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ORIGINAL ARTICLE

Biosystematic Studies on *Ptychobothrium punctatum* Sp.Nov. (Cestoda: Ptychobothridae Luhe, 1902) From *Channa punctata*

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ABSTRACT

Present investigation deals with description of a new species of Pseudophyllidean Cestode of the genus Ptychobothrium, Loennberg, 1889 collected from intestine of freshwater fish, Channa punctata at Ausa, Dist. Latur (M.S.) India during February, 2012 to January, 2014. Ptychobothrium punctatm Sp.Nov. comes closer to all known species of genus Ptychobothrium, Loennberg, 1889 in general topography of organs but differs due to elongated unarmed Scolex, Neck absent, Mature Proglottids 2-3 times broader than long, Cirrus pouch pyriform, Testes 52-56 in numbers, Ovary dumbbell shaped, Vitellaria follicular and eggs operculated.

Key words: *Cestode, Channa punctata, Ptychobothridae, Ptychobothrium punctatm Sp.Nov.*

INTRODUCTION

The Genus *Ptychobothrium* was established by Loennberg, 1889 with its type species *Ptychobothrium belones* (Dujardin, 1845*).* Subsequently, Sandeep K. Malhotra, 1983 added *Ptychobothrium nayarensis* from hill stream fishes *Barilius bola (*Ham*.)* and *Schizothorax richardsonii (*Gray*)*. Wongswad, 1998 described *Ptychobothrium mystacoleucysi, Ptychobothrium rojanapaibuli* collected from *Mystacoleucus marginatus* at Maesa Stream, Chiang Mai. Wongswad *et. al.,* 1998 reported *Ptychobothrium discusae* collected from *Mystacoleucus marginatus* at Maesa Stream, Chiang Mai. Recently *Ptychobothrium vitellaris (*Deshmukh *et al.,* 2015*)* described from *Mastacembelus armatus* and *Ptychobothrium elongata (*Deshmukh *et al.,* 2016*)* reported from *Mystus seenghala.*

MATERIALS AND METHODS

During the survey of Piscean Helminths, 68out of 240 freshwater fish *Channa punctata* from Ausa, Dist. Latur (M.S.) India were found infected with one hundred seven cestode parasites during February, 2012 to January, 2014. Collection of parasites, preservation, staining, mounting and Identification was done by standard methods (Gerald D. Schmidt, 1934; Yamaguti, S., 1959; Wardle, R.A., Mcleod, J.A. and Radinovsky, 1974; Khalil, Jones and Bray,1994).

RESULTS (Based on Four Specimens; Fig.1)

Scolex elongated, cylindrical in shaped, unarmed with an apical disc and measures 1.2455 (1.060-1.431) × 0.259 (0.159-0.360) mm in length and breadth. Scolex have pair of bothria, which is sessile, shallow, distinctly two lobed and measures 1.1395 (1.007-1.272) × 0.212 (0.106-0.318) mm in length and breadth. Anterior end of scolex terminates in a apical disc, which is oval, well marked and measures 0.0424 (0.0318-0.053) × 0.079 (0.063-0.095) mm in length and breadth. Neck absent. Mature segments are two to three times broader than long and measures 0.768 (0.636-0.901) × 2.279 (2.226-2.332) mm in length and width. Testes small, oval to rounded, 52-56 in number, measures 0.047 (0.031-0.063) × 0.063 (0.042-0.084) mm in length and width. Cirrus pouch pyriform, pre-ovarian and measures 0.222 (0.212-0.233) × 0.063 (0.042-0.084) mm in length and breadth. Cirrus thin, lies within the cirrus pouch, measures 0.201 (0.190-0.212) × 0.021 (0.011-0.031) mm in length and width. Vas deferens short curved tube, measures 0.018 (0.017-0.019)× 0.021 (0.021-0.031) mm in length and width. Vagina and cirrus pouch open in genital pore, which is small, oval, lies at middle of the segment and measures 0.047 (0.042 - 0.053) × 0.026 (0.021- 0.036) mm in length and width. Vagina start from genital atrium, posterior to cirrus pouch, measures

0.243 (0.233-0.254) × 0.026(0.021-0.031) mm in length and width. Seminal receptaculum short, thin, tubular, measures 0.018 (0.017-0.019) × 0.031 (0.021-0.042) mm in length and width. Ootype compact, measures 0.084 in diameter. Ovary bilobed, dumbbell shaped, each lobe measures 0.927 (0.901-0.954) × 0.127 (0.084-0.169) mm in length and width. The follicular vitellaria arranged intworows and measures 0.063 (0.042-0.084) × 0.026 (0.021-0.031) mm in length and breadth. Gravid proglottids are two times broader than long and measures 0.795 (0.636-0.954) × 2.014 (1.908-2.12) mm in engthand width. Eggs cylindrical, operculated, measures 0.039(0.033-0.044) × 0.032(0.025-0.039) mm in length and width. Uterine pore rounded in shape, lies to words anteriorregion of segments.

