

# Taxonomic Study of a New Cestode *Circumoncobothrium Ali* From *Mastacembelus armatus*

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## Abstract:

This communication deals with a new *Pseudophyllidaen* tapeworm belonging to the genus *circumoncobothrium* Shinde, viz. *circumoncobothrium ali* n. sp. has been described from the intestine of *Mastacembelus armatus* at Latur district (M. S.) India and compared with the existing species. Scolex triangular, having bothria, rostellar hooks single circle, straight, neck

short, mature segment broader than long; testes 80-85 (82) in number, ovary bilobed, medium genital pore, vitelline follicles oval and small, uterus saccular and oval.

## Keywords:

Cestode, *circumoncobothrium Ali*, *Mastacembelus armatus*.

## Introduction

The genus *circumoncobothrium* was erected by Shinde (1968) from the intestine of a freshwater fish, *ophiocephalus leucopunctatus*, as a type species *C. ophiocephali* at Aurangabad. Chincholikar and Shinde (1976) described two new species of this genus, i.e., *C. Shindei* from freshwater, *Mastacembelus armatus*, and *C. Bagarinsi* from freshwater fish, *Bagarius* sp. collected at Ambajogai and Latur. Shinde (1976) reported a new species at Paithan as *C. khami* from a freshwater fish, *ophiocephalus lusitriatus*. Later on, Jadhav and Shinde (1976) added two new species of this genus viz. *C. aurangabadensis*, and *C. raoi* from a freshwater fish, *Mastacembelus armatus* and *C. gachuai* Jadhav and Shinde (in press) from a fresh *ophiocephalus gachua*. Wongsawad and Jadhav added *C. baimaii* from *Mastacembelus armatus*. Shinde and Kalse added two new species of genus viz. *C. armatusae* from *Mastacembelus armatus* and *C. punctatusi* from *ophiocephalus punctatus*. Shinde described *C. mastacembelusae* as a new species from *Mastacembelus armatus*. *C. armatusae* (minor) reported from *Mastacembelus armatus* to this genus. Tat and Jadhav, 2004 reported *C. Manjari* from *ophiocephalus gachuva*. Supugade added *C. vitellariensis* from *Mastacembelus armatus*. Kharade added *C. cirrhinae* from *Cirrhina*. Shelke, added one new species *C. Mehdi* from *Mastacembelus armatus*. Pardeshi reported *C. ambajogaiensis* from *Mastacembelus armatus*. Jawalikar added new species, *C. Jogeshwari*, from *Mastacembelus armatus*. Borde added *C. purnae* from the host *Mastacembelus armatus*. Later on, added one more new species, *C. naidui*, from *Mastacembelus armatus*. Menkudale and Jawale added *C. thapari* from *ophiocephalus stratus*. *C. Jadhavae* added from *M. armatus*.

## Material and method

Fifteen specimens of the cestode parasite were collected from the intestine of *Mastacembelus armatus* at Latur, Dist. Latur. All were flattened, preserved in 4% formalin. Stained with Harris-hematoxylin, then passed through various alcoholic grades, clear in xylol, and mounted in DPX. Slides were prepared for anatomical studies, and drawings were made with the help of the camera lucida. All measurements are in millimeters.

## Description:

Fifteen specimens of the cestode parasites were collected from the intestine of freshwater fish, *Mastacembelus armatus*, from Latur, Dist. Latur, (M. S) India. The specimens of cestode parasites were stained with Harris-hematoxylin for taxonomic study.

The scolex is large, tapering anteriorly and broader towards the posterior region, triangular in shape, slightly longer than broad, with two bothria, distinctly marked off from the strobila and measures 1-1.92 x 1.339 in length and 0.476 to 1.249 in breadth. The scolex has two bothria, which are elongated, oval in shape, medium in size, reach up to the posterior end of the scolex, and measure 0.874 to 1.022 in length and 0.341 to 0.454 in breadth. The scolex bears an armed rostellum, small in size, oval in shape, and measures 0.135 to 0.169 in length and 0.225 to 0.269 in breadth. The rostellar hooks are 55 – 60 in number, arranged in a single circle. All hooks are straight, stout, a few slightly curved, small, and large. The smaller hooks measure 0.043 in length and 0.099 in breadth, whereas larger hooks measure 0.078 in length and 0.005 in breadth.



