

Prevalence of Endoparasites among *Liza abu* Fishes in a Private Farm in Babylon Province Iraq

Fadhil H.A. Al-Dulaimi¹, Ahmed. K. A . Al-Hamairy ², Aussama A. M. Al-Ajeely³

Abstract: A total of 142 fish of *Liza abu* were examined from one of the private fish farm in the Mashroa Al-Musayyib area, Babylon province which feeds from the Euphrates River water in the Al- Musayyib region from the period of December, 2018 till June 2019. The total percentage rate was 46.5%. The incidence of larval stage of the Trematoda *Diplostimum spathaecum* which was 36.60% and the larval stage of Cestoda *Ligula intestinalis* which was 25.35 % and the proportion of Oocysts of *Cryptosporidium* spp. Which was 23.90% and oocysts of *Eimeria* sp. was (16.20%) also recorded *Cryptosporidium* spp. where the first time When examining the intestine contents as a spherical bodies bright red ranged diameters from 3-7 microns and also studied the season effect and relationship with percentage of parasitic infections.

Keywords: Prevalence of Endoparasites, Fishes in a Private Farm, Babylon Province Iraq

I. INTRODUCTION:

At present, the world's population suffers from severe food shortages, both quantitatively and qualitatively (Hammood, 2017) . This problem is highlighted in countries experiencing drought or lack of coastal areas (Al-Saadi , 2007). It also faces the problem of lack of protein food, which is the main source of animal, although some plants contain protein, but in a small proportion, such as rice and corn (Al-Dulaimi, 2002 ; Sadiq, 2017), so it became urgent to search for sources of protein with high nutritional value and cheap price represents the most important fish and about Increasing demand for fish meat with the continuous increase in the population of the globe there have been few in some sources of fisheries in some seas, so it is necessary to search for new sources, namely fish farming in ponds, Lakes, floating cages, rice fields, and special farms (Al-Dulaimi, 2002 ; Al-Niaeemi, 2011) One of the most important freshwater fish is the *Liza abu* fish belonging to the Mugilidae family, all of which (except this species) are in the waters of Iraq and the Arabian gulf freely (Kadhim ,2003 ; Al-Dulaimi, 2010). The freshwater fish including *Liza abu* were infected with different types of parasites, such as protozoa , trematoda , cestoda, nematoda and crustaceans (Florindo *et al.*, 2017) . In other studies, many worms were diagnosed with freshwater fish like *Liza abu* (Al-Jadoaa, 2002) . Which led to a high rate of mortality in the fish community as a result of infection with various types of parasites, especially infection with nematodes and tapeworm (Portz *et al.*, 2013 ; Heins *et al.*, . 2014).

These fish are found in all forms of natural inland waters in Iraq, and are widespread in ponds and fish farms (Al-Asadiy *et al.*, 2001). It is considered an important food source for its popularity in local markets, especially southern Iraq (Rasheed, 2016) . Despite its importance as food, it is considered one of the enemies in farms Fisheries (Mhaisen, 1993) . Being competitive with farmed fish in its food and environment, it plays a major role in the transmission of

