



ISSN NO. 2320-5407

Journal homepage: <http://www.journalijar.com>

INTERNATIONAL JOURNAL  
OF ADVANCED RESEARCH

## RESEARCH ARTICLE

***Heteraxinoides karachiensis* n.sp (Monogenea axinoidea) from the fish *Scomberomorus gattatus* of Karachi coast, Pakistan**

\*Rana Hadi, and Fatima Mujib Bilqees

Department of Zoology, Jinnah University for Women, Karachi, Pakistan

**Manuscript Info****Manuscript History:**

Received: 12 April 2014  
Final Accepted: 25 May 2014  
Published Online: June 2014

**Key words:**

Monogenea, *Heteraxinoides karachiensis* n.sp, fish, gills, Karachi coast

**\*Corresponding Author****Rana Hadi****Abstract**

A new monogenea *Heteraxinoides karachiensis* is described here from the gills of fish *Scomberomorus gattatus* from Karachi coast. The new monogenean species characterized by elongated body, pharynx pyriform. Mouth aperture ventro subterminal. Testes 35 in number. Genital atrium covered inside with spines. Ovary tube like. Vagina absent. Haptor symmetrical. 3-6 clamps on shortest side, 27-29 at the base of longer side.

Copy Right, IJAR, 2014.. All rights reserved.

**INTRODUCTION**

Monogenea are one of the important fish pathogen and investigations on various aspects of these parasites are also important field of study and research. In Pakistan more attention may be paid to investigate monogenetic fish fauna of both marine and fresh water. The genus *Heteraxinoides* has been reported from different parts of the world, but present species is the first record of genus *Heteraxinoides* reported from Pakistan.

**Materials and Method**

100 specimens of *Scomberomorus gattatus* were collected from West Wharf Karachi coast. Gills were removed and placed in beaker containing formalin and water solution (water = 1000 ml, formalin= 2.5 ml) for 7-8 hours and were transferred into Petri dish containing the same solution. The liquid from the beaker was left till the solid parts settled down. The supernatant was poured out and remaining part was examined under binocular microscope and monogenea were recovered. Specimens were fixed in AFA (A mixture of 70% ethyl alcohol, formalin and acetic acid in the ratio of 90:7:3) for 24 hours. The gills were also examined, monogenea were collected and processed as mentioned above. After 24 hours these specimens were washed several times with 70% alcohol, stained with Mayer's Carmalum, dehydrated in graded series of alcohols, cleared in clove oil and xylene and mounted permanently in Canada balsam.

Illustrations were made with the aid of a camera Lucida. All measurements are given length by width in millimeters. Photographs of holotype specimens were also prepared.

***Heteraxinoides karachiensis*****(Fig: 1)****Results**

Family:	Axinidae Unnithan, 1957
Sub-family:	Heteraxininae Unnithan, 1957
Genus:	<i>Heteraxinoides</i> Yamaguti, 1968
Host:	<i>Scomberomorus gutatus</i> Bloch, Schneider, 1801
Location:	Gills

Locality: West Wharf, Karachi coast  
 No of specimens: 15 specimens in 10 fishes, 100 fishes examined.  
 Holotype: Z- JUW- M3

