

Study of a new tapeworm, *Pseudoconeata mausahaniaensis* n.g., n.sp. from *Clarias batrachus* from District Chhatarpur (M.P.) India

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ABSTRACT

Six fishes, *Clarias batrachus* were collected from village-Mausahania Tehsil-Nawugaon, District Chhatarpur (M.P.) India. One cestode was reported in its intestine. Scolex dome shaped without groove, Neck present. Ovary 'opposite cone shaped' lateral lobes of ovary situated in cortical as well as medullary region.

Figures : 02

References : 16

Table : 01

KEY WORDS : *Clarias batrachus*, Capingentidae, Chhatarpur, *Pseudoconeata*.

Introduction

Six fishes, *Clarias batrachus* were caught from village- Mausahania Tehsil- Nawugaon, District Chhatarpur (M.P.) India. One fish was infected with single cestode in its intestine. Morphological studies of the cestode revealed it to belong to genus, *Pseudoconeata* n.g. of the family Capingentidae⁵; order Caryophyllidea.

Material and Method

Fishes were examined for the Cestodes. Usual techniques for collection and preservation of the cestode was employed. Whole mount was stained in Mayer's Haemalum and cleared in xylol. Figures were drawn with camer--lucida and microphotographs were taken. All the measuerments have been given in millimeters unless otherwise stated.

GENERIC DISCUSSION

Medium sized unsegmented worms. Scolex dome shaped without any groove cushion, sucker or other additional adhesive organs. Neck present. Testes numerous, oval to round situated anterior level of cirrus pouch. Cirrus pouch median rounded, well developed with internal seminal vesicle. External seminal vesicle absent. Ovary 'opposite cone shaped', lateral lobes of ovary situated in cortical as well as medullary region. Vagina and receptaculum seminis present. Male and female gonopores common. Vitellaria oval to round reaches upto the middle level of cirrus pouch. Post ovarian vitellaria absent. Uterus long, and nonglandular located between cirrus pouch and posterior end of the body. Eggs oval, operculate and non-operculate. Parasites

of fresh water catfish.

Pseudoconeata mausahaniaensis n.g., n.sp.

Fig.1/(A-D), Fig.2 (A-D)

Medium sized, unsegmented worms measure (22.9 X 2.0) in length and width. Scolex dome shaped measures (1.50 X 1.062), without any sucker and spines. Neck medium sized measures (1.4 X 0.825).

Testes oval to round, medullary measure 0.125-0.2 X 0.125-0.187 (0.162 X 0.156), reaches up to anterior level of cirrus pouch. Cirrus pouch rounded, well developed measures (0.807 X 0.85), situated in median. Internal seminal vesicle oval to round measures (0.275 X 0.425). External seminal vesicle absent.

Female genitalia posteriorly located. Ovary opposite 'cone shaped' measures (0.637 X 1.487), ovarian lobes partly cortical and partly medullary. Vitelline follicles partaly cortical and partaly medullary measure 0.125 X 0.05 - 0.112 (0.0875 X 0.081), reaches up to the label of cirrus pouch. Receptaculum seminis absent. Post ovarian vitellaria absent.

Uterus coiled, non glandular, measures (1.437 X 1.387), not extending below to the ovarian lobes. Male and female gonopores open commonly. Vagina measures 0.018-0.025 (0.0215) in diameter.

Eggs oval, numerous, operculate and non-operculate measures 0.034-0.043 X 0.059-0.084 (0.0385 X 0.0715). Excretory canal measures 0.025 -0.037(0.031) in dimeter.

