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RECORDING OF FIVE MONOGENETIC TREMATODES FOR THE FIRST TIME FROM FISHES OF IRAQ

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SUMMARY

A total of 589 fishes, belonging to 23 species were collected from eight different localities in north and mid Iraq during 1993. The parasitological inspection of such fishes revealed the presence of 59 parasite species and two fungi. Among such parasites, five monogenetic trematodes were recorded on the gills of some fishes for the first time in Iraq. These included:- *Ancyrocephalus vanbenedenii* on *Liza abu* from Tigris river at Al-Zaafaraniya, south of Baghdad; *Dactylogyrus anchoratus* on *Cyprinus carpio* from Tigris river at Al – Zaafaranya *D. minutus* on *C. carpio* from both Tigris river at Al-Zaafaraniya and Euphrates river at Al-Qadisiya dam lake; *Discocotyle sagittata* on *L. abu* from both the drainage system at Al-Madaen district, south of Baghdad and Euphrates river at Al-Qadisiya dam lake and *Ancylodiscoides gomitus* on *Silurus triostegus* from Tigris river at Al-Zaafaraniya.

INTRODUCTION

Mnogenetic trematodes are known to cause harmful damage to fish gills and skin (Roberts, 1989). They have direct life cycles, which enable them to transmit easily from one host to another, especially under conditions of intensive fish culture (Bauer *et al*., 1969).

Detailed information on the parasitic fauna has a special importance for purposes of increasing the productivity of fish ponds or to improve the stocks of valuable commercial fisheries in natural waters (Shul'man, 1961). Gaining of such information comes from continuous surveys and inspection of fishes from different farms and water bodies. According to Mhaisen (Unpublished), 213 parasite species are so far known to infect fishes of Iraq. Among such parasites, 64 species belong to the monogenetic trematodes (Abdullah and Mhaisen, 2000). However, this number is increasing as new surveys add new items to this group of fish parasites. The present paper reports the occurrence of five monogenetic trematodes for the first time in Iraq from the gills of three fish species.

MATERIALS AND METHODS

A total of 589 fish specimens were collected, with the aid of cast nets, from eight localities in north and mid Iraq during the period from March to September 1993. These localities were:-

1- Tigris river at Mosul, Neinava province.
2- Tigris river at Tikreet, Salah Al-Deen province.
3- Tigris river at Al-Zaafaraniya, Baghdad province.
4- Diyala river at Al-Rustamiya, Baghdad province.
5- Euphrates river at Al-Qadisiya dam lake, Al-Anbar province.

6- Euphrates river at Faluja and Baghdadi towns, Al-Anbar province.
7- Northern part of the Main Drainage at Al–Mahmudia, Baghdad.
8- Drainage network at Al-Madaen, Baghdad province.

The scientific names of the sampled fishes together with their numbers are alphabetically listed as given below:-

14 *Acanthobrama marmid* Heckel, 1843
14 *Alburnus caeruleus* Heckel, 1843
8 *Alburnus capito* Heckel, 1843
21 *Aspius vorax* Heckel, 1843
17 *Barbus barbulus* Heckel, 1849
24 *Barbus belayewi* Menon, 1956
15 *Barbus esocinus* (Heckel, 1843)
33 *Barbus grypus* Heckel, 1843
2 *Barbus kersin* Heckel, 1843
34 *Barbus luteus* (Heckel, 1843)
18 *Barbus sharpeyi* Günther, 1874
1 *Barbus subquincunciatus* Günther, 1868
55 *Barbus xanthopterus* (Heckel, 1843)
1 *Carassius carassius* (Linnaeus, 1758)
83 *Chondrostoma regium* (Heckel, 1843)
67 *Cyprinus carpio* Linnaeus, 1758
17 *Garra rufa* (Heckel, 1843)
1 *Heteropneustes fossilis* (Bloch, 1794)
12 *Leuciscus lepidus* (Heckel, 1843)
132 *Liza abu* (Heckel, 1843)
3 *Mystus pelusius* (Solander in Russell, 1794)
5 *Silurus triostegus* Heckel, 1843
12 *Varicorhinus trutta* (Heckel, 1843)

Most fishes were preserved in 5% formalin but some were brought alive to the laboratory. Fish inspection was achieved as soon as possible. Skin and gill smears were prepared and examined. Parasites were fixed either with 5% formalin or hot 70% alcohol. They were identified according to Bykhovskaya-Pavlovskaya *et al.* (1962). Coad's (1991) list was followed for the scientific names of fishes.