Body is elongated, flattened, asymmetrically conical at anterior end 3.4-3.5mm long, 0.06-0.7 wide. Body is divided into anterior narrow, posterior and middle portion are broader, greatest width at the posterior region. Two oral suckers, muscular, rounded 0.08-0.08 long, 0.06-0.07 wide. Pharynx is pyriform, 0.01-0.02 long, 0.04-0.06 wide weakly muscular. Eye spot is absent. Mouth aperture is ventrosubterminal. Intestinal crura reaching to haptor, not confluent posteriorly. Testes are numerous 35 in number, confined to posterior third of body, largest testes is 0.06-0.07 long, 0.05-0.06 wide, smallest testes is 0.03-0.03 long, 0.03-0.04 wide. Genital atrium is 0.05-0.06 long, 0.04-0.041 wide, covered inside with spines. Ovary is elongated tube like, anterior to testes present in middle region of the body 0.34-0.35 long, 0.02-0.021 wide. Uterus is elongated tube like 0.23-0.24 long, 0.05-0.06 wide present in the middle anterior fifth of the body. Vagina is absent. Vitellaria consist of numerous small follicles, anterior end devoid of vitellaria, posteriorly confluent terminating near to haptor. Haptor is asymmetrical, the clamps on the shortest side of the haptor, marginal equally developed to those on the long side though much smaller in number, 3-6 clamps on shortest side, 27-29 at the base on longer side. Haptor is 0.1-0.15 long 0.1-1.2 wide Anchors are absent. Clamps consist of (a) lateral sclerites (b) median sclerites (c) marginal sclerites.

**Etymology:** The name *Heteraxinoides karachiensis* is refers to locality of the host fish.

## Discussion

The genus *Heteraxinoides* was proposed by Yamaguti 1963, to accommodate a new species *Heteraxinoides triangularis* (Goto 1894), (syn *Axine t.G.*), *Heteraxin t.(G)* Yamaguti, 1938 on *Anthias schlegeli* in Japan; *H.chinensis* Yamaguti, 1937 (syn *Heteraxine C.* Yamaguti, 1938) on *Hapalogenymiteus* in China sea; *H.hargisi* Price, 1962 on *Haemulon albmn* in U.S.A; *H.minuta* (Tripathi, 1959) Price, 1962 (syn. *Heteraxin.m.T.*), on *Megalaspis cordyla* in Chilka lake Puri India; *H.oligoplitis* (Meserve, 1938) Price, 1962 (syn. *Axin . (M)* Hargis, 1954) on *Oligolites saurus* in Sans Francisco, Ecuador; *H.scorpis* (Sandars, 1944) Price, 1962 on *Scorpis acquirpinus* in Safety Bay, W.Australia; *H.xanthophilis* (Hargis, 1956) (syn. *Heteraxine x.H.*) on *Leiostomus xanthurus* in Florida also recorded in Virginia, Thoney, 1988; *H.xanthophiloides* Price, 1962 on *Leiostomus xanthurus* in U.S.A; *H.caprodonis* Yamaguti, 1968 on *Caprodon schlegelli* in Hawaii; *H.zhukovi* Caballero and Bravo-Hollis, 1964 on *Oligoplites altus* in Mexican waters; *H.hannibali* Euzet and Ktari, 1969 on *Pomadasy incisus* in Gulf of Tunis; *Heteraxinoides* sp Rohde and William, 1987 on *Synagrops japonicus* in New South Wales; *H.argiropsi* Mamaev, 1977 from fishes of Arabian Sea; *H.regis* Dillon and Hargis, 1965 from New Zealand fishes; *H.pseudosciaenai* Gupta and Khullar, 1968 from marine fishes of India.

