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Infection of some *Acanthobrama marmid* (Heckel) fish with tapeworms *Ligula intestinalis* (Linnaeus, 1758) at Lake Tharthar, West of the city of Samarra, Salah al-Din/Iraq

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Abstract

Were collected 144 *Acanthobrama marmid* (Heckel) fish were collected from Lake Tharthar, west of Samarra/Salah al-Din, Once a month starting from February until June 2024, One type of tapeworm, *Ligula intestinalis* (Linnaeus, 1758) was recorded in the current study and its total length ranged from 35.7 - 150.2 cm and its width from 0.5 - 1.3 cm, which was isolated from the intestines of *Acanthobrama marmid* fish, with an infection rate of 81.9%, and the number of infected fish was 118 fish with a total length range of 25.6 - 12.5 cm, which were isolated from the 144 examined fish with a total length range of 28.2 - 12.5 cm.

Keywords: *Acanthobrama marmid*, fish, *Ligula intestinalis*, Lake Tharthar

Introduction

Many freshwater fish of the Cyprinidae family are infested, in particular, by the larvae of the tapeworm *Ligula intestinalis*, which inhabit their body cavity, these larvae are transmitted from the intestines of waterfowl to fish, causing ligulosis (Bauer *et al.*, 1969) [8]. The eggs of adult worms of the *Ligula intestinalis* type are thrown into the water with bird droppings, after which the eggs hatch and the embryos emerge to live for some time in the water until they are eaten by the copepod crustaceans to grow in their hollows, Until the fish eat these infected crustaceans, the larvae transmit to the tapeworms in the body cavity of the fish (Amlacher, 1970) [7]. Fish are commonly exposed to parasitic infections caused by poor environmental conditions, including the quantity and quality of water and the concentration of pollutants, which leads to a weak immune system in fish, and this makes their rate of infection with various diseases and parasites high (Abay, 2018) [1]. Some types of parasites have direct or indirect life cycles, and some have many hosts throughout their life cycle, which allows them to move easily from one host to another, and this avoids unsuitable environmental conditions that lead to damage in completing their life cycle, parasites may cause diseases and harm to fish stocks, and their mortality rates increase due to their transmission through their feeding on waste excreted by waterfowl that contain the larval stages of some types of parasites in the aquatic environment in which these fish live, there are many parasites that infect fish, including external parasites that infect the outer surface of the fish's body, or internal parasites that parasitize the internal organs and muscles and feed on the internal fluids of the fish. This leads to high mortality rates among infected fish, and Parasitic diseases increase the risk of infecting fish with other diseases, including bacterial and fungal diseases (Roberts, 2019) [13]. The study aims to identify the tapeworm *Ligula intestinalis* that infects the intestines of fish *Acanthobrama marmid* in Lake Tharthar, west of the city of Samarra/Salah al-Din, Iraq.

Materials and methods of work

The caught fish were classified according to Coad (2010) [9] and isolated from the intestines of fish infected with tapeworms of the type *Ligula intestinalis* based on the method Hashim *et al.*, (2015) [10].

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Results and Discussion

Were collected 144 *Acanthobrama marmid* (Heckel) fish were collected from Lake Tharthar, west of Samarra/Salah al-Din, one type of tapeworm *Ligula intestinalis* was recorded in the current study and its total length ranged between 35.7 - 150.2 cm and its width ranged between 0.5 - 1.3 cm, which was isolated from the intestines of *Acanthobrama marmid* fish with an infection rate of 81.9% the number of infected fish reached 118 fish with a total length range of 25.6 - 12.5 cm, and it was isolated from 144 examined fish with a total length range of 28.2 - 12.5 cm. The high infection rate among *Acanthobrama marmid* fish is explained by the nature of their feeding on crustacean animals infected with the larvae of the tapeworm *Ligula intestinalis* and their availability in large numbers in Lake Tharthar, which provides a great opportunity for infection of this type of fish, in addition, the aquatic environment conditions are suitable for fish infection and the growth of *Ligula intestinalis* larvae. Al-Hasani (1985) ^[4] found this type of tapeworm for the first time in Iraq in the body cavity of *Leuciscus vorax* in the Shatt al-Arab River/Basra. Al-Taie (2008) ^[6] noted that there was an infection rate of 32.92% for the tapeworm *Ligula intestinalis* in the intestines of *Liza abu* fish in the Tigris River near the city of Mosul, and this percentage is lower than the current study. Al-Ayyash (2011) ^[3] found five species of tapeworms in the intestines of twenty species in the Tigris River near the city of Tikrit/Salah al-Din. Between Muheisen and Al-Nasiri (2012) ^[11] on the presence of nine types of tapeworms in Tigris River fish/Salah El-Din. Hashim *et al.* (2015) ^[10] obtained four species of tapeworms in the intestine *Mastacembelus mastacembelus* with a moderate infection rate of 21.7%, and in fish *Silurus triostegus*, *L. esocinus*, and *Cyprinus carpio* with a low infection rate of 13.63%, 12.5%, and 8.3% respectively, from the Greater Zab River in Eski Kalak / Erbil, This study did not agree with the current study regarding the infection rate. Abbas (2019) ^[2] recorded an infection rate of 33.3% for this type of tapeworm from the intestines of *Leuciscus vorax* fish in the Tigris River near Baghdad Governorate, which is less than the percentage recorded in the current study. Shia (2019) ^[14] found another type of tapeworm *Caryophyllaeus auriculatus* in the intestines of the fish *Barbus barbulus* with an infection rate of 2.8% in the Tigris River at Taji Beach near Baghdad, and this infection rate did not agree with the current study.

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