RESULTS AND DISCUSSION

The parasitological examination showed that 59 parasite species and two fungi occurred in/on fishes of the present investigation. The present paper deals only with five newly recorded monogeneans in fishes of Iraq. Details of the remaining parasites were given in separate articles. The newly recorded monogeneans are arranged here according to Bykhovskaya-Pavlovskaya *et al.* (1962).

Family Dactylogyridae
Dactylogyrus anchoratus (Dujardin, 1845)
Dactylogyrus minutus Kulwiec, 1927
Ancyrocephalus vanbenedenii (Parona *et* Perugia, 1890)
Ancylodiscoides gomitus (Jain, 1952)
Family Discocotylidae
Discocotyle sagittata (Leuckart, 1842)

The following is a brief account on the description and occurrence of these parasites.

Dactylogyrus anchoratus (Dujardin, 1845) Fig. (1)

Dactylogyridae. Two pairs of head organs and four eyes present. Small worms, length up to 0.5mm., width 0.10mm. The attachment organ (haptor) has 14 small marginal hooks and two strong median hooks. Length of marginal hooks 0.014-0.035mm. Median hooks long and thin, with no external (outer) root but with long internal (inner) root in form of continuation of somewhat curved base portion. Total length of median hooks 0.092-0.130mm. One small but massive connecting bar present, about 0.008 x 0.018-0.029mm. Tube of copulatory organ almost straight cylindrical; supporting bar with uncinate process surrounding tube; vaginal chitinoid armor absent; total length of copulatory organ 0.020-0.032mm.

This species was detected in the present study from the gills of *C. carpio* from Tigris river at Al-Zaafaraniya during 1993. However, later reports on the occurrence of *D. anchoratus* from some fishes of Iraq were published before the existence of the present article. These included reports from *C. carpio* (Adday *et al*., 1999; Al-Aubaidi, 1999; Al-Aubaidi *et al*., 1999; Mhaisen *et al*., 1999; Mohammad- Ali *et al*., 1999; Sadek, 1999; Salih *et al*., 2000; Al-Tamimi, 2001; Al-Tamimi *et al*., 2001), from *Aspius vorax* (Mohammad-Ali *et al*., 1999), from *Carassius auratus* (Salih *et al*., 2000) and from *C. carassius* (Mhaisen *et al*., 1999; Mohammad-Ali *et al*., 1999; Salih *et al*., 2000).

Dactylogyrus minutus Kulwiec, 1927 Fig. (2)

Dactylogyridae. Two pairs of head organs and four eyes present. Small worms, length up to 0.48mm, width 0.11mm. The haptor has 14 small marginal hooks and two median hooks. Length of marginal hooks 0.013-0.023mm. Median hooks relatively short, with well developed external root and internal root recurving from base. Total length of median hooks 0.039-0.049mm. One large connecting bar present, almost straight with rounded and enlarged ends, about 0.003-0.004 x 0.025-0.032mm. Tube of copulatory organ smooth-walled, relatively short, straight or falcate; vaginal chitinoid armor absent; total length of copulatory organ 0.028-0.045mm.

