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ORIGINAL ARTICLE

Diagnosis of Some Parasites of Asian Catfish *Silurus Triostegus* (Heckel, 1843)

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ABSTRACT
A total of twelve fish specimens of the Asian catfish Silurus triostegus (Heckel, 1843) were purchased from fishermen in the local market of Bab al-Mu'adham in Baghdad province and examined for endoparasites .The present study revealed the existence of two species of digenetic trematodes, Megamonostomella rashediansis Rahemo and Al-Naemi, 1998 and Orientocreadium pseudobagri Yamaguti, 1934 in the intestine of Silurus triostegus and the third larval stage of the nematode Contracaecum species encapsulated in the intestinal wall of S. triostegus. This is the first recording of M. rashediansis and O. pseudobagri from S. triostegus from the Tigris River in Baghdad province.
***Key words**: Trematode, Nematode, Silurus triostegus, Asian catfish , Baghdad province, Iraq.*

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INTRODUCTION

Freshwater fish plays an important role in the life cycles of fish parasites as their intermediate or definitive hosts, these parasites in turn may threaten the diversity and abundance of local fish species in natural systems, affecting their marketability [1]. Metazoan parasites have harmful effects on fish health as well fishery industry [2]. The fish-borne trematode infections threat the food and employment in developing countries by causing damage in aquacultures; as well they affect the health of more than 18 million people around the world [3].

In Iraq, *Silurus triostegus* found to harbor many digenean trematodes [4 ; 5 ; 6; 7 ; 8 ; 9 ; 10 & 11]. Digenean trematodes of the family Orientocreadiidae are intestinal parasites of freshwater fishes [12] . *Orientocreadium pseudobagri* was originally described in Japan from the Bagrid catfish *Pseudobagrus aurantiacus* fish hosts in Japan were scattered between two fish families, Bagridae and Siluridae [13]. This trematode was also isolated in Russia from the Amur Silurid catfish, *Parasilurus asotus* , the Bagrid yellow catfish, *Pelteobagrus fulvidraco* , the Amur sleeper, *Perccottus glehni* and *P. fulvidraco* [14] .

O. pseudobagri Yamaguti, 1934 has 10 fish host species in Iraq [10]. It was reported for the first time in Iraq from the intestine of *Mastacembelus sharpeyi* and *Silurus triostegus* from Al-Hammar Marsh, south of Iraq by Al-Daraji [15] . It has subsequently been found in the intestines of *Silurus triostegus* [4], *Glyptothorax steindachneri* [5 & 9].

The genus *Megamonostomella* as well the species *M. rashediansis* were erected for the first time by Rahemo and Al-Naemi [16] from *Silurus glanis* collected from the Tigris River in Mosul city. Later on *M. rashediansis* was found in the intestine of *S. triostegus* from Greater Zab River, north of Iraq by Shwani [6] and Shwani & Abdullah [7] and from the Tigris River at Salah Al-Din Province by Hamdan [11].

Larval stages of the *Contracaecum* spp. occur in the mesenteries and body cavity of fish, while adults occur in the gut of fish- eating birds, marine mammals and people [17&1]. *Contracaecum* spp. larvae were recorded from 40 fish host species in Iraq [18].

The present study aims to demonstrate the parasitic fauna of *Silurus triostegus* collected from the Tigris River at Baghdad Province. To the best of the authors' knowledge this is the first record for *O. pseudobagri* from *S. triostegus* from the Tigris River in Baghdad province.

