



***Thaparotrema Shamimi* new species in catfish *Rita rita* (Hamilton, 1822) from Jamshoro district Sindh, Pakistan.**

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Abstract

Catfish species (Siluriformes: Bagridae) belong to genus *Rita* Bleeker, 1854 are diverse in number, the catfish species *Rita rita* (Hamilton, 1822) of genus *Rita* collected from Jamshoro, Sindh, Pakistan as a host for current studies. From 67 hosts 7 specimens were collected and identified as new species *Thaparotrema shamimi* having differential characters from its congeners such as body shape and size, posteriorly narrow and strongly curved at level of ovary, oral sucker terminal and rounded with curved at posterior level, ventral sucker oval in shape, anterior testis square in shape and posterior testis triangle in shape, ovary size and position, seminal receptacle oval in shape, uterine coils highly condense, seminal vesicle shape and position.

Keywords: *Thaparotrema* trematodes, Siluriformes catfishes, *Rita rita*, *Thaparotrema shamimi*.

Introduction

About 37 freshwater catfish species belong to order Siluriformes has been reported from Pakistan and Kashmir. *Rita* Bleeker, 1854 is a genus of bagrid catfishes found in southern Asia. *Rita rita* catfish is a nutritional fish having great economic value and distributed in Afghanistan, Pakistan, India, Nepal, Bangladesh and Myanmar (Mirza, 2003). Fishes are highly infected with helminth parasite may lead in loss of fish health and economic value. The reports on helminth parasites of freshwater fishes in Pakistan are so diverse but the reports on helminth parasites of *Rita rita* fresh water fish in Pakistan are limited to those of Ahmad *et al.*, (2014), Ayaz *et al.*, (2013), Khanum, *et al.*, (2008), Nazir *et al.*, (2014), Shakir and Khan, (2006), Soofi *et al.*, (2015 and 2016).

Genus *Thaparotrema* reported by Gupta in 1955. Trematodes of genus *Thaparotrema* parasites of

gallbladder and intestinal tract of freshwater fishes. Type species of genus *T. vittalani* reported (Gupta, 1955) collected from intestine and gallbladder of *Rita rita* from India. Only few species of genus *Thaparotrema* recorded from world are *T. pedicellatum* (Verma, 1927 and Soofi, 2015) collected from intestine and gallbladder of fishes *Rita rita*, *Hemibagrus nemurus* and *Rita buchanani* from Thailand and Pakistan, *T. piscicola* (Odhner, 1902) collected from gallbladder of *Gymnarchus niloticus* from Africa, *T. botswanensis* (Rensburg *et al.*, 2013). Collected from gallbladder of *Clarias gariepinus* from Africa.

Materials and Methods

Live catfish species *Rita rita* collected from Indus River and brought to the Department of Zoology

University of Sindh, Jamshoro, Pakistan for examination of helminth parasites. Fishes were dissected and viscera were separated in Petri dishes for examined under stereo dissecting microscope. Total 7 trematode specimens were collected and pass through method of fixing, dehydrated in grade serious of ethanol, stained in borax carmine, cleared in clove oil and xylol, mounted permanently in Canada balsam, Diagram were made with aid of Camera Lucida and identified with keys and literature. All measurement

given in millimeters (mm). Specimens are deposited in the department of Zoology, University of Sindh, Jamshoro, Sindh, Pakistan.

Results

Family Opisthorchiidae Braun, 1901
Genus *Thaparotrema* Gupta, 1955
Thaparotrema shamimi n. sp.

Table 1: comparative morphological measurement of *Thaparotrema* species.