D. minutus of the present article was detected from gills of *C. carpio* from Tigris river at Al-Zaafaraniya and from Euphrates river at Al-Qadisiya dam lake during 1993. However, later reports of this parasite were published before the existence of the present article. These included reports from *C. carpio* (Al-Zubaidy, 1998; Adday *et al*., 1999; Al-Aubaidi, 1999; Al-Aubaidi *et al*., 1999; Asmar *et al*., 1999; Mohammad-Ali *et al*., 1999; Sadek, 1999; Al-Nasiri, 2000; Balasem *et al*., 2000; Salih *et al*., 2000; Al-Tamimi, 2001; Al-Tamimi *et al*., 2001; Al-Nasiri *et al*., 2002), from *A. vorax* and *B. esocinus* (Mohammad - Ali *et al*., 1999), from *B. grypus* (Salih *et al*., 2000), from *B. xanthopterus* (Al-Nasiri, 2000; Salih *et al*., 2000), from *C. auratus* (Salih *et al*., 2000), from *C. carassius* (Mohammad-Ali *et al*., 1999), from *C. idella* (Mohammad- Ali *et al*., 1999; Salih *et al*., 2000) and from *L. abu* (Salih *et al*., 2000).

Ancyrocephalus vanbenedenii (Parona *et* Perugia, 1890) Fig. (3)

Dactylogyridae. It is characterized with two pairs of eye spots, three pairs of head organs and an opisthohaptor distinctly set off from body proper, with seven pairs of small marginal hooks and two pairs of median hooks each with one connecting bar. Intestinal crura not uniting posteriorly. Testis oval to elliptical. Genital pore post bifurcal. Ovary simple, anterior to testis. Vagina present.

A. venbenedenii was detected from the gills of *L. abu* from Tigris river al Al-Zaafaraniya, Baghdad. Although this is typically marine parasite (Bykhovskaya-Pavlovskaya *et al*., 1962), its occurrence on *L. abu* (the only freshwater species of the marine fish family Mugilidae in Iraq) is attributed to the entrance of some estuarine and even marine fishes from the Arab

Gulf to Shatt Al-Arab river and from there to other inland waters of Iraq where *L. abu* is so abundant. Recently, Ho *et al.* (1996) found some typically estuarine ergasilid crustaceans on gills of *L. abu* from Shatt Al-Arab river. Later reports of this parasite were published before the existence of the present paper. These included its occurrence only from *L. abu* from both Tigris river at Al-Zaafaraniya (Adday *et al.*, 1999) and from a man-made lake at Baghdad (Al-Nasiri, 2000).

Ancylodiscoides gomitus (Jain, 1952) Fig. (4)

Dactylogyridae. Body elongate. Opisthohaptor somewhat set off from body proper by a slightly constricted peduncle with 14 small marginal hooks and two pairs of median hooks, the dorsal hooks are similar in shape to, but much larger than the ventral hooks, each hooks supported by a transverse bar. Two pairs of eyes present. Intestinal limbs without diverticula, confluent posteriorly. Ovary and testis near middle of body. Vas deferens not looped around intestinal limb. Cirrus tubular, with accessory piece. Vagina presents, opening on right body margin.

A. gomitus of the present study was detected from gills of *S. triostegus* from Tigris river at Al-Zaafaraniya, Baghdad. Adday *et al.* (1999) reported *A. gomitus* of the present study (as *Haplocleidus gomitus*) while surveying parasites of fishes from Tigris river at Al-Zaafaraniya.

Discocotyle sagittata (Leuckart, 1842) Fig. (5)

Discocotylidae. Body lanceolate, flat, length 6-9 mm., width 1.7-2mm. Anterior end narrow to vaginal pores, then expands. Opisthohaptor well set off from body proper, with four pairs of equally developed clamps and a pair of median crooked hooks on a short terminal lappet. Intestinal crura reaching to terminal haptoral lappet, with offshoots. Testes abundant, divided into numerous follicles, in posterior half of the body. Copulatory organ in form of chitinoid tube. Genital sucker absent. Ovary near anterior end of testes. Vagina Y-shaped, with two marginal pores. Vitellaria massive, extending in lateral fields between vagina and posterior end of body proper.

