

**STUDY OF *PSEUDOBATRACHUS* (CAPINGENTIDAE: CARYOPHYLLIDEA)
TAPEWORM- A REVIEW ARTICLE**

REETESH KUMAR KHARE

Department of Zoology,
R.S. Govt. P.G. College,
LALITPUR (U.P.) INDIA
E-mail: rkkbwr@gmail.com

Received : 16.08.2017; *Accepted* : 08.10.2017**ABSTRACT**

Presently ten species of the genus *Pseudobatrachus*³ are recorded from the intestines of freshwater fishes of Bundelkhand region of India. The author in the present communication describes brief review of the genus along with the key to identification of various species of the genus.

Figure : 00

References : 10

Table : 01

KEY WORDS: Capingentidae, Caryophyllidea, Freshwater fishes, H-shaped ovary, *Pseudobatrachus***Introduction**

The unsegmented tapeworm, genus *Pseudobatrachus*, family Capingentidae, order Caryophyllidea was erected by two Indian Helminthologists in the year of 2005 with its type species *Pseudobatrachus chandra*³. Later, many researchers included several species in the genus viz. *Pseudobatrachus moolchandra*⁶, *Pseudobatrachus madhyapadeshensis*¹, *Pseudobatrachus chhatrasali*⁵, *Pseudobatrachus kenensis*⁹, *Pseudobatrachus ramchandra*⁷, *Pseudobatrachus ramsagarensis*⁴, *Pseudobatrachus sengarii*⁶, *Pseudobatrachus chandlaensis*¹⁰ and *Pseudobatrachus govindsagarensis*². Salient features of the genus are the presence of unsegmented body, partly cortical and partly medullary vitellaria, very long neck, H-shaped ovary and absence of postovarian vitellaria. The species, *Pseudobatrachus ramchandrai*, *Pseudobatrachus sengarii* and *Pseudobatrachus govindsagarensis* are reported from *Heteropneustes fossilis* while others from *Clarias batrachus*.

Species Diagnosis**1-*Pseudobatrachus chandra*³:-**

Medium sized, unsegmented worms. Scolex

oval to round with groove. Neck very long. Testes medullary, few in number and anterior to cirrus pouch. Cirrus pouch well developed and median. External and internal seminal vesicles absent. Vitellaria partly cortical and partly medullary, touches to ovarian lobes, postovarian vitellaria absent. Ovary H- shaped, lateral lobes of ovary, situated in cortex and medulla while isthmus in medulla. Receptaculum seminis absent. Eggs operculate. Parasites of *Clarias batrachus*.

2- *Pseudobatrachus moolchandra*⁶:-

Medium sized, unsegmented worms. Scolex spoon shaped without any hold fast organs. Neck very long. Testes medullary, numerous and anterior to cirrus pouch. Cirrus pouch well developed and median. External seminal vesicle absent, internal seminal vesicle present. Vitellaria partly cortical and partly medullary, not touches to ovarian lobes, postovarian vitellaria absent. Ovary H- shaped, lateral lobes of ovary, situated in cortex and medulla while isthmus in medulla. Receptaculum seminis absent. Eggs operculate. Parasites of *Clarias batrachus*.

3- *Pseudobatrachus madhyapadeshensis*¹:-

Medium sized, unsegmented worms. Scolex spoon shaped with apical sucker and accessory

TABLE-1 : Comparison of the characters of the species of *Pseudobatrachus*³

S. No.	Characters	<i>P. Chandrai</i> ³	<i>P. moolchandrai</i> ³	<i>P. madhyapradeshensis</i> ¹	<i>P. chhatrasali</i> ⁵	<i>P. keneensis</i> ⁹	<i>P. Ramchandrai</i> ⁷	<i>P. ramsagarensis</i> ⁴	<i>P. Sengarii</i> ⁶	<i>P. chandlaensis</i> ¹⁰	<i>P. Govindsagarensis</i> ²
1.	Scolex	Oval to round with groove	Spoon shaped without any hold fast organs	Spoon shaped with apical and accessory suckers	Spoon shaped with bothridea	Spoon shaped with apical disc and bothridea	Simple and elongated without any hold fast organs	Spoon shaped with groove, bothridea and rostellum	Simple blunt without any hold fast organs	Spoon shaped with bothridea	Simple blunt with groove and two apical disc
2.	External Seminal Vesicle	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Present	Present
3.	Internal Seminal Vesicle	Absent	Present	Present	Absent	Present	Present	Present	Present	Present	Present
4.	Vitellaria	Touches to ovarian lobes	Not touches to ovarian lobes	Not touches to ovarian lobes	Touches to ovarian lobes	Not touches to ovarian lobes	Touches to ovarian lobes	Not touches to ovarian lobes	Not touches to ovarian lobes	Not touches to ovarian lobes	Not touches to ovarian lobes
5.	Receptaculum Seminis	Absent	Absent	Present	Absent	Absent	Present	Present	Absent	Absent	Absent
6.	Eggs	Operculate	Operculate	Non-operculate	Operculate	Operculate	Operculate	Operculate	Operculate	Operculate	Operculate
7.	Host	<i>Clarius batrachus</i>	<i>Clarius batrachus</i>	<i>Clarius batrachus</i>	<i>Clarius batrachus</i>	<i>Clarius batrachus</i>	<i>Heteropneustes fossilis</i>	<i>Clarius batrachus</i>	<i>Heteropneustes fossilis</i>	<i>Clarius batrachus</i>	<i>Heteropneustes fossilis</i>

