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Rana Hadi

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

Email: ranahadi2000@yahoo.co.uk**Fatima Mujib Bilqees**

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

A new species *Axinoides belangerii* n.sp (Monogenea: Axinidae) on gills of *Johnius belangeri* from Karachi Coast, Pakistan

Rana Hadi and Fatima Mujib Bilqees

ABSTRACT

This paper reports a new species of monogenea of family Axinidae from the Karachi coast, Pakistan. *Axinoides belangerii* n.sp is found on the gills of fish *Johnius belangerii* and is characterized by elongated body, pointed anterior end with two oral suckers, obliquely truncated at posterior end. Mouth ventro terminal, pharynx oval in shape. Intestinal crura terminating near haptor. Testes 10-11 in number. Ovary situated nearly at equatorial region. Vagina funnel shaped, vaginal duct provided with small sphincter at anterior end. Uterus is spindle-shaped. Haptor with 39-40 clamps.

Keywords: *Axinoides belangerii* n.sp, Axinidae, *Johnius belangerii*, gills, Karachi coast, Pakistan.

1. Introduction

Large number of monogenean species have been reported from all over the world, Sproston, 1946, Yamaguti, 1938, Yamaguti, 1958, Yamaguti, 1963, Yamaguti, 1968, Zhang, 2001, including Pakistan, but little information is available on the monogenea of marine fishes of Pakistan. Bilqees, Shabbir, 2004, Kritsky, Bilqees, 1973, Kritsky, *et.al.*, 1978.

The marine fish monogeneans so far reported from Pakistan include *Paramazocreas tripathi* Kritsky, Bilqees, 1973, *Choricotyle pellonea* Kritsky, Bilqees, 1973, *Pellonicola lanceolatum* Kritsky, Bilqees, 1973, from the fish *Pellona elongate*; *Neocalcestoma elongatum* Kritsky, *et.al.*, 1978, from the fish *Arius serratus* and *Allodiscoctyla elongatum* Bilqees, Shabbir 2004, from the fish *Chorinemus moadetta* of the Karachi coast.

Species of the family Axinidae found in a variety of fishes all over the world. During the present studies species of this family has been recorded in Pakistan from the gills of *Johnius belangerii* and regarded a new species, reported and described here from Karachi coast, Pakistan.

2. Materials and Method

200 specimens of *Johnius belangerii* 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.

Specimens for scanning electron microscopy were fixed in AFA solution for 24 hours. After 24 hours the specimens were thoroughly washed several times with 70 percent alcohol to remove all traces of fixing agent, the specimens, after critical drying mounted on stubs, coated with gold and photographs were taken with the help of SEM. Joel Japan JSM 6380A at accelerating voltage of 15KV at Karachi University, Central Laboratory. The SEM

Correspondence:

Rana Hadi

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

Email: ranahadi2000@yahoo.co.uk

measurements are in micrometer. Holotype and Paratypes are in the collection of the first author.