D. sagittata of the present paper was detected from gills of *L. abu* from both Euphrates river at Al-Qadisiya dam lake and the drainage network at Al-Medaen, south of Baghdad. This is the first detailed report on *D. sagittata* in Iraq. However, Asmar *et al.* (1999) mentioned the occurrence of *D. sagittata* while surveying the parasites of fishes from Al-Qadisiya dam lake. *D. sagittata* is a haemophagous parasite causing anemia in mass infestations of up to 100 specimens per fish as well as some pathological effects and death (Bykhovskaya-Pavlovskaya *et al.*, 1962).

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ّخوم قسمخل يجمه ةي دح أتامزم ةرم لولأ أشن لا أ قلر ع اكلمس

نسجوم لمضدن لحر ف*، عباس ناجي بلاسم، غسان هاشم الخطيب

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الخلاصة

تعجم 589 دو . تقكلى إ 23 عونً م . عا . ثأقار علط . و لا . في ة . لمخطا نما . ن.م
1993. دو. جن. ع ك . لهأ ه . . فهث جا فشكر 59 . عزتا . لمفطلل. م فون . يفع
تا . جزل لجدم لادر يالن . معلو. ن جتعل ي ستاتيلظ اهد هين. ن . . م لأشتلا اةيدحأ ةم
فيق . م لاقا . لأض . . عم . . صغ. . عقارط لخلا ه هت . . . لا كت هً ن.م
Ancyrocephalus vanbenedenii على سمكة الخشني من ر دجلة عند الزعفرانية جنوب بغداد والنوع *Dactylogyrus anchoratus* على الكارب الاعتيادي من ر دجلة عند الزعفرانية والنوع *D. minutus* على الكارب الاعتيادي من كل من ر دجلة عند الزعفرانية ور الفرات عند بحيرة سد القادسية و النوع *Discocotyle sagittata* على الخشني من كل من منظومة المبازل عند قاطع المدائن جنوب بغداد ور الفرات عند بحيرة سد القادسية والنوع *Ancylodiscoides gomitus* على الجري الآسيوي من ر دجلة عند الزعفرانية.

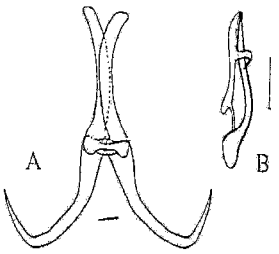

Fig. (1): *D. anchoratus*
A: Median hooks
B: Copulatory organ

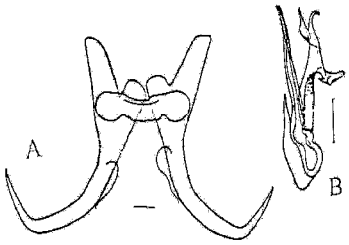

Fig. (2): *D. minutus*
A: Median hooks
B: Copulatory organ

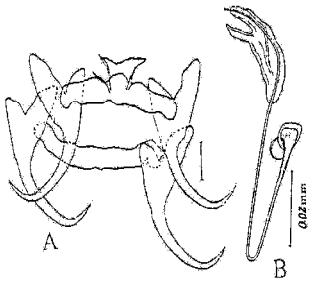

Fig. (3): *A. vanbenedenii*
A: Anchor complex
B: Copulatory organ

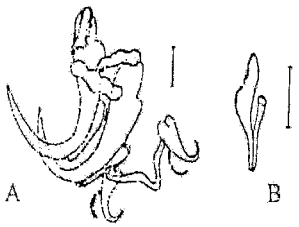

Fig. (4): *A. gomitus*
A: Anchor complex
B: Copulatory organ

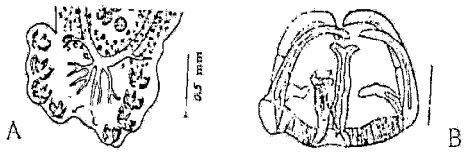

Fig. (5): *D. sagittata*
A : Opisthohaptor
B: Clamp

Figs. (1-5): Five monogenetic trematodes recorded for the first time from fishes of Iraq, adopted from Bykhovskaya-Pavalovskaya et al. (1962). Bar=0.01mm unless otherwise indicated.