STUDY OF PSEUDOBATRACHUS (CAPINGENTIDAE: CARYOPHYLLIDEA) TAPEWORM- A REVIEW ARTICLE 381

suckers. Neck very long. Testes medullary, numerous and anterior to cirrus pouch. Cirrus pouch well developed and median. External seminal vesicle absent, internal seminal vesicle present. Vitellaria partly cortical and partly medullary, not touches to ovarian lobes, postovarian vitellaria absent. Ovary H- shaped, lateral lobes of ovary, situated in cortex and medulla while isthmus in medulla. Receptaculum seminis present. Eggs nonoperculate. Parasites of *Clarias batrachus*.

4- *Pseudobatrachus chhatrasal*⁶

Medium sized, unsegmented worms. Scolex spoon shaped with bothridea. Neck very long. Testes medullary, numerous and anterior to cirrus pouch. Cirrus pouch well developed and median. External and internal seminal vesicles absent. Vitellaria partly cortical and partly medullary, touches to ovarian lobes, postovarian vitellaria absent. Ovary H- shaped, lateral lobes of ovary, situated in cortex and medulla while isthmus in medulla. Receptaculum seminis absent. Eggs operculate. Parasites of *Clarias batrachus*.

5- *Pseudobatrachus kenensis*⁹

Medium sized, unsegmented worms. Scolex spoon shaped with apical disc and bothridea. Neck very long. Testes medullary, numerous and anterior to cirrus pouch. Cirrus pouch well developed and median. External seminal vesicle absent, internal seminal vesicle present. Vitellaria partly cortical and partly medullary, not touches to ovarian lobes, postovarian vitellaria absent. Ovary H- shaped, lateral lobes of ovary, situated in cortex and medulla while isthmus in medulla. Receptaculum seminis absent. Parasites of *Clarias batrachus*.

6- *Pseudobatrachus ramchandra*⁷

Medium sized, unsegmented worms. Scolex simple and elongated without any hold fast organs. Neck very long. Testes medullary, numerous and anterior to cirrus pouch. Cirrus pouch well developed and median. External seminal vesicle absent, internal seminal vesicle present. Vitellaria partly cortical and partly medullary, touches to ovarian lobes, postovarian vitellaria absent. Ovary H- shaped, lateral lobes of ovary, situated in cortex and medulla while isthmus in medulla. Receptaculum seminis present. Eggs operculate. Parasites of *Heteropneustes fossilis*.

7- *Pseudobatrachus ramsagarensis*⁴

Medium sized, unsegmented worms. Scolex spoon shaped with groove, bothridea and rostellum. Neck very long. Testes medullary, numerous and anterior to cirrus pouch. Cirrus pouch well developed and median. External seminal vesicle absent, internal seminal vesicle present. Vitellaria partly cortical and partly medullary, not touches to ovarian lobes, postovarian vitellaria absent. Ovary H- shaped, lateral lobes of ovary, situated in cortex and medulla while isthmus in medulla. Receptaculum seminis present. Eggs operculate. Parasites of *Clarias batrachus*.

8- *Pseudobatrachus sengari*⁶

Medium sized, unsegmented worms. Scolex simple blunt without any hold fast organs. Neck very long. Testes medullary, numerous and anterior to cirrus pouch. Cirrus pouch well developed and median. External seminal vesicle absent, internal seminal vesicle present. Vitellaria partly cortical and partly medullary, not touches to ovarian lobes, postovarian vitellaria absent. Ovary H- shaped, lateral lobes of ovary, situated in cortex and medulla while isthmus in medulla. Receptaculum seminis absent. Parasites of *Heteropneustes fossilis*.

9- *Pseudobatrachus chandlaensis*¹⁰

Medium sized, unsegmented worms. Scolex spoon shaped with bothridea. Neck very long. Testes medullary, few in number and anterior to cirrus pouch. Cirrus pouch well developed and median. External and internal seminal vesicles present. Vitellaria partly cortical and partly medullary, not touches to ovarian lobes, postovarian vitellaria absent. Ovary H- shaped, lateral lobes of ovary, situated in cortex and medulla while isthmus in medulla. Receptaculum seminis absent. Eggs operculate. Parasites of *Clarias batrachus*.