Species	Present species	<i>T. vittalani</i> Gupta, 1955	<i>T. pedicellatum</i> (Verma, 1927) Soofi <i>et al.</i> , 2015	<i>T. botswanensis</i> Jansen Van Rensburg <i>et al.</i> , 2013
Host	<i>Rita rita</i>	<i>Rita rita</i>	<i>Rita rita</i> , <i>Hemibagrus</i> <i>nemurus</i> and <i>Rita</i> <i>buchanani</i>	<i>Clarias</i> <i>gariiepinus</i>
Locality	Pakistan	India	Pakistan, Thailand	Africa
Body	2.2-2.8	4.18	4.347-4.530	1.74-4.80
width	0.42-0.44	0.58	0.759-0.80	0.30-0.75
Oral sucker	0.16-0.24 X 0.15- 0.17	0.18 X 0.15	0.230-0.280 X 0.138-0.150	0.17-0.44 X 0.16- 0.45
Ventral sucker	0.17-0.18 X 0.16- 0.17	0.13 X 0.15	0.115-0.135 X 0.138-0.150	0.14-0.35 X 0.15- 0.34
Pharynx	0.07-0.08 X 0.08- 0.10	0.03 X 0.09	0.055-0.060	0.05-0.12
Esophagus	0.23-0.24 X 0.09- 0.10		0.161-0.182	0.03-0.18
Ovary	0.16-0.17 X 0.17- 0.20	0.11 X 0.09	0.230-0.260 X0.184-0.165	0.06-0.33 X 0.06- 0.34
Anterior testis	0.24-0.29 X 0.19- 0.21	0.21 X 0.17	0.368-0.390 X0.253-0.260	0.11-0.40 X 0.13- 0.34
Posterior testis	0.27-0.30 X 0.21- 0.31	0.23 X 0.18	0.322-0.328 X 0.391-0.396	0.12-0.40 X 0.11- 0.36
Seminal vesicle	0.11-0.11 X 0.05- 0.07		0.115-0.120 X 0.092-0.097	0.24-2.33
Seminal receptacle	0.07-0.09 X 0.29- 0.34		0.92-0.98 X 0.161-0.165	
Uterus from anterior extremity	0.69-0.73		1.84-1.95	
Uterus from posterior extremity	0.75-0.79		0.92-0.98	

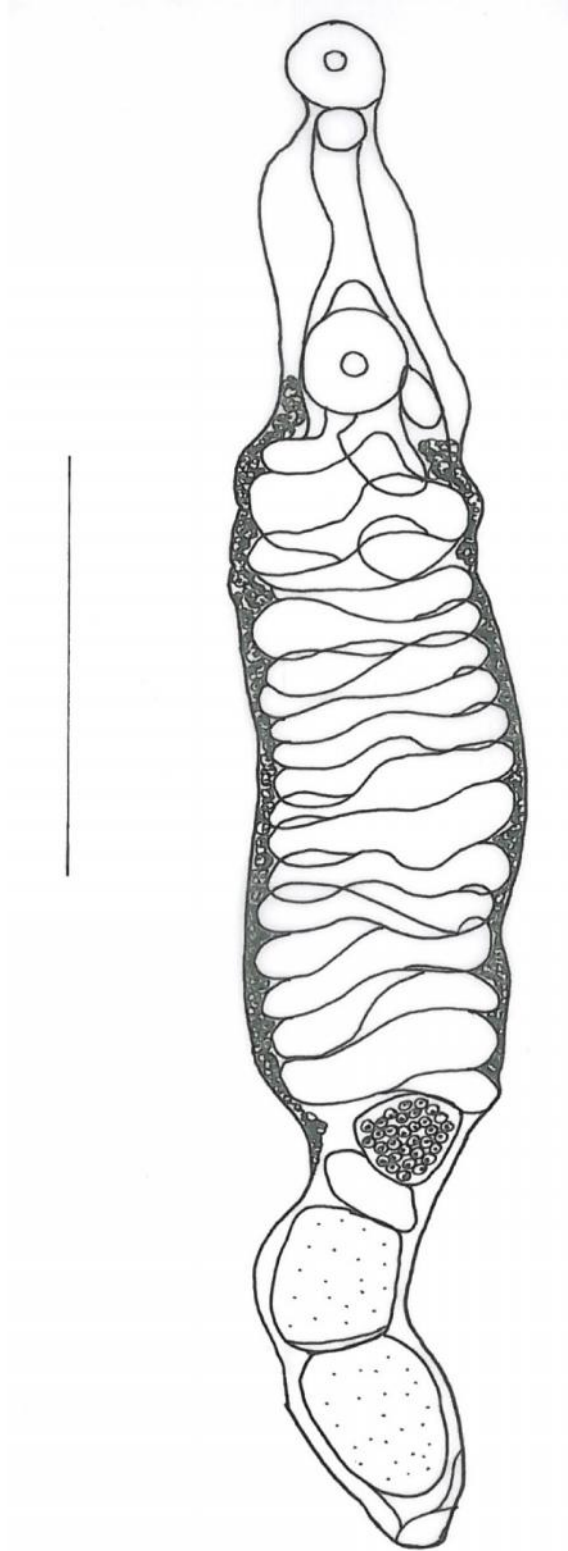


Figure 1: *Thaparotrema Shamimi* n. sp. Diagram of entire worm. Scale bar: 1mm.