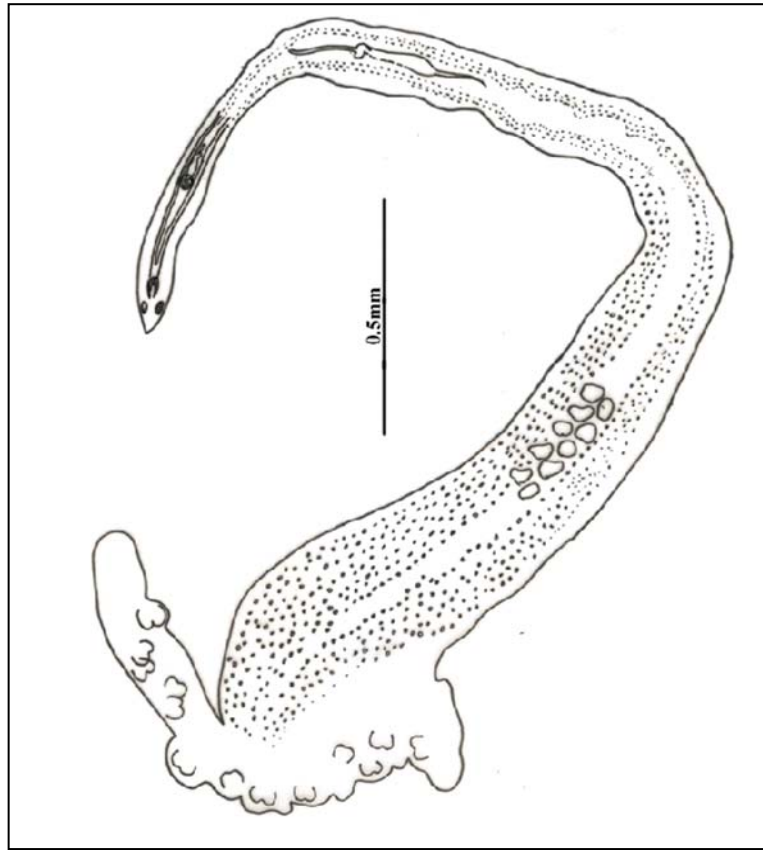


Fig 1: *Axinoides belangerii* n.sp. Whole mount of holotype

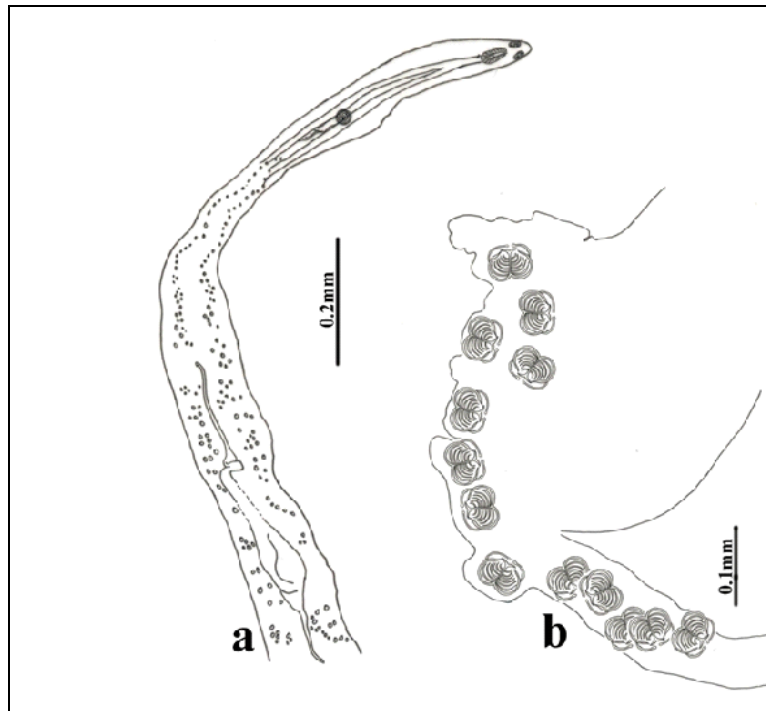


Fig 2(a-b): *Axinoides belangerii* n.sp. holotype, a. Anterior portion. b. Haptor showing clamps.