Discussion

Presently twenty two genera have been included

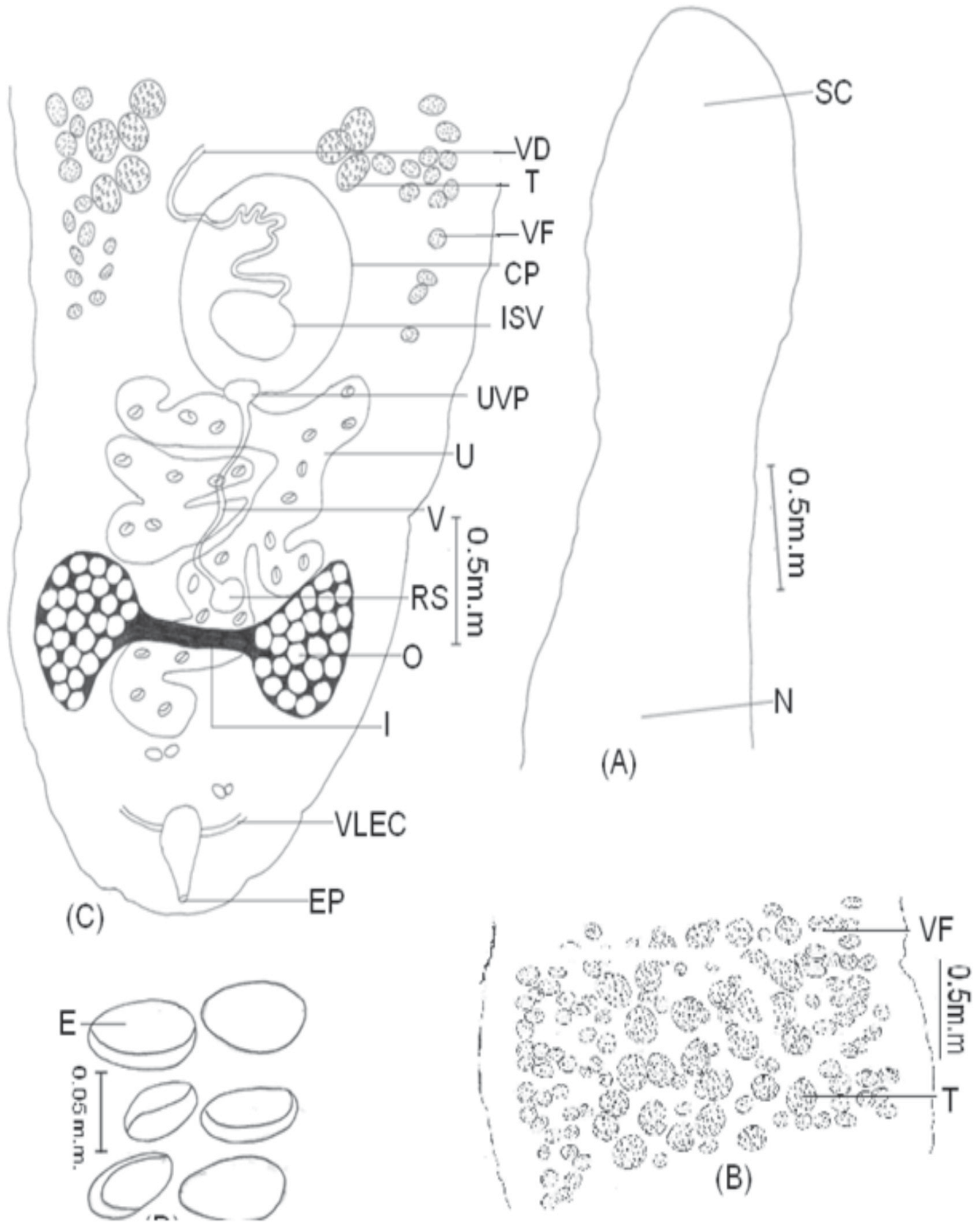


Fig. 1 : *Pseudoconeata mausahaniensis* n.g., n.sp., A – Scolex (50X), B– Middle region of the body (50X), C – Posterior region of the body (50X), D – Eggs (225 X).

in the family Capingentidae⁵. Order Caryophyllidea .

The present form comes closer to *Pseudocaryophyllaeus*²; *Pseudobilobulata*¹⁵; *Pseudobatrachus*¹⁰; *Sukhpatae*¹⁴; *Pseudoheteroinverta*¹³; *Sudhaena*⁶, *Pseudolobulata*¹.