10 *Pseudobatrachus govindsagarensis*²

Medium sized, unsegmented worms. Scolex simple blunt with groove and two apical disc. Neck long. Testes medullary, numerous and anterior to cirrus pouch. Cirrus pouch well developed and median. External and internal seminal vesicles present. Vitellaria partly cortical and partly medullary, not touches to ovarian lobes, postovarian vitellaria absent. Ovary H- shaped, lateral lobes of ovary, situated in cortex and medulla while isthmus in medulla. Receptaculum seminis absent. Eggs operculate. Parasites of *Heteropneustes fossilis*.

Key to the various species of the genus, *Pseudobatrachus*:-

1. Scolex without any hold fast organs-----2
 Scolex with any hold fast organs-----4
2. Receptaculum seminis present, vitellaria touches to ovarian lobes-----
 -----*Pseudobatrachus ramchandrai*⁷
 Receptaculum seminis absent, vitellaria not touches to ovarian lobes-----3
3. Spoon shaped scolex----- *Pseudobatrachus moolchandra*⁸
 Simple blunt scolex----- *Pseudobatrachus sengarii*⁶
4. Scolex with rostellum----- *Pseudobatrachus ramsagarensis*⁴
 Scolex without rostellum-----5
5. Scolex with groove only----- *Pseudobatrachus chandrai*³
 Scolex with groove and Apical disc----- *Pseudobatrachus govindsagarensis*²
 Scolex with other hold fast organs-----6
6. Scolex with apical and accessory sucker----- *Pseudobatrachus madhyapradeshensis*¹
 Scolex with bothridea-----7
7. Vitellaria touches to ovarian lobes----- *Pseudobatrachus chhatrasali*⁵
 Vitellaria not touches to ovarian lobes-----8
8. External seminal vesicle present- ----- *Pseudobatrachus chandlaensis*¹⁰
 External seminal vesicle absent----- *Pseudobatrachus kenensis*⁹

References

1. KHARE, R.K. (2008) On a new species of the genus *Pseudobatrachus*, Pathak and Srivastav, 2005 from *Clarias batrachus* (Linn.). *Rajarshi View*, **1** (1): 13-17.
2. NARAYAN, A. (2013) Morphotaxonomic study of a new tapeworm, *Pseudobatrachus govindsagarensis* n. sp. from *Heteropneustes fossilis* (Bloch) from district Lalitpur, Uttar Pradesh. *Flora and Fauna*, **19**(1) special issue: 277-282.
3. PATHAK, A. AND SRIVASTAV, A.K. (2005) Morphotaxonomical study of a new cestode, *Pseudobatrachus chandrai* n.g., n.sp. from freshwater cat fish, *Clarias batrachus* (Linn.). *Indian Journal of Environmental Sciences*, **9**(2): 141-143.
4. SAHU, V.K. (2012) Study of new Caryophyllidean (Capingentidae: *Pseudobatrachus*) tapeworms of freshwater fish of Bundelkhand region of Madhya Pradesh, India: Part-III. *Journal of Applied and Natural Science*, **4**(2): 266-270.
5. SAHU, V.K., SRIVASTAV, A.K. AND BAGHEL, C.L. (2009) Study of Caryophyllidean (Capingentidae: *Pseudobatrachus*) tapeworms of freshwater fishes of Bundelkhand region of Madhya Pradesh, India: Part-II. *Flora and Fauna*, **15**(2): 335-338.
6. SAHU, V.K., SRIVASTAV, A.K. AND SINGH, R. (2012) First record of *Pseudobatrachus sengarii* n. sp. from *Heteropneustes fossilis* (Bloch) from Central India. *Flora and Fauna*, **18**(2): 277-282.
7. SRIVASTAV, A.K. AND NARAYAN, A. (2010) Study of an interesting tapeworm, *Pseudobatrachus ramchandrai* n. sp. Of *Heteropneustes fossilis* (Bloch) from Bundelkhand region of Uttar Pradesh, India. *Proceeding of Parasitology*, **50**: 33-41.
8. SRIVASTAV, A.K., SAHU, V.K. AND KHARE, R.K. (2006) Study of Caryophyllidean (Capingentidae: *Pseudobatrachus*) tapeworm of freshwater fishes of Bundelkhand region of Madhya Pradesh, India: Part-I. *Journal of Natural and Physical Science*, **20**(1-2): 27-30.
9. SRIVASTAV, A.K., SINGH, M. AND KHARE, R.K. (2010) Study of a new tapeworm *Pseudobatrachus kenensis* n. sp. From *Clarias batrachus* (Linn.) from district Chhatarpur (M.P.) India. *Flora and Fauna*, **16**(2): 313-317.
10. SAHU, V.K. (2013) Study of Caryophyllidean (Capingentidae: *Pseudobatrachus*) tapeworms of freshwater fishes of Bundelkhand of Madhya Pradesh, India: Part-IV. *Journal of the Andman Science Association*, **18**(1); 113-117.