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DESCRIPTION OF SPECIES *SENGA MOHKHEDENSIS* (CESTODA: PTYCHOBOTHRIDAE) FROM FRESH WATER FISH *MASTACEMBELUS ARMATUS* AT MOHKHED DAM,TQ.DHARUR,DIST.BEED,M.S.,INDIA.

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Abstract:
The genus Senga was erected by Dollfus in1934, with its type species Senga besnardi from *Beeta splendens* at Vicennes, France. The present communication deals with the description of new species Senga mohkhedensis from fresh water fish *Mastacembelus armatus* from Mohkhed dam.The present tapeworm differs from all the known species of Senga in having scolex large, triangular with rostellar hooks and paired bothridia. The neck is very much short.The mature proglottids are broader than long. The testes medium and oval, cirrus pouch small, placed at the middle of the segment, cirrus thin, slightly curved, vasdeferens thin, short,vagina short thin tube. Genital pore small, rounded and placed at the center of the segment. The ovary small, bilobed, transversely elongated and placed in the posterior region of the segment, ootype small, oval and centrally located ,uterus preovarian, sac like.
Keywords: *Senga mohkhedensis*, Mohkhed dam, *Mastacembelus armatus*.

Introduction

The genus *Senga* was erected by Dollfus in1934, with its type species *Senga besnardi* from *Beeta splendens* at Vicennes, France.*S.ophiocephalina* Tseng,1933 as *Anchistrocephalus ophiocephalina* from *Ophiocephalus argus* at Taimen China and identified with a form previously recorded by Southwell,1933 as *Anchitrocephalus polyptera* Monticelli (1924) as *Bothriocephalus pcynomera* from *Ophiocephalus marulius* at Allahabad,India.*S.lucknowensis* Johri,(1956) from *Mastacembelus armatus* in India.Frenando and Furtado,1963,reported *S.malayana* from *Channa striata*,*S.parva* and *S.filiformis* from *Channa micropeltes* at Malacca.Ramadevi and Hanumantrao,1966 reported the plerocercoid of *Senga* sp.from *Panchax panchax*.Tadros,1968 synomised the genus *Senga* with the genus *Polyonchobothrium* and proposed new combinations for the species.Furtado and Chauhan,1971 reported *S.pahangensis* from *Channa micropeltes* at Tesak Bera.Shinde,1972 redescribed S.besnardi from *Ophiocephalus gachua* in India.Ramadevi,1976 described the life cycle of *S.visakhapatanamensis* from *Ophiocephalus punctatus* in lake at kondakaria,A.P., India. But they do not agree with the Tadros statement. Wardle, McLeod and Radinovsky, 1974 put Senga as a distinct genus in the family Ptychobothridae,Deshmukh,1980 reported *S.Khami* from *Ophiocephalus marulius*, a fresh water fish from kham river at aurangabd,India. Jadhav and Shinde,1980 reported *S.godavarii* from *M.armatus* at Nanded,M.S.,India.One more species *S.aurangabadensis* was added by Jadhav and shinde,1980 from *M.armatus* at Aurangabad M.S.India. A new addition made by kadam et al., 1981 as *S.paithanensis* from host *M.armatus*. Majid et al.,1984 added *S.raoi* and *S.jagannathae* from *Channa punctatus*. Two more new species erected by Jadhav et al.,1991 as *S.maharashtrii* and *S.gachuae* from the intestine of *M.armatus*. Monzer Hasnain,1992 added *S.chauhani* from *Channa punctatus*. Tat and Jadhav,1997 added *S.mohekarae* from the intestine of the *M.armatus*, at Parli v., Dist.Beed, M.S., India. Patil and Jadhav added *S.tappi* from *M.armatus* in 2003. Jadhav 2005 made the review article of the genus *Senga* from the fresh water fishes in Maharashtra State ,India. Pande et al., 2006 added two new species *S.ayodhensis* from *Amphinuous cuchia* and *S.baughi* from *Rita rita*. Kalse 2009 added one species *S.panzarensis* from *M.armatus*.Bhure et al.,2010 added one more species *S.madhavi* from *M.armatus*. Pardeshi,2011 added one new species *S.rupchandensis* from *Channa striatus*. Fartade added two species *S.nandedensis* in 2014 and *S.jadhavii* in 2015 from *M.armatus*.

Material and methods:

Seven specimens of the Cestode parasites were collected from the intestine of fresh water fish *Mastacembelus armatus*. All the parasites were flattened, preserved in 4 % formalin and stained with Harris haematoxylin ,whole mount slides were prepared for anatomical studies. All measurements in millimeter.

