



EFFECT OF USING *TAMARINDUS INDICA* SEED EXTRACTS TO MANAGING WHITE SPOT INFECTION IN GOLDFISH *CARASSIUS AURATUS*

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Abstract

In this study, we examine the Skin, Fins, and Gills of 40 models of Golden Fishes *Carassius auratus* and the average weight of studied Fish was 2.12 gm. and overall and standard length For it was 6.2, 4 cm respectively. The infected Fish and white spot disease have taken from local markets in the province of Babylon in a period from August till the end of September of 2019. These fish was infected by white spot disease noticeably. To control this white spot disease the treatment was designed by using aqueous extract of *Tamarindus* indeed in a concentration of 40%, 30%, 20%, and 10%. We used the diving method with extract in a glass basin for a period of 5 minutes to treat the infected fish.

There was a complete competence in killing the parasite *Ichthyophthirius multifiliis* that causing the white spot disease in the concentration of 40% so we can use this concentration for *Tamarindus indica* in order to eliminate the parasite. That causes the white spot disease and we notice that the mark able increase in fish activity and swimming near the water Surface than the treated fish return to its normal condition after few minutes when they returned to the recovery basin where the freshwater and suitable ventilation. Reformulate

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Key words : glass basing, white spots, gold fish.

Introduction

Fish farmers face many problems, including fish infected with parasites and disease (Mhaisen, F.T.; Khamees, *et al.*, 1991). Parasitic infection leads to fish weakness and loss especially the smallest one of them (AL-Nari A.W. 1997). The parasite plays an important

role in transmitting diseases to fish as well as weakening fish resistance and making them vulnerable to many diseases (AL-Hmdane & AL-Tae,1995). The most common disease that infects golden fish in water basing is white spot disease, most of the fishers face this disease in their wildlife at some point a diet may kill golden fish if it is not treated, it's called white spot disease as one of its main symptoms was a small white spot on the appearance

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of the infected fish body (http://the_goldfishtank.com/goldfish-diseases-white-spot-itch) Parasites may be difficult to see at the beginning of an infection. but when the parasite starts to feed on fish body fluids on their skin and fins, it will start clumping and appear as white spots on fishes body, the fish appear to have been sprinkled with salt or sugar and in fact, is infected with white spot disease (<http://www.arabvet.com/inodules/img-upload/cache/files/ich-1-1.jpg>). The caused infection is a parasite *I. multifiliis* that intended for most fish reared in cages, such as regular carp. The infection varies according to a gradual increase in temperature and the location of the infection, as it hoses the highest rate of injury on the skin and the highest severity of infection on gills (Hussein, 2018).

The plant kingdom contains many organic compounds of medical importance scientific research has expanded around it, and shows that most parasitic diseases can be treated with extracted plant products, and like this plant is *Tamarindus indica*, L. As the medically effective portion of *Tamarindus indica* is the pulp of the fruits leaves (Arab organization for agricultural development 1988) as it works as an antioxidant free radical then work to decrease the occurrence of deformities and not altering or impairing cellular metabolism (Ramos, 2003). Hence the interests of current studies directed to the use of tamarind extract in the treatment of golden fish infected with white spot disease.

Materials and Methods

Goldfish were collected from the local markets in the city of hills for the period from the first of August 2019 till the end of September 40 fish, the average weight of 2.12 g standard length 6.2, 4 ml respectively transferred by plastic bags filled with water to the convalescence size 40*50*75 cm filled with tap water three days before bringing fish to get rid of chlorine substance. The aqueous extract of Tamarinds indicia seed has been prohibited using water according to the method (Harborne, 1982) As 200 gm. of dry weight was taken from the ground sample with an electrical mill.

The sample was placed in 2000 ml glass beaker containing 400 ml of distilled water, then a sample was crushed with an electric miter for 3 hours, then the solution was filtered with a cloth and the solution was filtered through filtrating papers watchman No1 using Buchner fennel by the Electrical vacuum, then the filtrate was then concentrated using rotary evaporator device. After that, the volume used was increased to 1400 ml by distilled water and kept extracted in the refrigerator until use.

The fish were visually examined and the whit spot

disease was noticeably observed before treatment, after which treatment was done according to the following:

1. Putting each concentration of aqueous extract of Tamarinds indicia seeds understudy in the treatment tank provided with artificial ventilation via plastic tubes coming from an electric pumping apparatus aerator. In addition to the fish recuperation tank, to be placed there after the end of the treatment period as freshwater and artificial ventilation are available.

2. The physical of chemical factors of glass basin water were measured before and during treatment as follows

A- Water temperature, B- pH, C- Dissolved oxygen
D- Salinity

The reading was among the appropriate measures, for fish farming.

3. The fish were transported by hand net to the treatment basin, the infected fish were immersed in the treatment basin and placed for a period of 5 minutes, then transferred to a purified basin free of plant extract and fish were examined to observe the effectiveness of each of concentrations of aqueous extract of *Tamarindus indica* seeds to eliminate the parasite that causes the white spot disease.