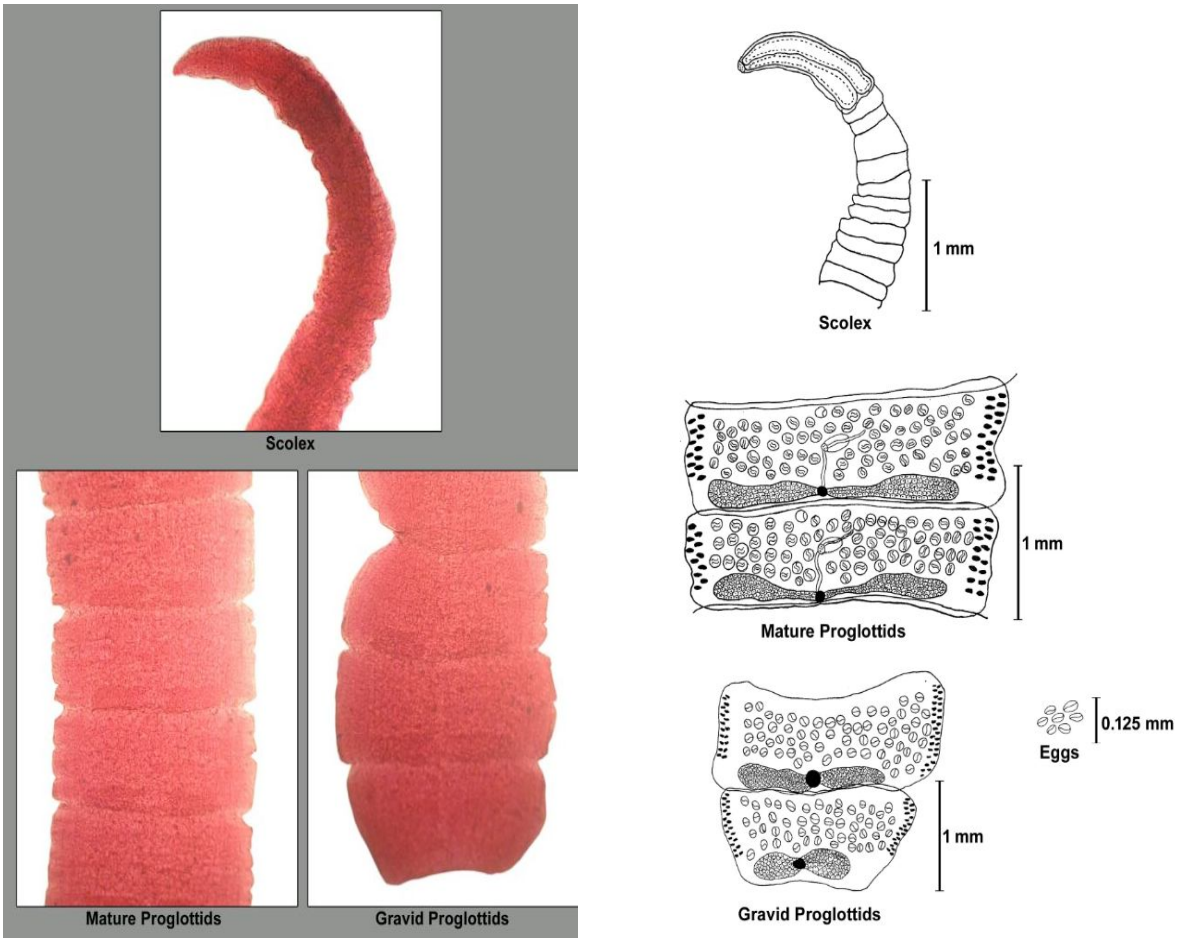

Fig. 1: Microphotograph and Camera Lucida diagram of *Ptychobothrium punctatm Sp.Nov.*

DISCUSSION

Loennberg, 1889 established the genus *Ptychobothrium* with its type species *Ptychobothrium belones* (Dujardin, 1845*).* Subsequently, Sandeep K. Malhotra, (1983) added *Ptychobothrium nayarensis* from hill stream fishes *Barilius bola (*Ham*.)* and *Schizothorax richardsonii (*Gray*)* in Garhwal Himalayas, India. Wongswad, 1998 described *Ptychobothrium mystacoleucysi, Ptychobothrium rojanapaibuli* collected from *Mystacoleucus marginatus* at Maesa Stream, Chiang Mai. Wongswad *et. al.,* 1998 reported *Ptychobothrium discusae* collected from *Mystacoleucus marginatus* at Maesa Stream, Chiang Mai. Recently *Ptychobothrium vitellaris (*Deshmukh *et.al*., 2015*)* described from *Mastacembelus armatus* and *Ptychobothrium elongata (*Deshmukh *et.al*., 2016*)* reported from *Mystus seenghala.*

On comparison, the present worm *P. punctatum* Sp. Nov. stands close to known species of the genus *Ptychobothrium* Loennberg, (1889) in general silent features, but varied from *Ptychobothrium belones* (Dujardin,1845*)* Loennberg, (1889) in absence of an apical disc.