Results

Description

The scolex is large ,roughly triangular ,containing rostellar hooks and paired bothria and measures 2.376-2.467 in length and 0.258-1.337 in breadth .The bothria are large in size balloon shaped and measures 1.783-2.396 in length and 0.053-0.566 in breadth .The armed rostellum meaeures0.028-1.102 in length and 0.224-0.292 in breadth, having 48 hooks, which are circular arranged and are of two types ,one is large and other is small.The large sized hooks measures 0.038-0.152 in length and 0.003-0.013 in length and 0.044-0.136 in diameter .The mature proglottids are broader than long and measures 0.212-0.262 in length and 1.728-1.852 in breadth .The testes are medium,oval,95-105 in number and measures 0.015-0.031 in diameter .Cirrus pouch is small oval ,middle of the proglottids ,transversely placed and measures 0.074-0.133 in length and 0.015-0.045 in breadth .Cirrus thin ,curved and measures 0.126-0.140 in length and 0.006 in breadth.Vas deferens is thin ,short and measures 0.030-0.034 in length and 0.020 in breadth .The vagina is short ,thin tube and measures 0.020-0.042 in length and 0.004 in breadth.Genital pore is small central ,rounded and measures 0.075-0.095 in diameter .The ovary is small in size ,bilobed ,transversely elongated and measures 0.440-0.676 in length and 0.016-0.076 in breadth .The ootype is small in size ,oval in shape ,centrally located and measures 0.053-0.064 in diameter .Uterus is saccular,preovarian ,filled with the eggs and measures 0.300-0.876 in length and 0.012-0.180 in breadth .The vitellaria follicular,arranged in two rows ,on each lateral sides of the segment.

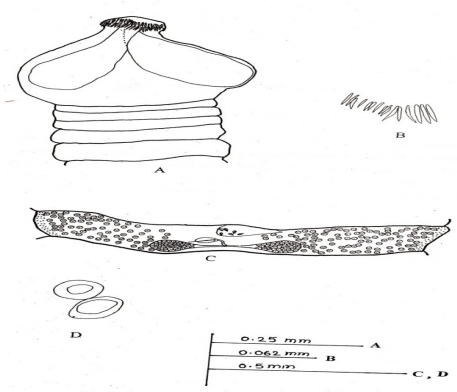

Figure: *Senga mohkhedensis* N.Sp. A) Scolex B) Hooks C) Mature segment D) Eggs

Discussion:

The genus *Senga* was erected by Dollfus,1934,with its type species *S.besnardi* from *Betta splendens*. The present worm comes closer to all known species of the genus *Senga* Dollfus,1934 in general anatomical features but differs from the same due to some characters from the following species.

1.The present tapeworm differs from *S.besnardi* Dollfus,1934 in having scolex triangular,hooks 50 in number,testes 160-175,ovary compact and reported from *Betta splendens* in France.**2.**The present worm differs from *S.ophiocephalina* Teseng,1933 in the number of hooks 47-50,testes 50-55,ovary bilobed but equatorial in position,vitellaria lobate and reported from *Philocephalus argua argua* in China.**3.**The present cestode differs from *S.pcynomera* Woodland,1924 in having scolex elongated,hooks 68 in numbers,mature segments are indistinct,ovary discontinuous into two groups and reported from *Philocephalus marulius* in India.**4.**The present worm differs from *S.lucknowensis* Johri,1956 in having hooks 36-48 in numbers, ovary post equatorial ,vitellaria lobulate and discontinuous in two groups.**5.**The present parasite differs from *S.malayana* Furnando and Furtado,1964 in having scolex circular ,hooks 60 in numbers ,ovary slightly bilobed,post equatorial,vitellaria lobate,discontinuous in two groups and reported from *Channa striata*,in Malacca.**6.**The present worm differs from *S.parva* Furnando and Furtado,1964 in having hooks 38-40 in numbers ,testes 150-180 in numbers and reported from *Channa micropeltis*,in Malacca.**7.**The present tapeworm differs from *S.pahangensis* Furtado et al.,1971 in having triangular scolex ,hooks 52 in numbers ,neck short ,segmentation clear,testes laterally situated in the proglottids ,vitellaria lobulated and reported from *Channa micropeltis*,in Tasek,Bera.**8.**The present cestode differs from *S.visakhapatanamensis* Ramadevi et al.,1973 in having circular scolex ,hooks 46-52 in numbers ,testes 50-55 in number ,vitellaria lobulated and reported from *Ophiocephalus punctatus* ,in India.**9.**The present form differs from *S.khami* Deshmukh and Shinde,1980 having scolex rectangular ,oval ,shallow bothria,hooks55-57 in numbers ,short neck ,testes rounded,155 in numbers and arranged in two fields ,cirrus pouch is elongated ,vitellaria follicular and reported from *Ophiocephalus marulius*,in India.**10.**The present parasite differs from *S.aurangabadensis* Jadhav et al.,1980 in having oval scolex ,hooks 50-52 in numbers ,in two half rows ,overlapping on each other ,mature segment broader than long ,testes 240-260 in numbers and vitellaria follicular.**11.**The present worm differs from *S.godavarii* Shinde et al.,1980 in having hooks 40-42 in numbers ,arranged in