MATERIALS AND METHODES

Twelve fish specimens of *S. triostegus* were purchased during 2017 from fishermen in the local market of Bab al-Mu'adham, according to the fishermen the fish specimens were caught from the Tigris river in Baghdad Province. They were brought to the laboratory, opened from the abdominal side. Digestive tracts were isolated and examined for parasites under dissecting microscope [19] . The isolated trematodes were washed in physiological saline, fixed in 70% ethanol. Stained with acetocarmine, dehydrated in ethanol series, cleared in xylene and mounted in canada balsam . For *Contracaecum* sp. Larvae they stored in 70% ethanol. Worms were then immersed in lactophenol for 48 h. and examined microscopically for taxonomic identification. Identification was done according to the available keys and descriptions, [1] to identify the larval stage of *Contracaecum* ; Rahemo and Al-Naemi [16] were followed to identify *Megamonostomella rashediansis* and [12] were followed to identify *Orientocreadium pseudobagri.* Measurements are in millimeters followed by means in parentheses. Photomicrographs were taken with digital camera Infinity lite-K100 attached to compound microscope Micros MCX100.

RESULTS AND DISCUSSION

Five of 12 (41.66 %) of *S. triostegus* in the present study found infected with two trematode species: *M. rashediansis* and *O. pseudobagri* and with the third larval stage L3of the nematode *Contracaecum* sp. found encapsulated in the intestinal wall.

The third larval stage L3 of the nematode *Contracaecum* sp. (Fig. 1)

Two larvae were found encapsulated in the musculature intestinal wall of *S. triostegus* in this study. The larva is cylindrical, body transversely striated, smooth 0.268 and 0.271 long, 0.097 and 0.101 wide. Small boring tooth locates at the anterior end of the mouth .The tail tapered at the end of the body. Although we could not identify larval *Contracaecum* specimens to the level of species since their reproductive systems were not fully developed, but we believe that L3 of *Contracaecum* in this study is probably represented *C. rudolphii* Hartwich, 1964, it resembles those of Arai and Smith [20] who believed that L3 larvae of freshwater fish might return either to *C. rudolphii* or to *C. spiculigerum* (which was considered as synonyms of *C. rudolphii*). Barson [1] explained the life cycle of *Contracaecum* and cleared up that when the infected cyclopoid copepod with second-stage larva is eaten by fish the larva develops to the third-stage (L3) which may encysted in the musculature. Lymbery [17] have demonstrated that larval *Contracaecum* spp. may migrate from the visceral organs, which they usually prefer to occur in, to the musculature of the fish post-mortem.

In Iraq, Herzog [21] represented the first record to the third larval stage of *Contracaecum* spp. found in 10 freshwater fish species. Later on many authors found this nematode infecting intestine, intestinal surface, body cavity, liver and gonads of different fish host species. According to Mhaisen *et al*. [18] *S. triostegus* is one of 40 fish host species for *Contracaecum* spp. larvae in Iraq.

Megamonostomella rashediansis Rahemo and Al-Naemi, 1998 (Figs. 2 A, B & C)

More than 25 specimens of *M*. *rashediansis* were found in the intestine of *S. triostegus* in this study. Measurements were done for 8 specimens only.

The body is small 0.468 - 0.756 (0.531) long, 0. 166 - 0.378 (0.253) wide. Small spines spread on the front of the body, ends near ovary level almost. Oral sucker is well developed, 0.083 - 0.138 (0.107) in diameter. The pharynx is muscular 0.036- 0.0544 (0.0458) long. Oesophagus is bifurcated into two intestinal caecae. Each caecum ends at the beginning or the mid- testis level. Testes located in hind body, they are double, apposite or each is slightly anterior to the other. Each testis is 0.10 - 0.221(0.101) long, 0.050 - 0.115 (0.075) wide. Vitellaria few, lie between ovarian and testicular zones. Eggs 0.025 - 0.030 (0.026) long , 0.015 – 0.020 (0.018) wide.

Description and measurements of *M. rashediansis* in the present study show resemblance to that detected in the intestine of *S. glanis* L. by Rahemo and Al-Naemi [16] , they considered the well developed oral sucker, presence of cirrus pouch and lacking of the seminal vesicle as distinguished features for this trematode to put it under the genus *Megamonostomella*.

Silurus glanis and *S. triostigus* are so far the only two fish hosts for this trematode in Iraq [16; 6; 7 & 11].