Present form differs from *P.nayarensis* Malhotra, 1983 in having heart shaped Scolex, bothria well developed, distinctly 3-4 lobed, testes 52-78 (66), ovary 'V' shaped, uterus 'S' shaped, excretory vessels 6 pairs in numbers and collected from *Barilius bola (*Ham*.)* and *Schizothorax richardsonii* (Gray) in river East and West Nayar, District Pauri, Garhwal, U.P., India.

Present tapeworm differs from *P. mystacoleucysi,* Wongswad, (1998) in having scolex triangular, testes 25-30 in number, pre-ovarian, cirrus pouch placed in the center, vagina long tube, ovary bilobed with 10-12 acini, uterus reticulate, filled with many eggs, uterine pore rounded, placed near to the anterior margin of the segment, granular vitellaria and collected from *Mystacoleucus marginatus* at Maesa Stream, Chiang Mai.

It differs from *P. rojanapaibuli* Wongswad,(1998) in possessing heart shaped scolex, bothridia compressed, immature segments square, testes 65-70 in number, in two fields, big and rounded, post-ovarian, cirrus pouch near to the anterior margin of the segment, big, cirrus curve, uterine pore not touching to the anterior margin of the segment, ovary 'U' shaped, uterus reticulate, vitellaria granular in 3-4 strips and collected from *Mystacoleucus marginatus* at Maesa Stream, Chiang Mai.

Present form *P. punctatum* Sp. Nov. differs from *Ptychobothrium discusae* Wongswad *et.al.,(*1998) in having scolex heart shaped, bothridia oval with having disc, number of segments 158-170 in number, testes 190-220 in number, post-ovarian, vas-differens coiled, gravid segments broader than long, ovary finger-like in the last gravid segment, Uterus square and conical, filled with two types of eggs, uterine pore rounded, lies near to the anterior margin of the segment and recovered from *Mystacoleucus marginatus* at Maesa Stream, Chiang Mai.

It differs from *P. vitellaris* Deshmukh *et al.,* 2015 in having Scolex tubular, Bothia distinctly two lobed, testes 40-45 in numbers and collected from *Mastacembelus armatus* (Lacepede,1800) at Mahur, Dist. Nanded.

P. punctatum Sp.Nov. differs from *p. elongata* Deshmukh *et al.,*2016 in having sessile Scolex, paired bothria, apical disk at anterior end of scolex, Neck short, Mature Proglottids broader than long, Cirrus pouch pyriform, Testes 50-55 in numbers, Ovary bilobed and recovered from intestine of freshwater fish, *Mystus seenghala* (Sykes 1839) at Dharmabad, Dist. Nanded.

Therefore, Considering all significant differentiating features of newer worms, authors are inclined to raise a new species *Ptychobothrium punctatum* Sp. Nov. The present species is named after host name *Channa punctata.*

Taxonomic Summary

Genus	: *Ptychobothrium* Loennberg, 1889
Species	**:** Ptychobothrium *punctatum* Sp.Nov.
Host	: *Channa punctata*
Habitat	**:** Intestine
Locality	**:** Ausa, District Latur M.S., India.
Period of collection	: February, 2012 to January, 2014.
Accession number	: PGDZ/YMN/1-04/ February, 2012 to January, 2014
Deposition	: Department of Zoology (UG & PG), Yeshwant Mahavidyalaya, Nanded.
Etymology	: The present species is named after host name *Channa punctata*

Key to the species of the genus *Ptychobothrium* Loennberg, 1889

Presence of Apical Disc	- 1
Absence of Apical Disc	- *P.belones* (Dujardin,1845*)* Loennberg, (1889)
1. Scolex Heart shaped	- 2
Scolex Triangular	- *P. mystacoleucysi* Wongswad, (1998)
Scolex Tubular	- 3
Scolex elongated	- *P. punctatum* Sp.Nov.
2. Testes below 100 in numbers	- 4

	Testes above 100 in numbers	- *P. discusae* Wongswad *et.al.,* (1998)
3.	Absence of Neck	**-** *P. vitellaris* Deshmukh *et.al*.,2015
	Presence of Neck	- *P. elongata* Deshmukh *et.al*.,2015
4.	Ovary 'V' shaped	- *P.nayarensis* Sandeep K. Malhotra, (1983)
	Ovary 'U' shaped	- *P. rojanapaibuli* Wongswad, (1998)

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