two half rows ,testes rounded,220-230 in numbers ,cirrus pouch is oval ,situated in anterior half of the segment and vitellaria follicular.**12.**The present tapeworm differs from *S.paithanensis* Kadam et al.,1981 which shows prominent ,large ,triangular scolex ,hooks 54 in numbers ,neck present ,testes oval to rounded,130-135 in numbers, arranged in two lateral groups ,vagina posterior to cirrus pouch and vitellaria follicular.**13**.The present cestode differs from *S.raoi* Majid and Shinde,1984 in having hooks 46 in numbers ,testes 65-170 in numbers ,vagina posterior to cirrus pouch and reported from *Channa punctatus* ,in India.**14.**The present parasite differs from *S.Jagannathae* Majid and Shinde,1984 in having hooks 44 in numbers ,testes 240-250 in numbers ,ovary compact ,vagina anterior to cirrus and reported from *Channa punctatus* ,in India.**15**.The present form differs from *S.gachuae* Jadhav et al.,1991 in having hooks 22-25 in numbers ,neck present ,testes 60-70 in numbers ,vitellaria follicular and reported from *Channa gachua* ,in India.**16**.The present worm differs from *S.maharashtrii* Jadhav et al.,1991 which shows muscular scolex ,hooks 45-46 in numbers,large ,arranged in two half crowns ,testes oval 80-90 in numbers and vitellaria follicular.**17.**The present cestode differs from *S.chauhani* Monzer Hasnain,1992 in having scolex oval ,hooks 40-44 in numbers and testes 200-210 in numbers ,vitellaria non lobate and reported from *Channa punctatus* ,in India.**18**.The present tapeworm differs from *S.mohekarae* ,Tat and Jadhav,1997 which shows elongated scolex ,hooks 151 in numbers ,neck short and broad ,testes 300-310 in numbers and vitellaria follicular.**19**.The worm under discussion differs from *S.armatusae* Hiware,1999 in having scolex triangular,hooks 32-40 in numbers ,vagina anterior to cirrus pouch and vitellaria follicular.**20**.The present cestode differs from *S.tappi* et al.,2003 which is having triangular scolex ,hooks 42-44 in numbers ,neck is very short and squarish ,testes 285-295 in numbers ,small ,rounded in two fields ,vagina anterior to cirrus pouch and vitellaria follicular.**21**.The present parasite differs from *S.ayodhensis* Pande et al.,2006 in having conical scolex ,hooks 29 in numbers,testes numerous ,vitellaria follicular and reported from *Amphinuous cuchia*,in India.**22**. The present worm differs from *S.baughi* Pande et al.,2006 in having hooks 28 in numbers ,neck present ,testes 40-50 in numbers ,ovary compact ,vitellaria follicular and reported from *Rita rita* ,in India.**23**.The present parasite differs from *S.panzarensis* et al.,2008,having scolex triangular ,number of hooks 58,neck absent ,testes 40-45,ovary compact ,vitellaria 4-5 lateral side reported from *Mastacembelus armatus* in India.**24**. The present cestode differs from *S.madhavii* Bhure et al.,2010 having scolex triangular ,number of hooks 40-42,testes 200-225 in numbers ,ovary bilobed ,reported from *Mastacembelus armatus* in India.**25**. The worm under discussion differs from *S.rupchandensis* Pardeshi et al.,2011 having scolex tubular ,neck absent ,testes 350-370 in numbers ,ovary bilobed reported from *Channa striatus* in India.**26**. The present tapeworm differs from *S.mastacembelusae* Sp. Nov. having scolex triangular ,hooks 20-22 in numbers ,neck absent ,ovary bilobed ,testes 100-130 in numbers ,vitellaria follicular reported from *Mastacembelus armatus* in India.**27.**The present worm differs from *S.madhukarii* Sp. Nov having number of hooks 45,neck absent ,testes 130 in numbers ,ovary bilobed ,vitellaria follicular reported from *Mastacembelus armatus* in India.**28.**The present cestode differs from *S.nandedensis* in having scolex triangular,hooks 60-62 in numbers ,testes 150-200 and reported from *Mastacembelus armatus* in Godavari basin,India.

The above noted differences are valid enough to accommodate these worm into a new species and hence the name *Senga mohkhedensis* N.Sp. is proposed after the name of locality.

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