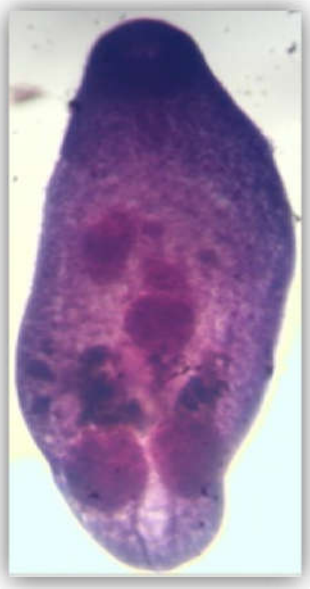
Orientocreadium pseudobagri Yamaguti, 1934 (Figs. 3 A, B & C)

This description is based on 5 mature specimens of *O. pseudobagri* were found in the intestine of *S. triostegus* in the present study. Body elongate, cylindrical, spines cover the body except the posterior end

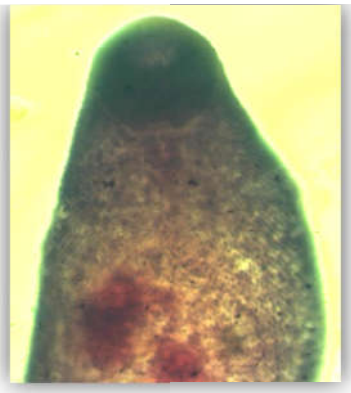
0.845 – 1.923 (1.212) long, 0.13-0.20 (0.180) wide. Oral sucker is subterminal 0.104 - 0.146 (0.132) in diameter , it is same or slightly larger than the ventral sucker. Ventral sucker 0.096 - 0.144 (0.128) in diameter. Intestinal cecae terminates before posterior end. Cirrus pouch large, curved, extending backward far beyond ventral sucker 0.165 – 0.200 (0.178). Genital pore between ventral sucker and intestinal bifurcation. Ovary globular, almost median lies between the anterior testis and the ventral sucker 0.062 – 0.088 (0.071) in diameter. Eggs 0.028 – 0.035 (0.030) long, 0.018 – 0.022 (0.021) wide. Testes oval, in tandem arrangement, they lie in the posterior half of the body 0.078 – 0.13 (0.12) long, 0.073 - 0.098 (0.077) wide .

O. pseudobagri in the present study showed resembles to that of Kim & Rim [12] in the location of the testes and the small differences in the ratio between the size of the testes and the ovary, they based on these two characters to distinguish this species from other *Orientocreadium* spp. were isolated from some Korean freshwater fishes.

Recording *M. rashediansis* and *O. pseudobagri* from *S. triostigus* from the Tigris River in Baghdad Province is the first.



- A -



- B - **- C -**

Fig. 2 : Photomicrograph of *Megamonostomella rashediansis* Rahemo and Al-Naemi, 1998

A- Adult worm.

B- Anterior part of the body.

C- Posterior part of the body.

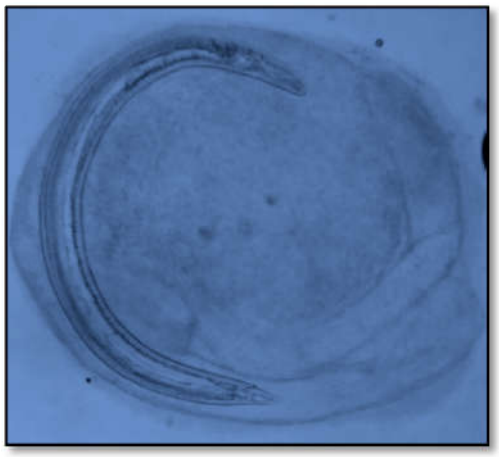


Fig. 1: Photomicrograph of L3 of encapsulated *Contracaecum* sp.

- A -

- B - **- C -**

Fig. 3: Photomicrograph of *Orientocreadium pseudobagri* Yamaguti, 1934

A- Adult worm.
B- Anterior part of the body.
C- Posterior part of the body.

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