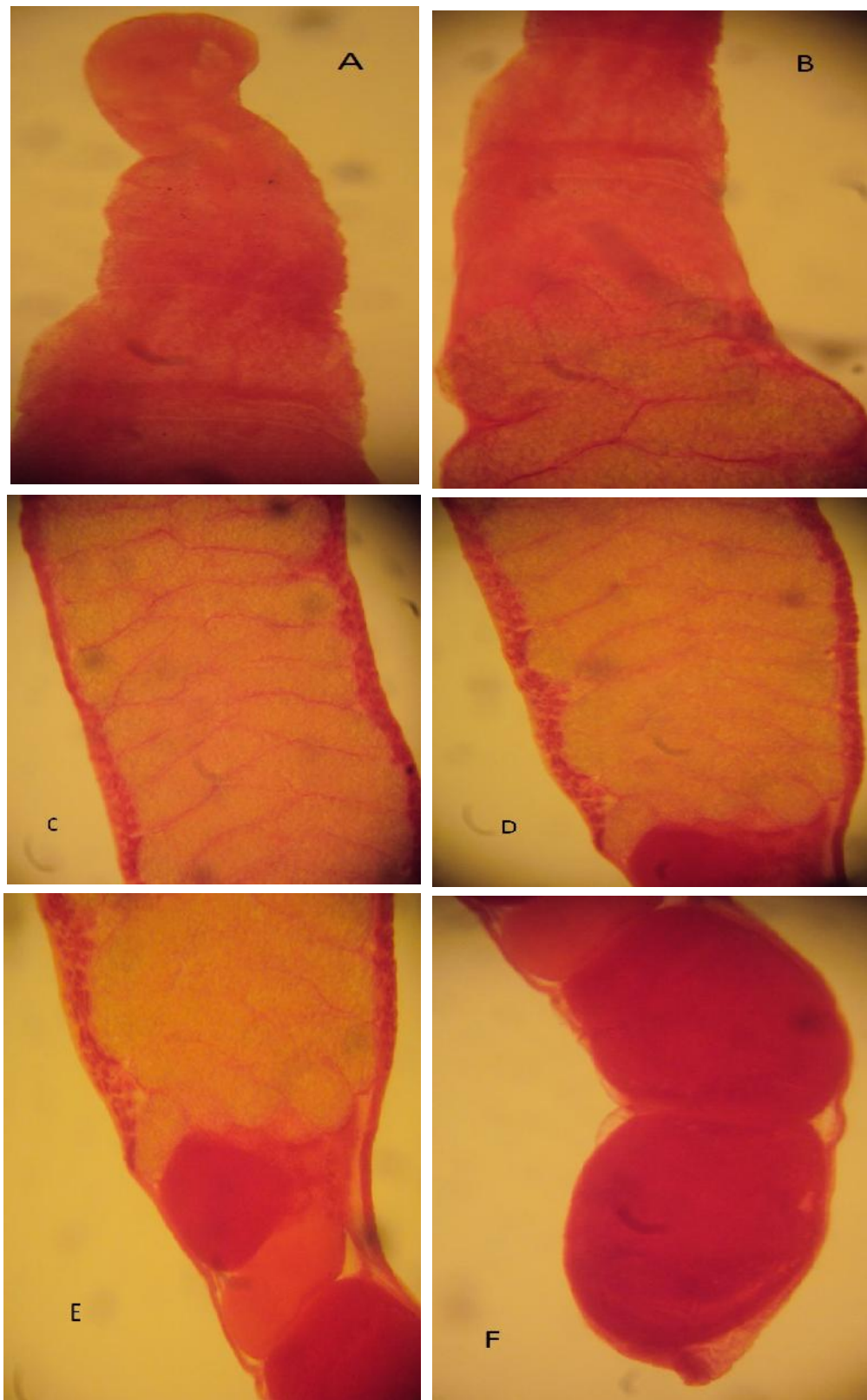


Figure 2: *Thaparotrema Shamimi* n. sp. A- F photographs of different body parts of worm.