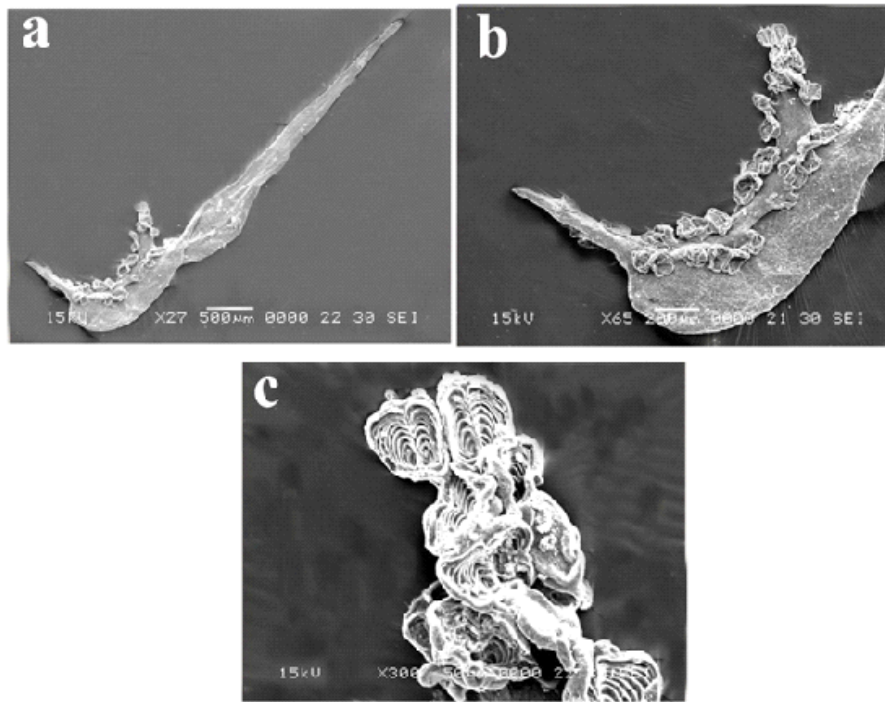


Fig 3(a-c): *Axinoides belangerii* n.sp. SEM micrograph of pacatype. A. Entire specimen. B. Haptor portion. C. Clamps.

3. Result

Family:	Axinidae, Unnithan, 1957
Sub-family:	Axininae, Monticelli, 1903
Genus:	<i>Axinoides</i> , Yamaguti, 1938
Host:	<i>Johnius belangerii</i>
Location:	Gills
Locality:	West Wharf, Karachi coast
No of Specimens:	20 from 15 fishes, 200 fishes examined
Holotype:	Z – JUW - M 2

Axinoides belangerii n.sp. (Fig.1-3)

Body is elongated tapered anteriorly, obliquely truncated at posterior end, along which extends the haptor. Total length of body is 3.18-3.19 mm long 0.48-0.49 mm wide. Head is pointed, paired oral suckers muscular 0.02-0.03 long, 0.01-0.02 wide. Eye spot is absent. Mouth is ventro terminal. Pharynx is oval in shape 0.1-0.15 long, 0.02-0.02 wide. Intestinal crura terminating near haptor. Testes are oval in shape, 10 to 11 in number arranged in two rows, occupying post ovarian position in posterior region of the body. Genital atrium is 0.035-0.04 in diameter. Ovary is 0.23-0.25 long, 0.04-0.05 wide situated nearly at equatorial region anterior to testes. Vagina is funnel shaped 0.18-0.19 long 0.02-0.03 wide. Vaginal duct is provided with a small sphincter at anterior end. Uterus is spindle-shaped 0.035-0.036 long 0.055-0.056 wide. Vitellaria consist of numerous small follicles, extending from pre equatorial region, in the lateral fields of the body, anterior part devoid of vitellaria. Haptor 0.1-0.15 long, 0.085-0.086 wide. Clamps are arranged in one row, 37-40 in number, clamps consist of (a) marginal sclerites, (b) 6 pairs of connecting sclerites (c) long prong of median spring anchor-shaped at tip.