The present form differs from *Pseudocaryophyllaeus*² in having dome shaped scolex, medium neck, 'opposite cone shaped' ovary, vitelline follicles reaches up to middle level of cirrus pouch, prominent receptaculum seminis, uterus extending to post ovarian region and both operculate and non-operculate eggs.

From *Pseudobilobulata*¹⁵ it differs in having dome

shaped scolex, medium neck, prominent intrrenal seminal vesicle, 'opposite cone shaped' ovary, prominent receptaculum seminis.

From *Pseudobatrachus*¹⁰ it differs in having dome shaped scolex, medium neck, numerous testes prominent intrrenal seminal vesicle, 'opposite cone shaped' ovary, vitelline follicles reaches up to middle level of cirrus pouch, prominent receptaculum seminis and both non-operculate and operculate eggs.

From *Sukhpatae*¹⁴ it differs in having dome shaped scolex, prominent intrrenal seminal vesicle, 'opposite cone shaped' ovary, vitelline follicles reaches up to middle level of cirrus pouch,

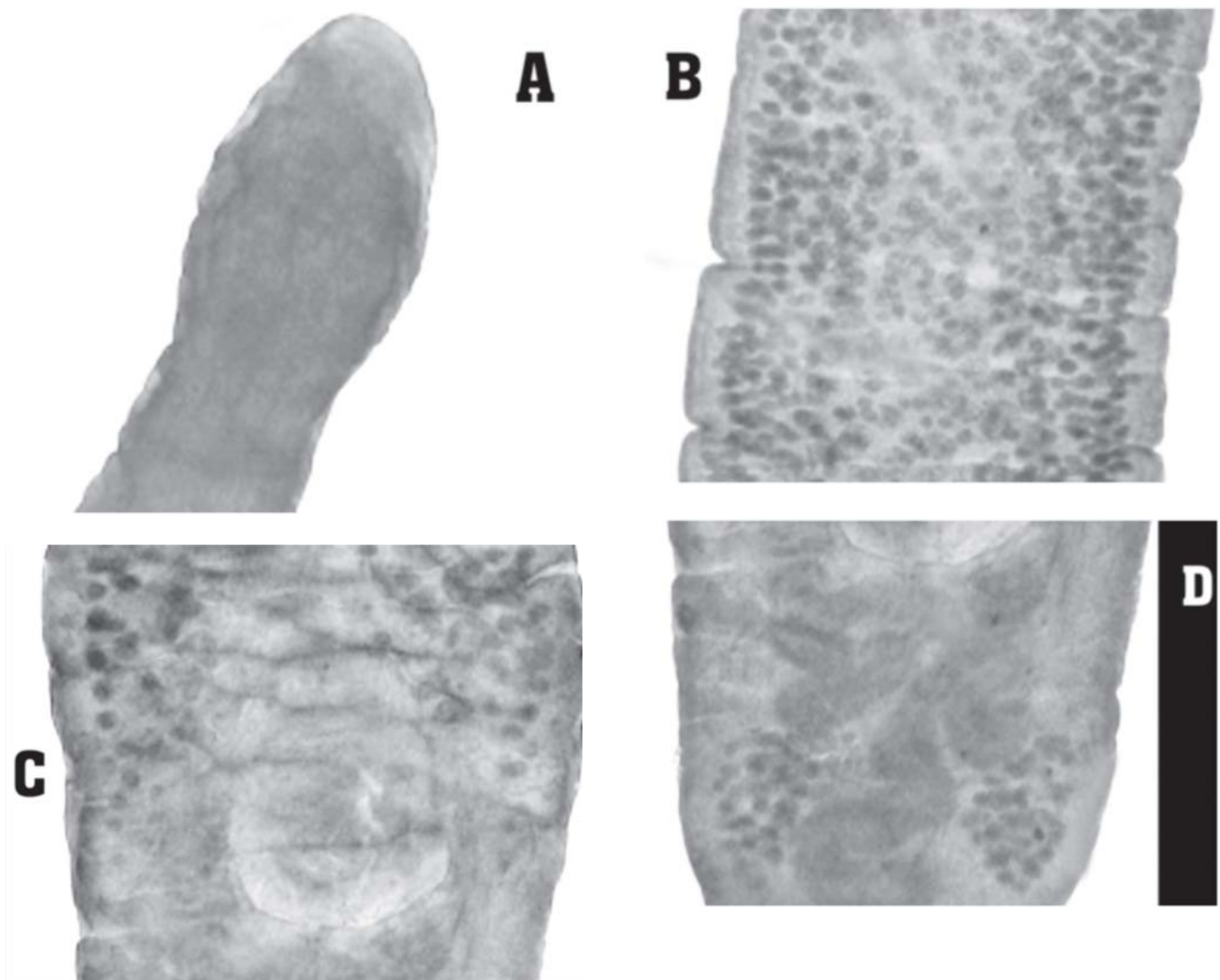


Fig.2: *Pseudoconeata mausahaniensis* n.g., n.sp.,

A. Scolex (50X)

B. A portion of worm showing position of testes and vitellaria (50X)

C. A portion of worm showing position of cirrus pouch (50X)

D. Posterior region of worm showing position of ovary (50X)

prominent receptaculum seminis, uterus extending to post ovarian region and both non-operculate and operculate eggs.

From *Pseudoheteroinverta*¹³ it differs in having dome shaped scolex, prominent intrernal seminal vesicle, 'opposite cone shaped' ovary, vitelline follicles reaches up to middle level of cirrus pouch prominent receptaculum seminis, uterus extending to post ovarian region and both non-operculate and operculate eggs.