¹ Environmental research center/Babylon University

² Science college of women , Babylon University

³ Basic Education College/Babylon University

parasites and other pathogens (Mhaisen *et al.*, 1993). The fishes are host to a large number of parasites, including what is satisfactory to the fish itself, including what is satisfactory to other fish or may be satisfactory to the vertebrates of carnivores, including humans (Siam *et al.*, 1994) fish are infected with a wide variety of parasites, including protozoa, cestodes, trematode and crustaceans (Fattohy, 1975). Where Duijun, (1967) mentioned. *Ligula intestinalis* is a trematode that causes the destruction of fish (Al-Saadi *et al.*, 1996). explained the influence of *Diplostomum* and (Mhaisen, 1983). Effect *Eimeria* spp. on the health and nutrition of fish The *Cryptosporidium* spp. parasite is a transmissible pathogen characterized by loss of privacy of the host (Lavine, 1984 ; Ali and Mahmood , 2009). It is a protozoa parasite belonging to the family Eimeriidae, which also includes both the genus *Eimeria* spp. and *Isospora*(Ali and Mahmood, 2009). Oocysts contain four sporozoite whereas spores and sporulation occurs within the host body (Hoole *et al.*, 2011) . Recent research has seen the presence of two types of oocysts, the first type has thick walls, most of which cross with feces and the second type has thin walled walls and release sporozoite whereas spores in the intestines to cause spontaneous (Urquhart *et al.*, 1996; Dworkin *et al.*, 1996). Studies on these microorganisms have recorded new non-host recorded previously, such as fish, snakes and crocodiles (Tzipori, 1988). More than 170 hosts of different species have been registered in 50 regions of the world (O'Donoghue, 1995). The first case of malignant spores caused by the *Cryptosporidium* spp. parasite in humans were recorded in (1976) and the importance of the disease is attributed to immunosuppressive hosts, especially those infected with the disease. Immunodeficiency AID is also a parasite of some important causes of chronic diarrhea in humans (Schmidt & Larry, 2000)

The present study aimed to determine the prevalence of endoparasites among *Liza abu* fishes and incidence as well as frequency of these parasites may be recovered in this fishes.

II. MATERIALS AND METHODS:

A total of 142 *Liza abu* fishes were obtained from the waters of a local private farm in Mashroa Al-Musayyib area in Babylon province were examined from of December, 2018 till June, 2019 for detected various endoparasites infections. Fishes were weights ranged between 5-20 grams and lengths between 16-22 cm and the ages that less than a year. The internal organs were examined after being dissected visually and microscopically as they opened the intestinal longitudinally and examined their contents using both the direct method (Urquhart *et al.*, 1996). And the technique of normal physiological saline solution (Anderson *et al.*, 1981) and the technique of pigmentation with the alzeil-nelson cold-modified (Baron *et al.*, 1994). Also examined fish eyes, which appeared darkness and bleeding by cutting on clean glass slides and then added a solution Physiological salt was examined under a microscope to observe the larval phase of the trematode (snail eye) *Diplostomum spathaceum* in fish eyes (Lasee. 2004). **Results:**

The table (1) is revealed that the number of infected fishes which were 66, with a total percentage rate about (46.5%) with different parasites . It was distributed among the study seasons with the highest incidence in the autumn season (44.1%) followed by winter(47.3%) , summer (42.8%) and spring (51.5%) .

Table (2), show the incidence of different parasites genus and species diagnosed in fish samples the larval stage infection of the trematode *Diplostomum spathaceum* its about (36.6 %) , whereas the percentage of *Ligula intestinalis* its (25.3%),and percentage of *Cryptosporidium* spp.which were (23.9%) and *Eimeria* spp.which were (16.2%) .

Table (3) shows the incidence of different parasites diagnosed in fish samples where the incidence of mixed types of three or more which were about (27.3%) followed by the incidence of two types which were (34.8%) and finally the incidence of one type which were (37.8%) .

Table (4) shows the total incidence in *Liza abu* fish infection with genus of *Cryptosporidium* spp. And relationship the infection with study seasons . In the summer season, it (22.2%, autumn (29.4%) , winter (25.6%) and spring (26.1%) . Oocysts appeared and then prepared, dyed and isolated samples of fish intestines in the form of colored

spherical bodies in a dark red color at their perimeter with a bright light center. The average diameters of oocysts which were (5-7) microns .

Table (1): Number of examined and infected fishes and a total percentage of infection with parasites among fishes *Liza abu* during the study season .

Season	No.of Exam. fish	No.of Infec. fish	%
Summer	28	12	42.8
Autumn	43	19	44.1
Winter	38	18	47.3
Spring	33	17	51.5
Total	142	56	46.5

Table (2): The percentage of infection fishes *Liza abu* infected with different parasites .