4. Discussion

The genus *Axinoides* was first proposed by Yamaguti, 1938, Sproston, 1946 status emend. to accommodate a new species *Axinoides tylosuri* on *Tylosurus scapanorhynchus* in Koti Japan. The other species recorded are *A. aberrans* Goto, (1899) (1900), on *Belone schismatorhynchus* in Japan also on *Tylosurus fodiator* Colombia Meserve, 1938. *A. gracilis* Linton, 1940, Sproston, 1946 (syn. *Axin.g.L.*, on *Tylosurus marinus* in Woods Hole and Florida, *A. kola*, Unnithan, 1957, Yamaguti, 1968, Zhang et.al., 1999, Zhang et.al., 2001 on *Albennes hians* in Trivandrum, India, in Hawaii from the fish *Ablennes hian*, also from the fish *Ablennes hians* in South China sea.; *A. meservi* Meserve, 1938, Goto, (1899) (1900) for *Axin aberrans*, on *Tylosurus fodiator*, *Belone schismatorhynchus* in Port Utria, Colombia; *A. raphidoma* Hargis, 1956. on *Tylosurus raphidoma* in Florida; *A. sabastisci* Yamaguti 1958 on *Sebasticus marmoratus* in Inland sea Japan; *A. bulbosus* Yamaguti, 1968. on *Belone platyura* in Hawaii; *A. diploporus* Yamaguti, 1968. on *Albenneshians* in Hawaii; *A. strongylurae* Yamaguti, 1968. on *Strongylura gigantea* in Hawaii; *A.jimenezii* Caballeroy, Bravohollis, 1969 on *Tylosurus crocodilus crocodilus* (= *T.raphidoma*) in Veracruz and Mexico; *A. oceanicum* Price, 1962a on *Tylosurus fodiator* in Pacific ocean.

The present species is longer (3.18-3.19 x 0.48-0.49), than *A. aberrans* (1.7-2.3), and *A. sebastisci* (2.25-2.5) while it is smaller than *A. kola* (3.86-5.25 x 0.7-0.9) *A. tylosuri* (7.9-8.3)

The species body size is in the range of *A. gracilis* (2.0-5.2), *A. diploporus* (2.33-10.5 x 0.17-0.45) *A. strongylurae* (2.5-5.0 x 0.25-0.6), and *A. bulbosus* (1.6-4.0 x 0.25-0.5).

Testes in present species are 10-11 in number while *A. bulbosus* has 12-17, *A. diploporus* 30-62, and *A. strongylurae* 21-35 in number.

The number of clamps in present species are 37-40, while in *A. tylosuri* these are 70; *A. aberrans* 25; *A. gracilis* 50-60; *A.kola* 69-75; *A. raphidoma* 17; *A. sebastisci* 38-42; *A. bulbosus* 44-57; *A. diploporus* 43-55 and *A. strongylurae* has 21-27 clamps. Table 1.1

Table 1.1: Comparative characters between *A. bulbosus* and *A. belangerii*, (- indicates absence).

	<i>A. bulbosus</i>	<i>A. belangerii</i>
Body Size	1.6 mm-4.0 mm x 0.25 mm-0.5 mm	(3.18-3.19 x 0.48-0.49)
Shape of Pharynx	Rounded	Oval
Testes	12-17	10-11
Ovary	-	0.23-0.25 mm long 0.04-0.05 mm wide
No. of Clamps	44-57	37-40
Vagina	-	Funnel Shape
Uterus	-	Spindle Shape
Genital atrium	-	0.035-0.04 mm in diameter

Present species is different from its closely related species *A. bulbosus*, the pharynx in present species is oval while in *A. bulbosus* it is rounded. The number of testes in present species are 10-11 while in *A. bulbosus* these are 12-17. The number of clamps in present species is 37-40 while in *A. bulbosus* these are 44-57 in number. The present species is also differs from all the known members of *Axinoides* in the number of clamps.

This genus has been reported from different parts of the world including Japan, Florida, Colombia, India, Hawaii, Woods Hole, but present species is the first record of the genus *Axinoides* reported from Pakistan, and the combination of following characters such as oval pharynx, 10-11 number of testes, 37-40 number of clamps, arranged in a single row separate the present species from the previously described species, therefore, regarded as new due to the above differences which justify that present specimens belongs to an un described species.

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