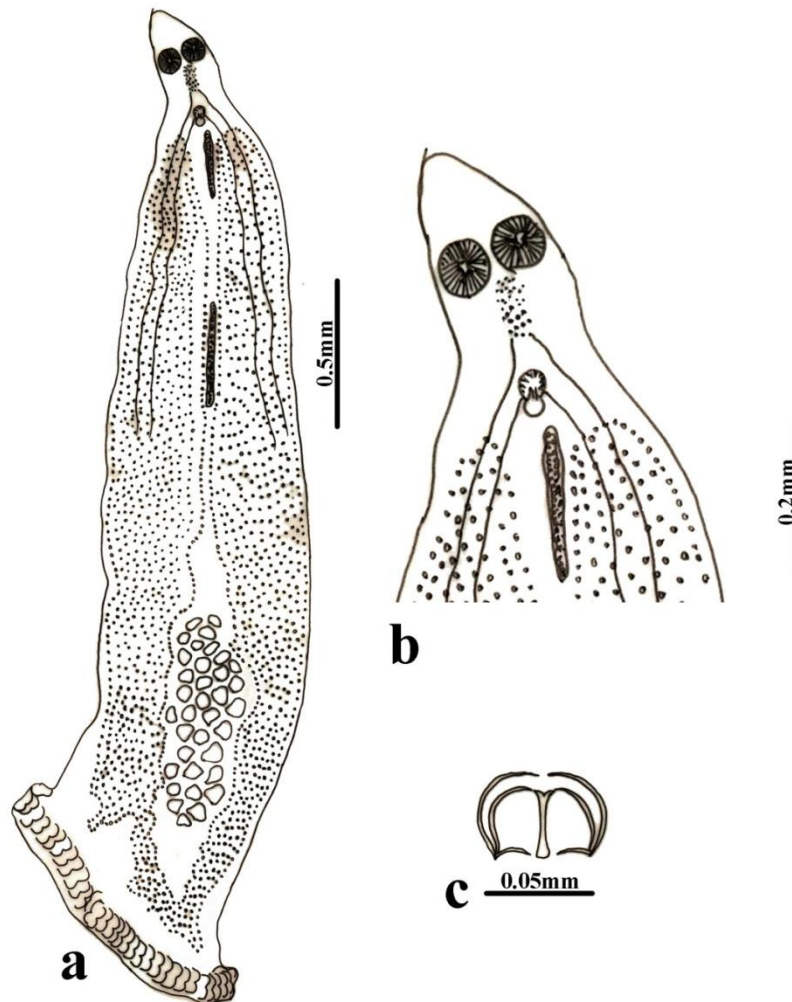
Among all the known species of the genus the body size of the present species is large (3.4-3.5 x 0.6-0.7) than *H.triangularis* (1.5) *H.hargisi* (2.7 x 0.33), *H.minuta* (0.913- 1.01 x 0.087-0.1), *H.oligoplitis* (1.82-1.95), *H.scorpis* (2.67-2.68), and with in the range *H.caprodonis* (1.35-3.8 x 0.37-1.25), but smaller than *H.xanthophiloides* (4.4 x 9.55), *H.chinensis* (3.64 x 0.98)

The number of testes in present species are 35 while in *H.triangularis* and *H.chinensis* these are 12, in *H.minuta* these are 15, in *H.scorpis* these are 32, and in *H.caprodonis* 5-11 in number.

In present species number of clamps on short side of haptor are 3-6, while on longer side are 27-29. In *H. triangularis* 6 on short side and 36 on longer side. In *H.hargisi* 7 on shorter side and 13 on longer side, *H.minuta* 10-13 on shorter side, 20-31 on longer side, *H.oligoplitis* 16-18 on shorter side, 40-42 on longer side, *H.scorpis* 20 on shorter side, 34 on longer side *H.xanthophilis* 18-21 on shorter side, 29-34 longer side, *H.xanthophiloides* 20 on shorter side, 36 on longer side, and in *H.chinensis* 6 on shorter side, 36 on longer side

The present species differs from the most closely related *Heteraxinoides chinensis* Yamaguti, 1937 from *Hapalogenymiteus* in China, in body size the present species is smaller than *H.chinensis*, number of testes 35 in present species. while *H.chinensis* there are 12, the number of clamps in present species 3-6 on shorter side, while 27-29 on longer side, the number of clamps in *H.chinensis* 6 on shorter side and 36 on longer side.

Pyriform pharynx, ovary elongated, uterus tube like, 35 number of testes, combination of these characters separate the present species from previously described species of the genus *Heteraxinoides*, substantiate the statement that the species *Heteraxinoides karachiensis* under study are new.



