy in the hatchuries and fish cultures, the common site of infection are the eyes of the fish Host (Ruthellen and Floyed, 1994)

There were three of the major classes of clinical anti-protozoal drugs originated from plants and used in medical systems, such as Quinine which is isolated from the plants *Cinchora succirubra* and used for treatment of Malaria , Emetine which was obtained from *Cephaelis ipecacuanha* and used as amoebicidal drug and Artemisin which was isolated from Chinese Medicinal herb, it also used as antimalarial agent (Iwu *et al.*, 1994) .

Al-Rawi & Chakravarty (1988). mentioned that the main economic used of plant *Punica granatum* of the family

Punicaceae is as food beside of the wide usage in many medicine purposes.

Prashanth *et al.*(2001) tested the effects of the aqueous examined of *P. granatum* as antibacteral agents.

In controlled trials the biological activity of aquaeous and alcoholic extracts of the fruit pell of *Punica granatum was* examined tested against dermatophytes (Al-Kinani, 2001).

Recently Jarallah (2003) studied the effect of the aquaeous and alcoholic extract of this plant.The activity of cutaneous leishmaniasis which is caused by *Leishmania* both *in vitro* and *in vivo* and concluded that it might be regarded as a new approach for antileishmanial drugs.

During the routine course of the health of the hatchery of Marine Science Center, an infection by the ciliated protozoan *Tetrahymena* sp was observed in high density.

The aim of the present study is try to control the infection of *Tetrahymena corlissi* by using the aqueous extract of the fruits pell of *Punica granatum*.

MATERIALS AND METHODS

The parasites were isolated from dead eggs, larvae and eyes of fishes from the hatchery of Marine Science Center.

The ciliated parasites were isolated from the dead eggs and larvae of the fish *Cyprinus carpio* and *Barbus sharpyei* which infected with this parasite at the hatchery of Marine Science Center. This parasites were treated according to Paperna (1980). and identified according to Ruthellen and Floyed (1994).

Fruit pell of *Punica granatum* were collected from Basrah market, cleaned, dried, grinded and stored in plastic bags at 4c. The aqueous extract of fruit pell was prepared by mixing 50 gm of the ground fruit pell (powder), with 250 ml distilled water, and mixed by magnatic stirrer for 24 hr. at room temperature, then the mixture was filtrated through filter paper Whatman No.1. The supernatant was dried by freeze dryer (Harborne, 1974; and WHO, 1998). The following concentrations were

prepared from this extract (1,2,3,4, mg /ml.) drop of each of The above different concentrations was placed over clean slide containing an active parasites. the activity of the parasites examined at 10, 20, 30, 40, minutes.

RESULTS AND DISCUSSION

Description of the parasite:- *Tetrahymena corlissi* Hoffman *and Glenn*,1978 (Fig . 1)

Site of infection:- Eggs & eyes of *C. carpio* & *Barbus shartpyei* fishes *Tetrahymena* belongs to the order Hymenostomatidae which is characterized, by ventrally buccal cavity with an undulating membrane on the right, and three membranelles on the left, and uniform body ciliation.The genus belongs to the suborder Tetrahymenidae which is characterized, by having inconspicuous oral ciliat. Vestibule seldom present, the body is usually small and most of them are facultative parasites.

The body form is pear-shaped, with pointed anterior and rounded posterior end. The body [20-70 (45) long by 15 - 40 (27.5) u wide 1, covered by uniform cilia arranged in rows. The buccal apparatus just behind the anterior pole, equipped with an undulating membrane of coalescent cilia and three obliquely set membranelles.

The effect of the fruit pell extract on *Tetrahymena corlissi*

The results of the present study demonstrated, that the life span and activity of the parasites decreased with increasing concentration of this extract Table (1). The morphology of ciliated parasite as seen by light microscope showed that, the treated parasite become smaller and rounded in shape, slow and less motile as compared with the control (untreated) samples, which is ovoidal in shap

Table (1). Effect of aquaeous extract of *Punica granatum* on *Tetrahymena corlissi* (A: Active; d. A: decrease in activity; I.A: in activity)

Time/ Con	1mg/ml	2mg/ml	3mg/ml	4mg/ml	control
0	A	A	A	A	A
10 minutes	A	A	A	A	A
20 minutes	A	.dA	d.A	d.A	A
30 minutes	A	d.A	d.A	I.A	A
40 minutes	d.A	I.A	I.A	*I.*A	A

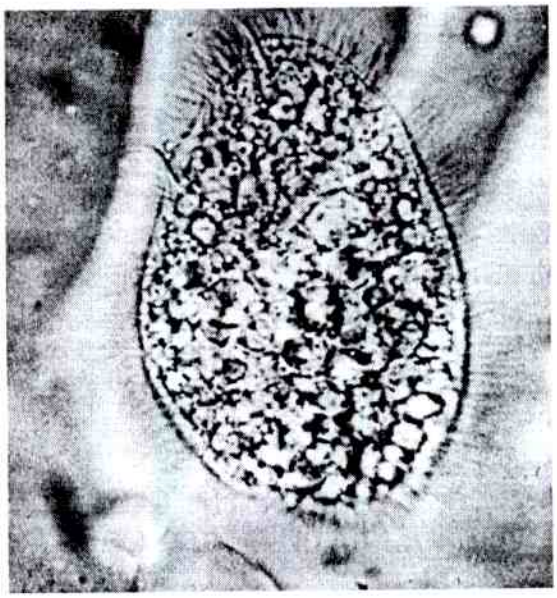

Fig (1) *Tetrahymena corlissi*

According to Hoffman and Glenn (1978) there is one species belonging to the genus *Tetrahymena*

T. corlissi have been studied by Hoffman and Glenn (1978). The infection was seen as small (1mm) white spots in the skin and

musculature, accompanied by epidermal sloughing, raised scales and finally death. In some casese the parasite penetrate into the visceral cavity, there where no apparent tissue response.

Many of the ciliates ingest red cell, this disease is very similar to that caused by other facaltative species (Corliss, 1970). These ciliates are completely free-living, and the reason for chang to parasite form the high organic contents or high ciliate population.

The present specimens showed a full agreement with species that described by Hoffman and Glenn (1978) and the present finding considered the first record of this parasites in Iraq.

The results of the present study, showed also a decrease in size and chang in shape of the treated parasite compared with the control, and this may be related to the chemical effects of tannins and some phenolic substances, which composed the extract of this plant. Bakir (1997) demonstrated that the mechanisms of action of *P. Granatum* is due to presence of tannius and phenolic substances, and their ability to precipitate on the protein of cell membrane during its penetration. These compounds form hydrogen bounds with nitrogen free and multihydroxyl – groups, causing inhibition of some enzymes which are very assential to the organism (Reed, 1995).

The results of the present study show that aqueous extract of *P. granatum* have a high effect against the parasite.

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تأثير المستخلص المائي لقشور الرمان *Punica granatum* على الطفيلي الهدبي *Tetrahymena corlissi* المسجل لأول مره في العراق

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الخلاصه

تم دراسة تاثيرالمستخلص المائي لقشور الرمان *Punica granatum* ضد فعالية ونمو الطفيلي المهدب الابتدائي *Tetrahymena corlissi* الذي يصيب بيوض وعيون اسماك الكارب الاعتيادي *Cyprinus carpio* واسماك البني *Barbus sharpyei* المستزرعه. يعد تسجيل هذا الطفيلي هو الاول له في العراق وقد تم عزل هذا الطفيلي من مفقس مركز علوم البحار.