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The first record of genus *Pseudophyllodistomum* Cribb, 1987 from Siluriform catfish *Mystus cavasius* (Hamilton, 1822) of River Indus Sindh, Pakistan

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Abstract

During current studies on helminth parasites of Siluriform catfish *Mystus cavasius* of river Indus at Jamshoro, Sindh, Pakistan. Total of 67 host fishes were collected from different habitats of study area. During examination of visceral organs, the 7 trematodes belong to genus *Pseudophyllodistomum*, Cribb, 1987 were collected from gallbladder of catfish *Mystus cavasius*. Trematodes collected from intestine have close resemblance with species *Pseudophyllodistomum johnstoni* Cribb, 1987 in having body shape, size and other diagnostic features and identified as such. Previously *Pseudophyllodistomum johnstoni* Cribb, 1987 collected from urinary bladder of freshwater fishes of Australia, and Japan. Whereas present species recorded from Siluriform catfish *Mystus cavasius* of river Indus, Jamshoro, Sindh, Pakistan. This is first record of genus *Pseudophyllodistomum*, Cribb, 1987 from Pakistan.

Keywords: Catfish, *Mystus cavasius*, Trematodes, River Indus

1. Introduction

Fishes are beneficial for human being in various ways, belongs to most important group of vertebrates, used even at prehistoric ages as long life and intelligence^[1]. Fish are main source of food and provides high quality protein and minerals to humans. Human beings for healthy functioning of the body needs vitamins A, D, E, K and vital fatty acids, which can be provided by fishes^[2]. The significance of fish parasites depends on the commercial significance of fish they affect. *Mystus cavasius* Hamilton, 1822 catfish species belong to family Bagridae and order Siluriformes, commonly known as Gangetic *Mystus* which has been reported to be distributed in India, Bangladesh, Pakistan, Nepal, Sri Lanka, Thailand and Myanmar^[3-8]. It has high market request as food fish with high market price, due to good protein content in its flesh^[5, 7, 10, 11, 9, 12].

The reports on trematodes of catfishes in Pakistan are limited to those of Ahmad *et al.*^[13], Ayaz *et al.*^[14], Khanum *et al.*^[15], Nazir *et al.*^[16], Shakir and Khan^[17] and Soofi *et al.*^[18-19]. Whereas, no attempt has been made to undertake research on the helminth parasites of catfishes especially catfish *Mystus cavasius* in Pakistan.

2. Materials and method

During current studies on helminth parasites of Siluriform catfishes collected from river Indus Jamshoro district, Sindh, Pakistan, total of 67 host fishes *Mystus Cavasius* were collected from different habitats of study area and brought to the Department of Zoology, University of Sindh, Jamshoro. Fishes were dissected, visceral contents separated in Petri dishes examined under dissecting microscope. During examination of visceral organs, 7 trematode belongs to the genus *Pseudophyllodistomum* Cribb, 1987 were collected from gallbladder of the host fish. Methods described by Garcia and Ash^[20] and Schmidt^[21] were followed for collection and processes of trematodes for detailed study. Diagrams were made with the aid of Camera Lucida, photographs taken with Olympus DP12 camera and identified with help of keys and literature. Specimens deposited in the Department of Zoology University of Sindh, Jamshoro, Pakistan.

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3. Results

Pseudophyllodistomum johnstoni Cribb, 1987

Family: Gorgoderidae Loss, 1899

Genus: *Pseudophyllodistomum*, Cribb, 1987

Type host: *Mystus cavasius*

Site of infection: Gallbladder

Type locality: River Indus at Jamshoro, Sindh, Pakistan

Number of specimen: 7 from 5 hosts

Description: (Fig. 1 and 2)

Body of worm thick, flattened, measures 4.44-5.03 X 1.2-1.66, spatulate at posterior end, cuticle with undulations on body with small striations or ring shape structures on tegument. Oral sucker large, rounded to cup shape, well developed, terminal measures 0.48-0.67 X 0.5-0.9. Ventral sucker small, rounded and at sub- median measures 0.32-0.35 X 0.32-0.33. Prepharynx absent and pharynx square shape measures 0.1 X 0.16-0.17. Esophagus small and broad measures 0.12-0.17 X 0.24-0.28. Caeca extended from oral sucker to the posterior extremity of hind body. Seminal vesicle saccular just anterior to ventral sucker measures 0.22-0.23 X 0.22-0.26. Genital pore posterior to oral sucker at fore-body. Ejaculatory duct long, genital atrium rounded. Testes two intra-caecal, irregular shape, post-ovarian, posterior testis rounded posteriorly and groove at anteriorly measures 0.22-0.25 X 0.18-0.19, anterior testis large oval shape measures 0.28-0.31 X 0.16-0.21, both testes separated by vitellaria. Ovary rounded anterolateral to posterior testis measures 0.22-0.25 X 0.2-0.3. Vitellarium two in the form of compact masses, one at right side to the ovary broad anteriorly and pointed posteriorly and other in between testes large, bean shape with groove at dorsal side. Uterus intra-caecal somehow overlapped by cecum at hind body, loops extended from ventral sucker to posterior extremity. Eggs oval to round in shape measures 0.051-0.076 X 0.018-0.057. Excretory pore terminal.