**Figure 1: *Heteraxinoides karachiensis* n. sp a) Whole mount of holotype, (ventral view) b) Anterior portion c) Clamp.**

## References

Caballeroy, C.E. and Bravo-Hollis, M. 1964. Helminths de peces aguas maxicanas de Pacifico XXIII. Descripcion de cuatro nuevos monogeneos y una breve consideracion sobre nomenclatura de esta clase. An. Inst. Biol., 34, 163-203.

Dillon, W.A and Hargis, W.J, Jr. 1965. Monogenetic trematodes from the Southern Pacific Ocean, 2. Polypisthocotyleids from new Zealand fishes: the families Discocotylidae, Microcotylidae, Axinidae and Gastrocotylidae. Antarctic. Res Ser., 5, 251- 280.

Euzet, L and Ktari, M.H. 1969. *Heteraxinoides hannibali* n.sp (monogenea, Polypisthocotylea), a gill parasite of *Pomadasys sincisus* (Bowdich, 1825) (Teleostei) in Gulf of Tunis. Bull. Mus. Nat. Hist. Nat., vol 41, 269-279.

Goto, S. 1894. Studies on the ectoparasitic trematodes of Japan. J. coll. Sc. Tokyo, 8, 1-273.

- Gupta, N.K., Khullar, M. 1968. *Heteraxinoides pseudosciaenai* n.sp (Monogenea: Axinoidae) from the gills of marine fishes from India. Res. Bull. (N.S) Punjab Univ., 19, 97-99.
- Hargis, W.J. (jr). 1953. Monogenetic trematodes of Westhampton lake fishes III. Part 1. Comparative morphology of the species encountered. J. Parasitol., 39(1), 88-105.
- Hargis, W.J. (jr). 1956. Idem part XII. The family gastrocotylidae Price, 1943. Bull. Mar. Sc. Gulf and Caribbean, 6, 28-43
- Mamaev, YU.L. 1977. The new species of monogeneans from Arabian Sea: *Intracotyle caballeroi* sp nov and *Heteraxinoides argiopsis* sp nov. int Excreta parasitological memoria de Doctor Eduardo Caballero Caballero. Mexico, Univ. Nation. Auton. Mexico, 79-84.
- Meserve, F.G. 1938. List of twenty-two species of monogenetic trematodes from the South Pacific. Proc. Minnesota Acad. Sc. 6, 38.
- Price, E.W. 1962a. North American monogenetic trematodes X. The family Axinidae. Proc. Helm. Soc. Washington, 29, 1-18.
- Rohde, K, William, A. 1987. Taxonomy of monogeneans of deep sea fishes in southeastern Australia. Systematic Parasitol., 10:45-71.
- Sandars, D.F. 1944. A contribution to the knowledge of the microcotylidae of Western Australian. Trans. Roy. Soc. Australia. 68, 67-81.
- Thoney, D.A. 1988. Developmental variation of *Heteraxinoides xanthophilis*(monogenea) on hosts of different size. J. Parasitol., 74(6): 999-1003.
- Tripathi, Y.R. 1959. Monogenetic trematodes from fishes of India. Ind. J. Helm. 9(1-2), 1-149.
- Unnithan, R.V. 1957. On the functional morphology of a new fauna of monogenea on fishes from Trivandrum and environs. Part I. axinidae fam. Nor. Bull. Centr. Res. Inst. Univ. Kerala 5(2), 27-122.
- Yamaguti, S. 1963. Systema Helminthum IV. Monogenea and Aspidocotylea Interscience Publishers ,NewYork.699P.
- Yamaguti, S. 1937. Idem pt. 19. Fourteen new ectoparasitic trematodes of fish. 28 pp. (published by the author, march 25).
- Yamaguti, S. 1938. Idem. pt. 24. Trematodes of fishes in Japan. J. zool. 8(1), 15-74.
- Yamaguti, S. 1968. Monogenetic trematodes from Hawaiian fishes. Univ. Hawaii Press, Honolulu Hawaii. 287pp.