From *Sudhaena*⁶ it differs in having dome shaped scolex, 'opposite cone shaped' ovary, vitelline follicles reaches up to middle level of cirrus pouch, prominent receptaculum seminis, uterus extending to post ovarian region and both operculate and non-operculate eggs.

From *Pseudolobulata*¹¹ it differs in having dome shaped scolex, 'opposite cone shaped' medium neck, ovary, vitelline follicles reaches up to middle level of cirrus pouch and both operculate and non-operculate eggs.

Thus the present new genus, *Pseudoconeata* n.g. differs from all the known genera of the family Capingentidae. From *Sudhaena* it differs in having dome shaped scolex, 'opposite cone shaped' ovary, vitelline follicles reaches up to middle level of cirrus pouch, prominent receptaculum seminis, uterus extending to post ovarian region and both operculate and non-operculate eggs.

In the light of above discussion the proposed new genus, *Pseudoconeata mausahaniaensis* n. g., n.sp. may be provisionally accommodated as a new genus.

The genus is named after the shape of the ovary while species is named after the place of host collection.

Type species : *Pseudoconeata mausahaniaensis*
n. g., n.sp.

Host : *Clarias batrachus* (Linn.)

Habitat : Intestine

Locality : Village- Mausahania, Tehsil-
Nowugaon,
District- Chhatarpur (M.P.) India

Date of Collection: 1st October 2008

Number of specimen: 01

Accession number : BBCZD/MS/ C-20

Deposition : Parasitological laboratory,
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Bipin Bihari (P.G.) College,
Jhansi (U.P.) India