Type parasite	No.of Infec. fish	%
<i>Diplostomum spathaceum</i> arvae	52	36.6
<i>Lgula intestinalis</i> arvae	36	25.3
<i>Cryptosporidium</i> spp. oocysts	34	23.9
<i>Eimeria</i> spp oocysts	23	16.2

Table(3):Type of infection with a different parasites in *Liza abu* fishes .

Type of infec.	Infec. cases	Percentage%
infec.with one type	18	27.3
infec.with two type	23	34.8
infec.with three or more than three	25	37.8
Total	56	99.9

Table(4): Infected of *Liza abu* fishes with *Cryptosporidium* spp. And relationship with study season.

Season	No.of Exam.	Infec. Cases	Percentage%
Summer	27	5	22.2
Autumn	34	10	29.4
Winter	39	10	25.6
Spring	42	11	26.1
Total	142	37	26.1

III.

DISCU

SSION:

The importance of studying fish parasites and diagnosed comes from the importance of fish itself As a consideration of source rich in protein If these parasites do not kill their host may be It can degrade its value as food for man (Al-Nasiri, 2013). The need for additional food sources is increasing with the rapid and continuous increase of the world's population year after year, The orientation were to the aquatic environment and fishing from seas, lakes and rivers is the way to provide new food sources (Finstad *et al.*, 2000). And Because of insufficient fish caught from natural water to fill the continued lack of protein therefore, the idea of expanding the establishment of fish farms has been developed and breeding by using with the latest available techniques (Al-Zubaidy, 2007) . Including coarse fish, which is an important food source being a protein source contains amino acids, vitamins and mineral salts (Abdullah , 2003).

The parasites cause various damage to their hosts vary between the host's food robbery, wounds, scratches, or tearing of the tissues, or their metabolites act as toxic substances that affect the host(Kadhim,2003;Al-Nasiri,2000).

The effect may also vary to include different host activities such as swimming, nutrition, growth, reproduction, And bring about different physical deformities As well as parasites intrude on their hosts sometimes they transmit many viral, bacterial and parasitic diseases to their hosts (Yanong, 2006) . The results of the study shown in Table (1) showed that there were a variation in the infection rates during the study months, as the highest rate of infection was during the spring season as it reached (51.5%) and the lowest infection rate during the summer was (42.8 %) This was attributed to the increase in fish nutrition, which always occurs in the beginning of the spring season , to increase its reproductive processes (Bilal , 2006 ; Ryan, 2010)

The emergence of the larval stage of the parasite *Diplostomum spathaceum* and with the adult worms of the parasite. These parasites are from the Trematoda and their final hosts are waterfowl such as gulls and ducks (Baure *et al.*, 1969) . The incidence was (36.6%) . The seriousness of this parasite on the health of fish is evidenced by the observation of darkness and bleeding for several eyes fish that referred to (Hoglund, 1991)

The *Cyprinus carpio* infection causes the discoloration of cataracts in the form of small opacities in fisheye lenses. The current study showed that the incidence of parasitic larvae *Ligula intestinalis* was(25.35%) , This parasite returned to the cestoda where it lives in the intestinal of waterfowl and it was causes Liguliosis disease and is found in the body cavity of many freshwater fish and this percentage is higher than that recorded by Al-Noori, (1996) . Which amounted to 19.02% in the *Acanthoroma maruni* fish in Mosul . In a study in the city of Mosul also, specifically in the Mosul dam in the *Acanthoroma maruni* fish they were recorded from (Rahemo & Sulaiman. 1992) . *Ligula intestinalis* incidence rate which was (42.8%) , The high rates of percentage with the parasite *Ligula* It is often found in fresh and stagnant water, lakes , ponds or private farms and is also due to the regular presence of water birds, crustaceans and the nature of the ecosystem in such water birds. As Sweeting, (1976) explanation the incidence of *Liza abu* fishes in these parasite is due to having a simple gastrointestinal tract and no sudden change in acidity of the gastrointestinal tract , And therefore its penetrate the intestinal wall and reach the physical cavity of the fish. The larva also affects gonads in males and females. This leads to infertility but the growth and increasing size of the larvae leads to compress on the internal Viscera and then atrophy (Al-Noori,1996) .