4. The severity of infection percent was recorded after each treatment for each concentration of studies whereby the fish are taken and then killed by hitting method with a small piece of wood on the head then we made swabs from the skin and fins, and then separated the gills from their diaphragm cavity and examined by the Olympus CH complex microscope. And used the power of zoon between 40-1000 once, then parasite class isolated depending on (Bykovskaya-Pavlovskaya, *et al.*, 1962). Followed all the changes that took place in each of the percentages in cadence infection and mean intensity infection depending on (Snedecor & Cochram, 1974).

Results and Discussions

The location of parasite from the animal kingdom. It is a gift from a circular shape that affects most types of fish. this parasite is spread in the water when the temperature reaches between 20-22 c° and dies when the temperature exceeds 28 c° (AL-Loess, *et al.*, 1990). Table 1, 2 shows the percentage and severity of infection of the parasite in golden fish treated with the use of the aqueous extract of *Tamarindus indica* seeds in four concentrations 10,20,30 and 40% for a period of five minutes if the fish were searched for the parasite understudy in three locations are the skin, fins, and gills.

Table 1: The percentage and incidence of parasite *I. multifiliis* infection of golden fish after treatment according to the site of infection in the pool with a concentrated aqueous extract of *Tamarindus indica* seeds 10% top line and trough with 20% extract concentration the bottom line.

| Infection site | Number of fish tested* | Number infected fish | Infection rate % | Parasite number | Severity of infection |
|----------------|------------------------|----------------------|------------------|-----------------|-----------------------|
| skin | 10 | 2 | 20 | 6 | 2.0 |
| | 10 | 1 | 10 | 9 | 4.5 |
| fins | 10 | 1 | 10 | 10 | 2.5 |
| | 10 | 2 | 20 | 6 | 3.0 |
| gills | 10 | 3 | 30 | 14 | 2.8 |
| | 10 | 2 | 20 | 11 | 3.6 |

* The number of infected fish with in each treatment is 10 as it examines the skin, fins and gills of each fish.

Table 2: The percentage and severity of infection with the parasite *Ichthophthirius multifiliis* of golden fish after treatment according to the site of infection in the basin with plant extract of *Tamarindus indica* seeds 30% the top line of the basin have an extract concentration of 40%, the lower line.

| Infection site | Number of fish tested | Number* infected fish | Infection rate % | Parasite number | Severity of infection |
|----------------|-----------------------|-----------------------|------------------|-----------------|-----------------------|
| Skin | 10 | 1 | 10 | 9 | 9.0 |
| | 10 | - | - | - | - |
| Fins | 10 | 1 | 10 | 4 | 4.0 |
| | 10 | - | - | - | - |
| Gills | 10 | 2 | 20 | 7 | 3.5 |
| | 10 | - | - | - | - |

* The number of infected fish with in each treatment is 10 as it examines the skin, fins and gills of each fish.

Table 3: Observations of fish movement during the treatment period according to the concentration of aqueous extract of *Tamarindus indica* seeds for period of five minutes.

| Extract concentration % | Observation of golden fish |
|-------------------------|---|
| 10 | The fins are normal movement, the color of the fish is normal, normal color, no mortalities |
| 20 | The fish are normal, normal color, no mortalities |
| 30 | Normal fish, no mortalities, the speed of fish movement and swimming near surface of water |
| 40 | Normal fish, fish movement is average and some fish are over turned |

Table 4: Physiochemical specification for treated water basin and contain the aqueous extract of *Tamarindus indica* seeds in different concentration.

| Concentrate extracted <i>Tamarindus indica</i> seeds | Extract temperature | pH | O ₂ mg/L | Salinity fraction of thousands |
|--|---------------------|---------|---------------------|--------------------------------|
| 10 | 24±1 | 6.2±0.1 | 6.7±0.3 | 0.83 |
| 20 | 23±1 | 6.3±0.1 | 6.5±0.4 | 0.90 |
| 30 | 25±1 | 6.5±0.2 | 6.6±0.2 | 0.91 |
| 40 | 22±1 | 5.8±0.3 | 6.6±0.3 | 0.93 |
| Recuperation water | 23±1 | 5.6±0.2 | 6.7±0.2 | 0.84 |

The highest infection rate was 30% on gills of treated fish with a concentration of 10% and no parasite appeared in all sites understudy on fish treated with a water extract with a concentration of 40%.

Table 3 indicates the observation of the movement and condition of the fish as no death was recorded for the treated fish in all concentrations of the water extract of *Tamarindus indica*. As the movement and color of the fish were natural of in the extract with a concentration of 30% the movement of the fish was rapid and swimming near the surface of the water due to the increasing in the concentration and the extract with a concentration of 40% some fish were overturned on the back during processing, but returned to their normal state when placed in the basin.

Physiochemical specification for the aqueous extract of *Tamarindus indica* seeds and purity were recorded (Table 4). All factor were controlled by artificial ventilation by an air pump. As well as controlling the temperature of the aqueous extract by means of a heater attached to the vitreous basin, which is within the appropriate range of fish life as the most important factors for the spread of the parasite is the high density of fish, as well as the main factors such as temperature 25-26c° in addition to dissolved organic matter (A-Fanacev, & Yakovchuk, 1971).

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