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## Diplectanid parasite from the gills of the triacanthid fish (*Triacanthus biaculeatus*) captured from Khor Abdullah, Northwest Arabian Gulf, Iraq

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### Abstract

In the present study a description of unidentified monogenetic parasite detected from the gills of short nose tripod fish *Triacanthus biaculeatus* (Bloch, 1786) was given and it is clear that this parasite differs from the other related diplectanid species by owing a special structure in its cirrus pouch. So, its appearance is considered as a new record in the Arabian Gulf waters.

### 1. Introduction

The genus *Diplectanum* Diesing, 1858 represents one of the genera of the family Diplectanidae Monticelli, 1903 which are gill parasites of marine perciformes [1,2]. Also, this family includes some species which have been described from freshwater fishes [3,4,5].

[6] mentioned that the family Diplectanidae includes about 22 genera and more than 218 valid species. The first species which detected as a member of Diplectanidae was proposed by [7] named as *Dactylogyrus aequans*. Later, [8] proposed the genus *Diplectanum* as a new genus when he transferred *Dactylogyrus aequans* to *Diplectanum aequans* and considered it as a type species of this new genus. [5] in his phylogenetic study proposed the first cladistics analysis for the genera of the family Diplectanidae using the morphological characters. Later, [9] proposed a hypothesis of the phylogenetic relationships between the

diplectanid genera based on 36 morphological characters using cladistics methods.

Recently, [10] published a phylogeny and revision of the family Diplectanidae and according to the results of their study they mentioned that the genus *Diplectanum* is restricted to species that have, male copulatory organ with nested tubes, accessory copulatory organ, prostatic reservoir separated into three zones, ventral and dorsal squamodiscs.

In our region especially in the Arabian Gulf waters the previous record of the genus *Diplectanum* was restricted by [11] who detected *Diplectanum* sp. from the gills of sciaenid fish *Johnius(J.)sina* from Khor Al-Zubair estuary. The present article aimed to look for more information about the occurrence of the genus *Diplectanum* in Iraqi marine fishes.

### 2. Materials and Method

Twenty two specimens of the parasites were collected from the gills of *Triacanthus biaculeatus* off Khor Abdullah during April 2009. The parasites were fixed in AFA(alcohol-formalin-acetic acid) then it mounted in glycerol-gelatin for Permanente slides. The haptor and the copulatory organs were studied by using compound microscope

### 3.Results

During the survey of the parasitic fauna of *Triacanthus biaculeatus* 22 specimens of the monogenetic trematods (*Diplectanum* sp.) were collected from the gill filaments of four fish hosts(prevalence:66.6%, mean intensity:5.5). and the following description is based on 18 specimens.

The body of the worm elongated 0.757-0.873 length, up to 0.144-0.218 wide in region of middle third( Fig.1-A).Opisthohaptor (Fig.1- B) 0.160-0.187 wide , Squamodisc rounded,0.041-0.059 in diameter, with five-seven pairs of complete circles of minute trapezoid scales, Median bar strongly constricted at mid region, 0.053-0.071 long, The two submedian bars enlarged in their medial ends, 0.044-0.054

model Leitz Biomed and the drawing of the parasite were done by the aid of locally manufactured camera Lucida. All measurements are given in millimeters. [12,13] used to confirm the parasite identification, whereas, [14] used to identify the fish species

long, Dorsal anchor 0.053-0.057 long with two subequal roots,Ventral anchor 0.043-0.048 long with unequal roots.

Head subconical,0.071-0.088 wide, with several pairs of head organs along sloping sides. Two pairs of eye spots are present at the cephalic region.Pharynx muscular,pyriform,0.040-0.043x0.034-0.041; Cecasimple, ending blindly at posterior end of the body.

Testis elliptical, 0.077-0.098 x 0.038-0.065, located at the equatorial level. Cirrus pouch consisting of a very minute narrow spicule is enclosed in cylindrical sheath of longitudinal fibers. Prostatic cells located on each side of uterus as massed cells; Vas deferens located posteriorly to cirrus pouch.