Description

Body of worm elongate, anteriorly wider, posteriorly narrow and strongly curved at level of ovary measures 2.2-2.8 X 0.42-0.44. Widest at level of equatorial region of body. Oral sucker terminal and rounded with curved at posterior level measures 0.16-0.24 X 0.15-0.17. Pharynx rounded in shape, attached to oral sucker measures 0.07-0.08 X 0.08-0.10. Esophagus elongate measures 0.23-0.24 X 0.09-0.10 and intestinal bifurcation at level of ventral sucker, caeca extended between posterior of ventral sucker to the posterior extremity of body, but overlapped at middle region of body by uterus. Ventral sucker oval, large, pre-equatorial region of body measures 0.17-0.18 X 0.16-0.17. Testes two diagonal, at posterior region of body, anterior testis square in shape, small measures 0.24-0.29 X 0.19-0.21 and posterior testis triangle in shape, broad anteriorly with narrow posteriorly measures 0.27-0.30 X 0.21-0.31. Ovary heart shape, vertical in position, pre-seminal-receptacle left side of body measures 0.16-0.17 X 0.17-0.20. Seminal receptacle oval in shape, vertical in position, pre-testicular measures 0.07-0.09 X 0.29-0.34. Uterine coils highly condense, cover whole middle region of body, extended between posterior margin of ventral sucker to ovary, distance from anterior end of body measures 0.69-0.73 and distance from posterior end measures 0.75-0.79. Seminal vesicle oval in shape, at lateral side of ventral sucker measures 0.11-0.11 X 0.05-0.07. Vitelline follicle lateral fields from ventral sucker to the level of seminal receptacle. Excretory pore terminal.

Taxonomic Summary

Type host: *Rita rita*

Site of infection: Gallbladder

Type locality: River Indus at Jamshoro, Sindh, Pakistan

Number of specimen: 7 from 67 hosts

Etymology: The name of new species refers to the honored of author's mother name Soofi Shamim.

Discussion

Genus *Thaparotrema* Gupta, 1955 parasites of gallbladder and intestine of freshwater fishes. Present species compare with all congeners species of genus reported from the world.

T. vittalani Gupta, 1955 collected from intestine of and gallbladder of fish *Rita rita* from India differs from present species in having broad body covered

with spines; oral sucker rounded, subterminal; pharynx globular; esophagus narrow; intestinal bifurcation in between pharynx and ventral sucker; caecum not overlapped by uterus; seminal vesicle elongate, posterior to ventral sucker; ovary sub-globular; testes separated by excretory bladder, oval to rounded in shape; seminal receptacle oval in shape; uterine coils not much compact, intra-caecal; vitelline follicles not much compact, extra-caecal, fields from post-bifurcal region of intestine to the level of anterior testis; excretory bladder sigmoid stem in between testes.

T. pedicellatum Verma, 1927 and Soofi *et al.*, 2015 collected from intestine and gallbladder of fishes *Rita rita*, *Hemibagrus nemurus* and *Rita buchani* from Thailand and Pakistan differs from present species in having body fusiform in shape, covered with spines except post-testicular region; widest at post equatorial region of body; oral sucker oval; prepharynx short; pharynx rounded to oval in shape; esophagus short; testes tandem, anterior testis small and rounded, posterior testis large oval in shape; ovary rounded, at right side of body; seminal receptacle rounded to oval; uterine coils much compact, extending from posterior region of ventral to the ovary; vitelline follicles not close to lateral boundary of body, extending between posterior region of ventral sucker and seminal receptacle.

T. piscicola Odhner, 1902 collected from gallbladder of *Gymnarchus niloticus* from Africa differs from present species in having elongate, straight body armed with spines; oral sucker rounded to globular; ventral sucker much broad and globular; prepharynx absent; testes branched; ovary irregular in shape, at left side of body; vitelline follicles extending between pre-equatorial region and anterior testis; excretory bladder elongate, tubular.

T. botswanensis Jansen Van Rensburg *et al.*, 2013 collected from gallbladder of *Clarias gariepinus* from Africa differs from present species in having widest at level of ventral sucker; body broad armed with spines; oral sucker rounded to oval in shape; pharynx oval; caecum narrow, not overlapped by uterus; testes separated by excretory bladder, oval in shape; uterus intra-caecal; vitelline follicles not much compact, extra-caecal, fields between acetabular to ovary; ovary bean shape; seminal receptacle large, oval, triangular in shape; seminal vesicle tubular, posterior to ventral sucker; excretory bladder with sigmoid between testes, pore terminal.

Present trematode of collected from catfishes *Rita rita* on the basis of differential characters body shape and size, strongly curved at level of ovary, oral sucker terminal and rounded with curved at posterior level, ventral sucker oval in shape, anterior testis square in shape and posterior testis triangle in shape, ovary size and position, Seminal receptacle shape and position, uterine coils highly condense purposed as new species *Thaparotrema shamimi*. The name of new species refers to the honored of author's mother name Soofi Shamim.

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