The neck is short, wide, and broader than long and measures 0.169 to 0.135 in lengths and 0.737 to 0.851 in breadth.

The mature segments are broader than long, almost 7-8 times broader than long, with convex irregular margins and measures 0.301 to 0.243 in length and 2.263 in breadth. The testes are 80 to 85 (82) in number, medium in size, oval in shape, distributed in two groups, lateral to the ovary bounded laterally by longitudinal excretory canals, unevenly distributed, in the central medulla, and measure 0.039 to 0.049 in length and 0.024 in breadth. The cirrus pouch is of medium size, oval in shape, in the center of the segment, anteroposteriorly and obliquely placed, in the anterior half of the segments, pre-ovarian and measures 0.116 in length and 0.024 to 0.043 in breadth. The cirrus is thin, slightly coiled, and measures 0.097 in length and 0.015 in breadth. The vas deferens is a thin, slightly curved, elongated tube and measures 0.097 in length and 0.010 in breadth.

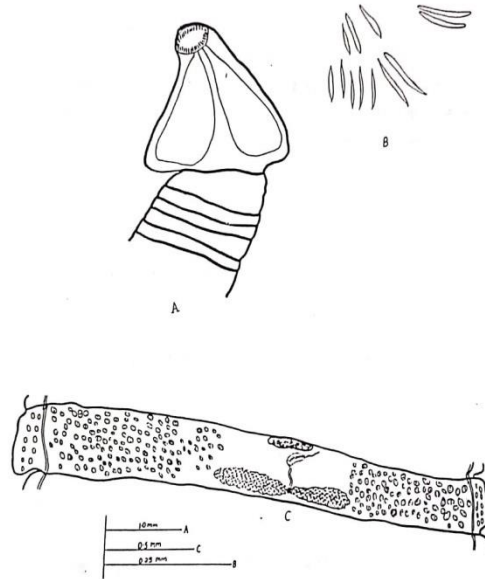
The ovary is distinctly bilobed, posterior to the middle of the segment, or near the segment's posterior margin, lobes unequal in size and connected by a thin, short isthmus. Each lobe is transversely elongated, with numerous short, blunt, round acini and measures 0.776 in length and 0.097 to 0.087 in breadth. The vagina is a thin tube, arises from the genital pore, takes a slight curve, runs posteriorly, reaches and opens into the ootype, and measures 0.121 in length and 0.019 in breadth. The ootype is small in size, round in shape, post-ovarian, and measures that are 0.029 in length and 0.019 in breadth.

The genital pores are medium in size, oval in shape, just anterior to the middle of the segments, obliquely placed, and measure 0.019 in length and 0.014 in breadth.

The vitelline follicles are small in size, oval in shape, distributed from the anterior to the posterior margin of the segments, in two rows, on each lateral side of the segments, and measures 0.033 to 0.039 in length and 0.019 to 0.024 in breadth.

The uterus is saccular, medium in size, oval in shape, near the segment's anterior margin, contains numerous eggs, and measures 0.267 in length and 0.029 to 0.039 in breadth. The eggs are oval in shape, small in size, and measured by 0.024 in length and at least 0.009 to 0.015 in breadth.

The uterine pores are large in size, oval in shape, obliquely placed, double walled, and measured by 0.0334 in length and 0.019 to 0.024 in breadth.



A – Scolex, B – Rostellar hooks, C-- Mature segment

#### Result and Discussion:

The genus *Circumoncobothrium* is erected by Shinde(1968) as a type species *C. ophiocephali* from *ophiocephalus leucopunctatus* at Aurangabad. Later on, the following species are added to this genus.

The worm under discussion is having scolex large, tapering anteriorly, broader posteriorly, triangular in shape, length 1.192-1.339, breadth 0.476 to 1.249, hook large and small, straight stout; 55 to 60, curved, in a single circle; neck short, wide, mature segments broader than long, testes 80 – 85(82) in number, oval, medium, in two groups; ovary bilobed, lobes unequal, in middle of the segment, width short isthmus; vitellaria follicular, oval, from anterior to posterior margin of the segment and in 2 rows on each side.