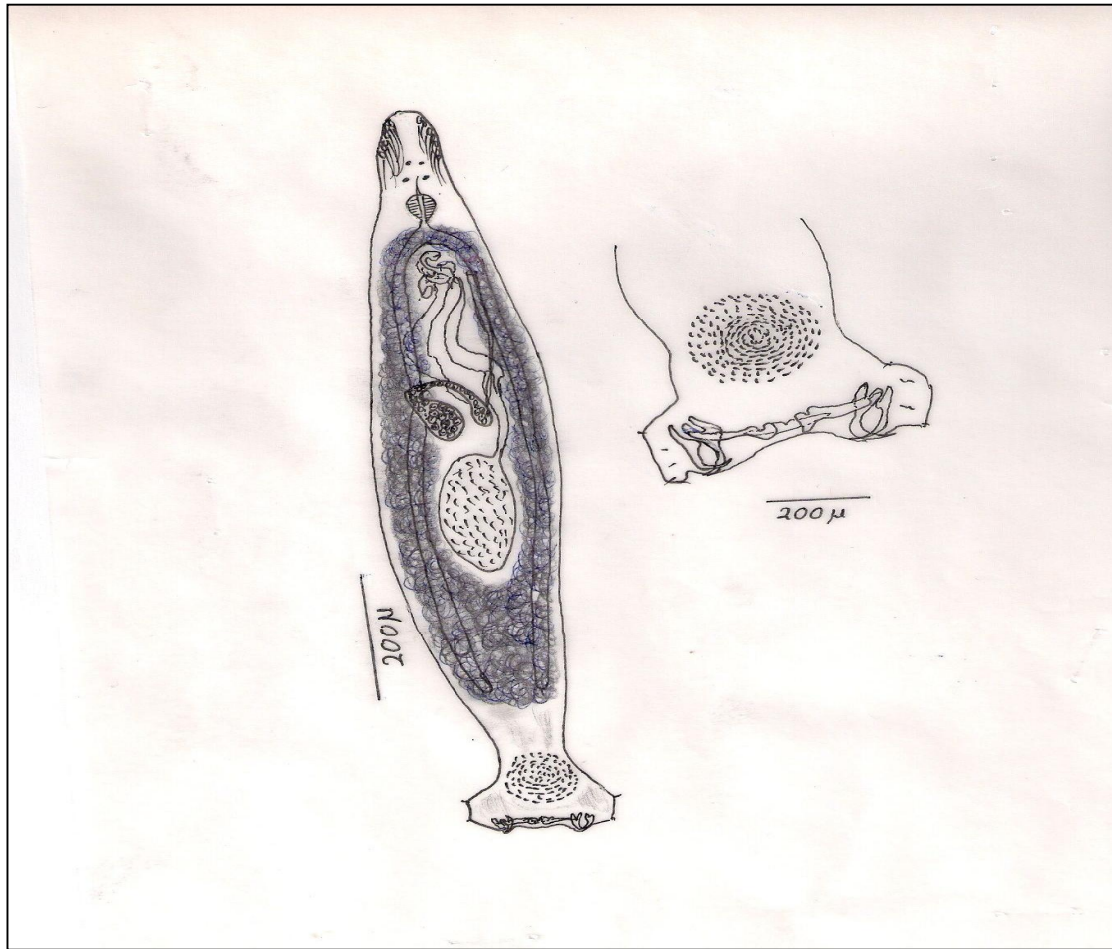


Fig . 1 –*Diplectanum* sp. A- Whole amount ( dorsal view ) , B- Opisthaptor (dorsal view).

Ovary with retort shape, 0.020-0.029 wide, located immediately anteriodextral to the testis. Uterus curved. Vitellaria co-

extensive with intestine and confluent in post-testicular region. Genital pore located shortly postbifurcation of the caeca

#### 4. Discussion

[8] established the genus *Diplectanum* for the first time when he transferred *Dactylogyrus aequans* Wagener, 1857 to the genus *Diplectanum* and he considered *Diplectanumaequans* as the type species.

[10] mentioned that the genus *Diplectanum* is restricted to the species which have, i - male copulatory organ having nested tubes, ii - accessory copulatory organ, iii - prostatic reservoir separated into three zones and iv- having ventral and dorsal squamodiscs.

For the recent records of the diplectanid parasites in the world we can refer to the results of [15,16,17,18,19, 20].

Only one study was done by [11] conducted with the diplectanid parasites infecting the gills of the marine fish *Johnius(J.)sina* in Khor Al-Zubair Estuary, in this study unidentified species was described for the first time in the Arabian Gulf water.

The present species closely resembles *D. curvivagina* in the shape of the squamodisc but the later species having curved cirrus pouch and distinctly enlarged

toward the distal end. Also, the present species differs from the most related species by owing sheathed specular cirrus pouch and

simple tubular vagina. So, the present record of this parasite is considered as its first record in the Arabian Gulf water.