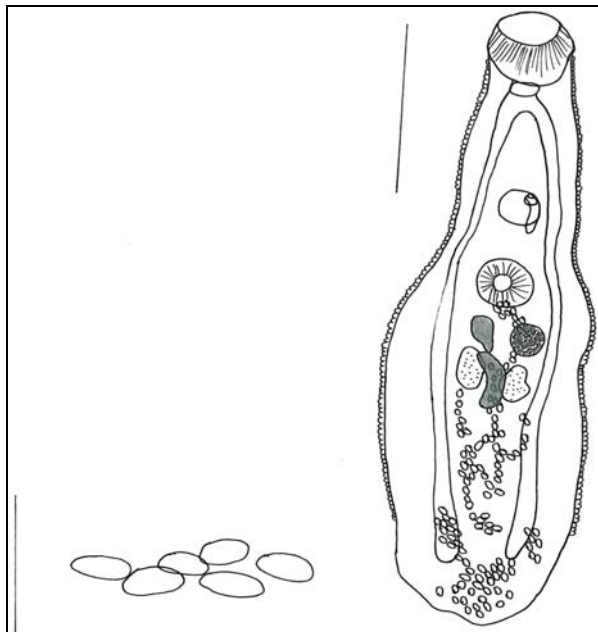


Fig 1: *Pseudophyllodistomum johnstoni* diagram of entire specimen and eggs. Scale bar 1 and 0.1.

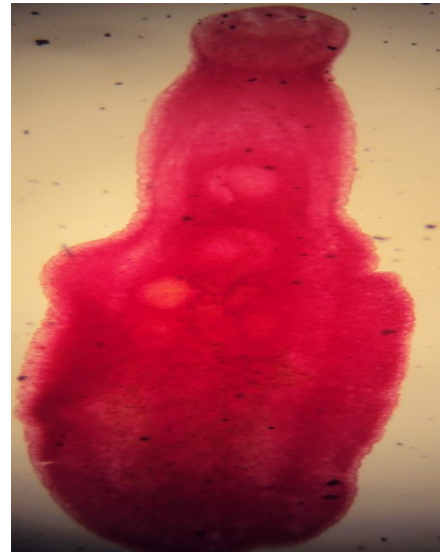


Fig 2: *Pseudophyllodistomum johnstoni* photograph of entire specimen

4. Discussion

Genus *Pseudophyllodistomum* Cribb, 1987 contain flattened trematodes, parasites of urinary bladder and intestine of freshwater fishes [22]. Genus *Pseudophyllodistomum* Cribb, 1987 separated from genus *Phyllodistomum* on the basis of type species in having a simple uterus restricted to the intra-caecal and post-caecal fields of the hind-body, a saccular excretory vesicle [22-23]. Type species of genus *Pseudophyllodistomum* is *P. johnstoni* Cribb and Bray [22-23]. Other species of genus recorded from world are *P. murrayense* Cribb and Shimazu [23], *P. mingense* Tang and Shimazu [23], *P. macrobrachicola* Cribb and Shimazu [23]. Present species *Pseudophyllodistomum johnstoni* compare with following species:

P. johnstoni Cribb [23] collected from urinary bladder of freshwater fishes of Australia similar with species but some characters differs from present in having pharynx absent; testes diagonal; seminal vesicle dorsal to genital atrium; ovary distinctly lobed; laurels canal present; uterus inter-caecal, descending and ascending loops; eggs oval in shape; excretory vesicle I-shaped.

P. macrobrachicola yamaguti, Cribb and Shimazu [22-23] collected from urinary bladder of *Odontobutis obscura*, *Cottus reinii*, *Silurus asotus*, of Japan differs from present species in having ventral sucker large and wider; intestinal bifurcation at about junction of fore body, diverticular; testes irregular and diagonal; seminal vesicle pyriform; ovary globular; uterus much folded at hind body; seminal receptacle present; eggs elongate; excretory pore postero-terminal.

5. Conclusion

Specimens of genus *Pseudophyllodistomum* have close resemblance with *Pseudophyllodistomum johnstoni* Cribb, 1987 and identified as such. Previously this species is reported from Australia and Japan. Whereas present species recorded from catfish *Mystus cavasius* of river Indus, Jamshoro, Sindh, Pakistan. This is first record of genus *Pseudophyllodistomum*, Cribb, 1987 from Pakistan.