The *Eimeria* spp. were recorded in the current study depending on what was Where the total parasite incidence rate were (16.2%) .) remind (Bykhovskay *et al.*,1962 According to the formal and standard study with specifications of

oocysts, this study agrees with the recent studies by the percentage of (16.2%) with 23 fishes infections which is a widely known species such as streptococcal and coccidiosis were causes fish in intestinal epithelium tissue (Mhaisen, 1983)

And the infection with Coccidiosis were also caused with general weakness. The genus of *Eimeria* spp. were one of the protozoa that return to the Apicomplexa class. These parasites were reflat in inside of host cell particularly in the epithelium of the intestines, liver, kidneys and other organs (Noga, 2010)

The *Cryptosporidium* spp. parasite is an important parasite recently because it is one of the causes of intestinal diseases, especially diarrhea in many animals as well as humans. But in fish, the disease in *Naso lituratus* was characterized by intermittent anorexia and reduced dietary consumption (Hoover *et al.*, 1981), and recorded from (Levine, 1984).

As a species *Cryptosporidium nasorum* in (1984). In this current study, it recorded an incidence rate which was (26.10%). This percentage is not low and must be taken into account because it was transmit the infection to the humans (Levine, 1984). Thus, the results in this study are comparable with other studies in Egypt on Tilapia, where the percentage rate which was (20%) with *Cryptosporidium nasorum* (Al-Ghaysh & Mahdi, 1998) The parasite dimensions were (6-7) microns, in this study when the parasite dimensions ranged from (5-7) microns. That is may be belong to the same species, which is *C. nasorum*. In Egypt, there was recorded percentage rate about (12%) in Assiut fish *Cryptosporidium molanari* In Australia by (Hefnawy, 1989). Recently, isolate as a (Ryan *et al.*, 2004) from the Guppy fish with measuring in 4.72 x 4.47 microns. But in this study noting that no significant differences were observed between seasons with the incidence rate of infection, this may be due to the fact that this group of parasites characterized by the release of large numbers of oocysts, which remain for long periods in the stool or water (Marahail *et al.*, 1997). The oocysts were ability to cause the infection occurrence since the moment it's come out with feces or with the contents of the intestine. therefore, This increases the percentage rates of host infection inevitably. (Hoglund, 1991). One of the factors that help to spread oocysts and contamination of water bodies or private farms and aquatic organisms, including fish that the oocysts were resistance of most sterile circulating It also resists the chlorine used to sterilize water for its wall thickness (Armson, 2004). The oocysts also retain their vitality in water for 66 days and contamination of drinking water may be lead to the pathological cases in humans. The torrents and rains are involved in increasing the pollution (Camphil *et al.*, 1982; Osewe, 1996). The infection of humans can also occur through contaminated hands with intestinal contents during cleaning or preparation of food or when eating these fishes grilled or improperly cooked (Anthony, 2007).

Moderate months of temperatures are characterized by the abundance of intermediate hosts such as crustaceans, worms and low ciliata, as well as that the maturity of some infectious phases requires rather high temperatures for their detection to complete and become infectious (Al-Awadi *et al.*, 2010). This, in turn, leads to increased pollution of the environment with the infective stage of many parasites, including water bodies such as rivers (Raheef & Al-Gellany, 2002). As indicated Kenned, (1975) Until the high rates of infection during the spring season comes as a result of the growth of animal species such as insects, crustaceans and mollusca, these hosts play an important role as nutrition for a number of organisms, like fishes. As for the low rate of infection during the summer season, perhaps due to the malnutrition because the farmer reduces the proportion of food in the summer for providing a high rate of oxygen for the purpose of breathing or as a result of environmental or physiological factors related to the host itself as reduced activity and movement during the cold months (Alvarez-Pellitero, and Sitjà-Bobadilla, 2002; Mahmood, 2012).

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