## 5. References

- [1] **Oliver, G. (1982)** Quelques aspects de la spécificité parasitaire chez les Diplectanidae Bychowsky, 1957 (Monogenea, Monopisthocotylea). Bull. Mus. Natn. Hist. Nat. Paris ,sér. A (Zool.) 123 :295-301.
- [2] **Oliver, G. (1993)** Les Diplectanidae Bychowsky, 1957 (Monogenea, Monopisthocotylea, Dactylogyridea) marqueurs biologiques, ttemoins de la biogeographie et de l'evolution de leurshotes. Bull. Soc. Zool. Fr. 118 (1): 25-36.
- [3] **Kritsky, D.C. and Thatcher, V.E. (1984)** Neotropical Monogenea. 6. Five new species of *Diplectanum* (Diplectanidae) from freshwater Teleostes *Plagioscion* spp. (Scieanidae), in Brazil . Proc. Biol. Soc. Wash. 97 (2):425-439.
- [4] **Nasir, S. (1984)** Occurrence and significance of the monogenean *Cycloplectanum americanum* (Price, 1937) Oliver, 1968, on a freshwater host. J. Parasitol. 69 (5):957-962.
- [5] **Oliver, G. (1987)** Les Diplectanidae Bychowsky 1957 (Monogenea, Monopisthocotylea, Dactylogyridea). Systématique. Biologie. Ontogénie .Écologie. Essai de phylogénèse. Thèse d'état. Université des Sciences et Techniques du Languedoc. 433 pp.
- [6] **Boeger, W.A. and Kritsky, D.C. (2001)** Interrelationships of the Monogenoidea:. In: Littlewood, D.T.J e R.A. Bray (Eds). Interrelationships of Platyhelminthes (pp.92-102). The syst. Assoc. Special Volume Series 60.353 pp.
- [7] **Wagener, I. (1857)** Helminthologische Bemerkungenauseinem Sandsschreibean C. Th. V. Siebold. Zeit. Wiss. Zool. 9 :73-90.
- [8] **Diesing, K.M. (1858)**. Rvisian der Myzhelminthen, Abteilund: Trematoden. Sitz.-ber. K. Akad. Wiss. Wein Math.-Naturw. K., 32(23):307-390 (Cited by Yamaguti, 1963).
- [9] **Domingues, M. (2004)** [Phylogeny and Taxonomy of Diplectanidae Monticelli, 1903 (Platyhelminthes: Monogenoidea)]. Curitiba : Doctoral Dissertation. Graduate Program in Zoology, Universidade Federal do Paraná, 199 pp. (In Portuguese).
- [10] **Domingues, M. and Boeger, W.A. (2008)**. Phylogeny and Revision of Diplectanidae Monticelli, 1903 (Platyhelminthes: Monogenoidea). Zootaxa 1698: 1-40..
- [11] **Al-Daraji, S.A.M. (1995)**. Taxonomical and ecological studies on the metazoan parasites of some marine fishes of Khor Al-Zubair Estuary, northwest of the Arabian Gulf. Ph.D. Thesis, University of Basrah, 182 pp.
- [12] **Yamaguti, S. (1963)**. Systema Helmithum IV. Monogenea and Aspidocotylea . London - New York , Interscience Publishers. 699 pp.
- [13] **Yamaguti, S. (1968)**. Monogenetic trematodes of Hawaiian fishes.

- University of Hawaii Press,  
Honolulu:287 pp.
- [14] **Kuronuma, K. and Abe, Y. (1986).** Fishes of the Arabian Gulf. *Kuw. Inst. Sci. Res.*, 357 pp.
- [15] **Justine, J.-L. (2001).** *Diplectanum parvum* sp. nov. (Monogenea, Diplectanidae) from *Cephalopholis urodeta* (Perciformes, Serranidae) of New Caledonia. *Acta Parasitol.*, Vol. 53, No. 2, p: 127-132.
- [16] **Santos, C.P.; Timi, J.T. and Gibson, D.I. (2002).** *Diplectanum squamatum* n. sp. (Monogenea: Diplectanidae) from the gills of *Cynocionguatucupa* (Sciaenidae) in Southwest Atlantic Water. *Syst. Parasitol.*, 52: 199- 204.
- [17] **Domingues, M. and Boeger, W.A. (2003).** Neotropical Monogenoidea. 43. *Diplectanum monticellin* sp. (Diplectanidae) from the gills of *Cynoscion liearchus* (Perciformes: Sciaenidae) in Brazil. *J. Parasitol.*, 89: 698-700.
- [18] **Boeger, W.A.; Fehlaue, K.H. and Marques, E.E. (2006).** Neotropical Monogenoidea. 49. Four new species of the Diplectanidae (Dactylogyridea) from the gills of some pachyurines (Teleostei: Sciaenidae) from the Rio Tacantins and Rio Doce Basins with the proposal of *Anoplectanum* n.g. and *Spinomatrix* n.g. *Syst. Parasitol.*, 64: 57-68.
- [19] **Aguirre-Macedo, M.L.; Vidal-Martinez, V.; Gonzalez-Solis, D. and Caballero, P.I. (2007).** Helminth communities of four commercially important fish species from Chetumal Bay, Mexico. *J. Helminthol.*, 81: 19-31.
- [20] **Mendoza-Franco, E.F.; Roche, D.G. and Torchin, M.E. (2008).** New species of *Diplectanum* (Monogenoidea: Diplectanidae), and proposal of a new genus of the Dactylogyridae from the gills of gerrid fishes (Teleostei) from Mexico and Panama. *Folia Parasitol. (Praha)*, 55(3): 171-179.

## طفيلي من عائلة دبلوكتنيدى فى غلاصم سمكة الحماره المصطادة من خور عبد الله , شمال غرب الخليج العربى

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### الخلاصة

تم فى الدراسة الحالية وصف نوع غير مشخص من الطفيليات أحادية المنشأ والتي تم عزلها من غلاصم سمكة *Triacanthus biaculeatus* وأتضح أن هذا الطفيلي يختلف عن مثيلاته من عائلة *Diplectanidae* من خلال أملاكه لكيس ذؤابة *cirrus pouch* ذي تركيبية مختلفة وعليه أعتبر ظهور هذا الطفيلي فى الدراسة الحالية بمثابة التسجيل الأول له فى مياه الخليج العربى.