6. References

- Hamilton F. Importance of fish. In: Fish Encyclopaedia Benton WB, London. 1971.
- Fellows P, Hampton. Fish and fish products. In: small-scale food processing - A guide for appropriate equipment Intermediate Technology Publications, FAO, Rome: ISBN 1-85339. 1992, 108-5.
- Frose R, Daniel D. *Mystus cavasius*. In: Fish Base. December version, 2011.
- Day F. The fishes of India; being a natural history of the fishes known to inhabit the seas and fresh waters of India, Burma, and Ceylon. 1st ed. London. 1878, 778.
- Talwar PK, Jhingran AG. Inland fishes of India and adjacent countries. and 1st ed. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi, Bombay and Calcutta. 1991; 1(2):1063.
- Tripathi SD. Present status of breeding and culture of catfishes in south Asia. Legendre M, Proteau JP, editors. The biology and culture of catfishes. Aquatic Living Resources, 1996, 219-228.
- Rahman MR, Rahman MA, Khan MN, Hussain MG. Observation on the embryonic and larval development of silurid catfish, gulsha (*Mystus cavasius* Ham.). Pakistan Journal of Biological Sciences. 2004; 7:1070-1075.
- Chakrabarty P, Ng HH. The identity of catfishes identified as *Mystus cavasius* (Hamilton, 1822) (Teleostei: Bagridae), with a description of a new species from Myanmar. Zootaxa. 2005; 1093:1-24.
- Siddiqui MN, Biswas PK, Ray S, Hasan MJ, Reza MF. Effect of freezing time on the nutritional value of *Mystus gulio* (Nuna Tengra), *Mystus tengara* (Bazari Tengra) and *Mystus cavasius* (Gulsha Tengra). Journal of Science Foundation. 2010; (1&2):119-122.
- Hossen MS, Reza AHMM, Rakhi SF, Takahashi K, Hossain Z. Effect of phospholipids in brood stock diets on serum calcium level, gamete quality and spawning of threatened Bagrid Catfish Gulsha, *Mystus cavasius*. International Journal of Research in Fisheries and Aquaculture. 2014; 4(2):70-76.
- Roy PK, Hossain MA. The fecundity and sex ratio of *Mystus cavasius* (Hamilton) (Cypriniformes: Bagridae). Journal of Life and Earth Science. 2006; 1(2):65-66.
- Ashashree HM, Venkateshwarlu M, Sayeswara HA. Seasonal changes of protein in the tissues of male catfish *Mystus cavasius* (Ham) in Bhadra reservoir, Karnataka, India. International Journal of Applied Biology and Pharmaceutical Technology. 2013; 4(4):264-267.
- Ahmad N, Ayaz S, Shams S, Karimullah. Prevalence and Morphology of Helminth Parasites of Fish from River Swat, Khyber Pakhtunkhwa. Pakistan Journal of Agricultural Research. 2014; 27(2):142-148.
- Ayaz S, Khan MA, Rehman IU, Anwar M, Saeed S, Zarin S. Prevalence of Endoparasites in Fresh Water Fishes in River Punjkorha, Khyber Pukhtunkhwa Pakistan. International Journal of Biology, Pharmacy and Allied Sciences. 2013; 2(1):111-115.
- Khanum H, Ferdows J, Farhana R. Community of Helminth Parasites in *Rita rita* (Hamilton Buchanun). Journal of Biosciences. 2008; 16:133-135.
- Nazir T. Studies on the helminth parasites of a freshwater fish, *Channa punctatus*. MSc, Department of Zoology, Govt. College, Lahore, 1996.
- Shakir HA, Khan AM. The Prevalence of Cestode Infection in a Freshwater Catfish, *Sperata sarwari*, Department of Zoology Punjab University Lahore, Pakistan. Punjab University Journal of Zoology. 2006; 21:41-47.
- Soofi H, Birmani NA, Dharejo AM, Abbasi AR. First record of genus *Thaparotrema* Gupta, 1955 (Trematoda: Ophisthorchiidae) in Pakistan. Journal of Entomology and Zoology Studies. 2015; 3(6):232-234.
- Soofi H, Birmani NA, Dharejo AM. *Dendrorchis ritata* n.sp. (Trematoda : Gorgoderidae) from catfish *Rita Rita* (Siluriformes : Bagridae) of Sindh, Pakistan. International Journal of Fauna and Biology Studies. 2016; 3(3):17-19.
- Garcia LA, Ash LR. Diagnostic Parasitology Clinical laboratory manual. The CV Mosby Company. 11830 Westline Industrial Drive, St. Louis, Missouri 63141, 1979.
- Schmidt GD. Essentials of Parasitology 4th Edition. W.M.C. Brown Publishers 2460 Keper Boulevard, Dubuque, IA 52001. 1988, 294.
- Bray RA, Gibson DI, Jones A. Keys to the Trematoda The Natural History Museum, London, UK. 2008; 3:191-203.
- Shimazu T. Digeneans Parasitic in Freshwater Fishes (Osteichthyes) of Japan. II. Gorgoderidae and Orientocreadiidae. Bulletin of the National Museum of Nature and Science. 2014; 40(2):53-78.