Revised Key of the various genera of the Family capingentide⁵

1. Post-ovarian median vitellaria present-----2
Post-ovarian median vitellaria absent-----6
2. Uterine coil extend anterior to cirrus pouch .Scolex with two large bothria-----
-----*Capingens*³
Uterine coil not extending anterior to cirrus pouch .Scolex lacking bothria -----3
3. Ovary inverted A-shaped-----*Adenoscolex*²
Ovary not as above-----4
4. Ovary dumbbell shaped; scolex quite reduced; neck absent-----*Breviscolex*⁷
Ovary otherwise; scolex well developed, neck present-----5
5. Ovary H- shaped-----*Ehdmonia*
Ovary band- shaped-----*Capingentoides*
6. Ovary U- shaped uterine coils extending anterior to cirrus pouch-----
-----*Spartoides*.
Ovary U- shaped, uterine coils not extending anterior to cirrus pouch-----*Mystoides*
Ovary not U- shaped, uterine coils not extending anterior to cirrus pouch-----
7. Neck absent-----8
8. Neck present-----9
Ovary H- shaped-----
Pseudolytocestus
Ovary inverted A- shaped-----*Pseudoadnoscolex*
Ovary fan- shaped -----
Pseudoclariasis
Ovary inverted U- shaped-----
Pseudoinverta
Ovary ear-shaped -----
Pseudoauricularia
Ovary uneven bilobed-----*Pseudounevenata*,
Ovary bean-shaped-----*Pseudobeanata*,
Ovary band-shaped-----*Pseudostrigata*,
9. Neck present ovary band-shaped-----
-----*Pseudocaryophyllaeus*.
Neck present ovary bilobed-----
-----*Pseudobilobulata*.
Neck present ovary inverted A-shaped-----
-----*Pseudoheteroinverta*.
Neck present ovary omega-shaped-----
-----*Sukhpatae*.
Neck present ovary H-shaped with long arms-----

TABLE-1 : Comparison of the characters of the genera of the family capingentidae⁵, comes closer to *Pseudoconeata* n.g.

S. No.	Characters	<i>Pseudocaryophyllaeus</i> ²	<i>Pseudobilobulata</i> ¹⁵	<i>Pseudobatrachus</i> ¹⁰	<i>Sukhpatae</i> ¹⁴	<i>Pseudoheteroinverta</i> ¹³	<i>Sudhaena</i> ⁶	<i>Pseudolobulata</i> ¹¹	<i>Pseudoconeata</i> n.g.
1	Scolex	Rounded	Blunt	Rounded, grooved	Blunt	Blunt	Blunt	Spoon	Dome shaped
2	Neck	Very long	Small	Very long	Medium	Medium	Medium	Small	Medium
3	Testes	Numerous	Numerous	Few (5 to 10)	Numerous	Numerous	Numerous	Numerous	Numerous
4	Internal seminal vesicle	Present	Absent	Absent	Absent	Absent	Present/ Absent	Present	Present
5	Ovary	Band shaped	Bilobed shaped	'H' shaped	Omega shaped	Inverted 'A' shaped	'M' shaped	Uneven bilobed shaped	Opposite cone shaped
6	Vitelline follicles	Reches below to cirrus Pouch	————	Reches below to cirrus pouch	Reches below to cirrus pouch	Reches below to cirrus pouch	Reches below to cirrus pouch	Up to the level of cirrus pouch	Up to the middle level of cirrus pouch
7	Receptaculum seminis	Absent	Absent	Absent	Absent	Absent	Absent	Present	Present
8	Uterus	Anterior to ovary	Reaches below to ovary	Reaches below to ovary	Anterior to ovary	Anterior to ovary	Anterior to ovary	Reaches below to ovary	Extended to post ovarion region
9	Eggs	Non-operculate	————	Operculate	Non-operculate	Non-operculate	Operculate	Operculate	Operculate/ non-operculate
10	<i>Clarias batrachus</i>	<i>Heteropneustesfossilis</i>	<i>Heteropneustesfossilis</i>	<i>Heteropneustesfossilis</i>	<i>Heteropneustesfossilis</i>	<i>Heteropneustesfossilis</i>	<i>Clarias batrachus</i>	<i>Clarias batrachus</i>	<i>Clarias batrachus</i>

Pseudobatrachus.

Neck present ovary M-shaped with long arms————

—————*Sudhaena*

Neck present ovary uneven bilobed————

—————*Pseudolobulata*

Neck present ovary bow-shaped————

—————*Pseudobowae*

Neck present ovary opposite cone-shaped————

—————*Pseudoconeata* n.g.
 Neck present ovary dumbbell-shaped—————
 —————*Pseudodumbbellata* n.g.
 Neck present ovary kidney-shaped—————

Pseudokidniata
 Neck present ovary oar-shaped—————
 —————*Pseudooarae* n.g.