The present cestode differs from *C. ophiocephali* Shinde, 1968 in having scolex distinct, length 0.81, breadth 0.51, and rod-shaped rostellar hooks 80 in number, 0.050 to 0.055 in length, and 0.024 to 0.048 in breadth. Testes 70 to 80, in two lateral fields, round; ovary a single, conical mass, irregular shaped band, thin in the middle, expanded at lateral ends, with 2-3 well-developed acini, near posterior broader of the segments and vitellaria, in 14 to 15 rows on each side.

The present type-worm differs from *C. aurangabadensis* Jadhav and Shinde, 1976 in having scolex broader in the middle, narrow at both ends, rostellar hooks 42, rod-shaped. Testes 135-145, round, scattered throughout the segment; ovarian lobes with 3-4 acini, near

the posterior margin of the segments, and vitellaria granular and near the segments' lateral margin.

The present form differs from *C. raoi* Shinde and Jadhav, 1976 in having scolex broader in the middle and narrow at both ends, hooks 46, rod-shaped; testes 210-215, rounded, in two fields; ovary at almost near posterior margin of segments, vitellaria granular and at lateral sides of the segments.

The present tapeworm differs from *C. khami* Shinde, 1976 in having scolex cylindrical, with even width; apical disc separated by a notch, hooks 48, lancet-shaped, absence of neck, mature segments squarish, testes 190-200 (194), round, evenly distributed; ovarian lobes compact, near the posterior margin of the segments and vitellaria follicular, round, in a singular layer and near lateral margins of the segments.

The present cestode differs from *C. yogeshwari*, Scolex large, hooks 53 in number, neck short, testes 95 - 98 in numbers, ovary indistinctly bilobed.

The present tapeworms differ from *C. purnae* Borde, from *M. armatus* having hooks 52 numbers, mature segment squarish, testes 230 - 235 in numbers, vitellaria follicular in 3-5 rows.

The present form differs from *C. Jadhavae* scolex is dome-shaped, rostellar hooks are 35 - 45 in number, the neck is present, testes are oval to rounded, 95 - 105 numbers. Vitellaria is follicular in two rows.

The present worm differs from *C. thapari* having scolex is large, hooks 52 in numbers, mature proglottids medium in size, testes 95 in numbers, medium size, oval in shape, vitellaria are follicular, 2-3 rows, ovary medium, lobed. The vas deferens is thin and short.

The present tapeworm differs from the species *C. mehdi* Shelke scolex large, triangular, rostellar hooks 56, neck, short, mature proglottids medium, testes 284, medium, oval, squarish, vas deferens short, thin, ovary large, distinctly bilobed, Vitellaria follicular.

The present tapeworm differ from the species *C. ambajogaiensis* is scolex large, triangular, rostellar hooks 48 number, the neck is short, mature segments two and half times broader than long, testes (150-160) in number, oval, ovary bilobed, dumbbell-shaped, vitellaria are follicular, in two rows.

The present tapeworm differs from the species *C. clarias* is a scolex medium, rostellar hooks 48 in number. Neck rectangular, mature segment squarish,

The present cestode parasite differs from *C. Shindei* Shinde and Chincholikar, 1976 in having scolex 1.56 in length, breadth 1.21, hooks 49, rod-shaped; testes 260 - 275(273), round, lobes compact, in the center of segments, and vitellaria granular.

The present form differs from *C. bagariusi* Chincholikar and Shinde, 1976 in having 1.31 length, 1.65 breadth; hooks 55, rod-shaped, absence of neck; testes 275-285 (276), round; ovarian lobes with 5-6 globular shape and in 4-5 rows on each side.

The present form differs from *C. gachuai* Jadhav and Shinde (in press). I have scolex pear-shaped, hooks 46, testes 375 to 400, round; ovary with 5-6 acini, post- equatorial, vitellaria follicular, particular, and 1 2 rows on each side.

testes 249 - 259 in numbers, dumb ovary bell-shaped, follicular vitellaria.

The present worm differs from *C. gangapurensis* scolex with the truncated disc with 42 rostellar hooks, testes medium to large, oval, 165 - 170 (167) in number, and ovary bilobed but unequal lobes, vitellaria follicular, follicles in 3-5 rows.

### Conclusion

The above-noted characters are so distinct that there is no other way, to the author, than to erect a new species, to accommodate these worms and hence the name *Circumoncobothrium* ali n.sp. is proposed, after late Dr. Syed Mehdi Ali, Ex-professor and Head, Department of Zoology, Marathwada University, Aurangabad. Who has contributed so much to our knowledge of helminthology?

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