References

1. Fotedar DN. On a new cestode parasite (Protocephalidae:Cestoda). *Kashmir Sci.* 1958; **31**:17-32.
2. Gupta SP. Csryophyllaeids (Cestoda) from freshwater fishes of India. *Proc. Helminthol. Soc.* 1961; **73** : 183-186.
3. Hunter GW III. Notes on the Caryophyllaeidae of North America . *J. Parasitol.* 1927; **14** : 16-26.
4. Hunter GW. New Caryophyllaeidae from North America . *J. Parasitol.* 1927; **15** : 185-192.
5. Hunter GW III, Hunter WS. Studies on the parasites of fishes of the Lake Champlain watershed. Annu. Rep. N.Y. state conservancy Dep. *Biol. Surv. Suppl.* 1930; 197-216.
6. Khare RK. Morphotaxonomy of piscian cestodes and ecological observation of *Mastacembelus armatus* (Lacepede) in relation to parasitic infestation. Ph.D. Thesis, Bundelkhand Univ., Jhansi (U.P.) India. 2006; 1-185.
7. Kulakovaskay OP. *Breviscolex orientalis* n.g., n.sp. (Caryophyllaeidae: Cestoda) from fish in the Amur basin (In Russian). *Dokl. Acad. Nauk SSSR.* 1962; **143** : 1001-1004.
8. Mackiewicz JS. *Edlintonia ptychocheila* gen. n. sp. napingentid. (Cestoidea: Capingentidae) and other caryopjyllid tapeworms from cyprinid fishes of North America. *Proc. Helminthol. Soc. Wash.* 1992; **37** : 110-118
9. Mathur N. 'Morphotaxonomy of piscian cestodes and their ecological study in *Heteropneustes fossilis* (Bloch.) Ph.D. Thesis, Bundelkhand Univ., Jhansi (U.P.) India. 1992; 1-166.
10. Pathak A, Srivastav AK. Morphotaxonomical study of a new cestode, *Pseudobatrachus chandrai* n.g., n. sp. From freshwater cat fish, *Clarias batrachus* (Linn.) Ind. *J. Environ. Sci.* 2005; **9**(2): 141-143.
11. Sahu VK. Faunastic Survey of piscian tapeworm of Bundelkhand region of Madhya Pradesh. Ph.D. Thesis Bundelkhand Univ., Jhansi (U.P.) India. 2007; 1-150.
12. Singh Mukta, Narayan Aditya, Singh Abharaj Raj, Srivastav AK. A new tapeworm, *Pseudobowae chhatarpurensis* n.g., n.sp. from *Clarias batrachus* (Linn.) from district Chhatarpur (M.P.) India. *Flora and Fauna.* 2015 ; **21** (1) : 75-79.
13. Srivastav AK, Khare RK. Study of a new tapeworm, *Heeradevina baruasagarensis* n.g., n. sp. From *Clarias batrachus* (Linn.) *Flora and fauna.* 2005; **11** (2): 25-27.
14. Srivastav AK, Khare RK. A new tapeworm of *Pseudoheteroinvrta tikamgarhensis* n.g., n. sp. From *heteropeustes fossilis* (Bl.). *Flora and Fauna.* 2005; **11** (2): 151-154.
15. Srivastav AK, Khare RK, Sahu VK. Morphotaxonomical status of *Sukhpatae prithvipurensis* n.g., n. sp. From fresh water cat fish, *Heteropneustes fossilis* (Bl.) of Bundelkhand region of Madhya Pradesh. *Proc. of Zoological Society of India.* 2005;121-127.
16. Srivastav AK, Lohia S. Status of *Pseudobilobulata* n.g. (Capingentidae Hunter, 1930) with description of a new species from freshwater fish of Jhansi Uttra Pradesh, India. *Flora and Fauna.* 2002; **8**(2): 75-76.