BIO-SYSTEMATIC STUDIES ON PROTEOCEPHALUS GRANULARIS SP. NOV.
(CESTODA: PROTEOCEPHALIDAE) OF FRESHWATER FISH MYSTUS SEENGHALA

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ABSTRACT

The present study deals with description of a new species of cestode genus Proteocephalus, collected from intestine of freshwater fish, Mystus seenghala at Kandhar, Dist. Nanded (M.S.) India. Proteocephalus granularis sp.nov. comes closer to all the known species of genus Proteocephalus in general topography of organ but differs due to broad scolex, suckers five in number, large, neck absent, mature Proglottids slightly broader than long, cirrus pouch pyriform, genital pore marginal, testes 55-60 in numbers, ovary bilobed, ootype oval and vitellaria granular.

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KEY WORDS: Bio-Systematic, Cestode, Mystus seenghala, Proteocephalus granularis sp. nov.

Introduction

Genus Proteocephalus with type species P. filicollis in Gasterosteus aculeatus and G. pungitius from Europe was reported. Three species P. exiguis, P. dubius and P. neglectus from white fish, Perches and Trout respectively were added. Worker1 described P. thymalli from Graylings. Two species to this genus P. flaviatlis were added from Microperus dolonieu and P. osburni from small mouth bass2. P. vitellaris was reported from Bagarius yarelli3. Dogiel and Bykhovskii, described P. gobiorum from Gobies. P. parallactius was added from Cristivomer namaycush to this genus9. Cestodologist5 recorded P. primaverus from Salmo clarkia. Another researcher7 added P. sandoni from H. niloticus. P. longicollis from Cottus gobio8 and P. raosahebae from M. armatus9 were reported.

Materials and Methods

During the survey of Piscean Helminths, 16 out of 214 freshwater fish Mystus seenghala10 from Kandhar, Dist. Nanded (M.S.) India were found infected with 28 cestode parasites during February, 2011 to January, 2013. These cestodes were preserved in 4% hot formalin, stained with Harris haematoxylin and Borax carmine, dehydrated through various alcoholic grades, cleared in xylene, mounted in D.P.X. and drawings are made with the aid of Camera Lucida. All measurements were recorded in millimeters unless otherwise stated. Identification was done by standard methods6,10,12,14.

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Results
(Based on Seven Specimens)

Cestodes medium, creamy-whitish, having scolex, neck, immature and mature proglottids. Scolex unarmed, large, triangular, narrow anteriorly and broad posteriorly, measures 0.421 (0.393-0.449) in length and 0.354 (0.225-0.483) in breadth. It bears five muscular suckers, oval to rounded in shape and measures 0.157 (0.146-0.168) in length and 0.140 (0.135-0.146) in breadth. Fifth sucker larger than other suckers and measures 0.163 (0.157-0.168) in length and 0.174 (0.168-0.180) in breadth. Neck absent. Mature proglottids slightly broader than long and measures 3.456 (3.382-3.529) in length and 4.706 (4.588-4.823) in breadth. Testes 55-60 in numbers, oval to rounded, scattered throughout proglottids, pre-ovarian and measures 0.250 (0.235-0.265) in length and 0.206 (0.176-0.235) in breadth. Cirrus pouch median, pyriform and measures 0.765 (0.735-0.794) in length and 0.397 (0.382-0.412) in breadth. Cirrus thin coiled tube, within cirrus pouch and measures 0.559 (0.529-0.588) in length and 0.044 (0.029-0.059) in breadth. Vas deferens thin, long, curved tube and measures 0.912 (0.882-0.941) in length and 0.073 (0.059-0.088) in breadth. Vagina and cirrus pouch opens through common genital pore which is small, oval, marginal and measures 0.279 (0.265-0.294) in length and 0.0117 (0.088-0.147) in breadth. Vagina starts from common genital pore, posterior to cirrus pouch, elongated thin tube, runs transversely, forms seminal receptaculum and measures 2.500 (2.470-2.529) in length and 0.059 (0.029-0.088) in breadth. Seminal receptaculum, runs transversely, reaches and opens to ootype, measures 0.765 (0.735-0.794) in length and 0.073 (0.059-0.088) in breadth. Ootype rounded, medium, measures 0.323 in diameter. Ovary large, distinctly bilobed, transversely placed towards posterior margin of proglottids and measures 1.985 (1.912-2.059) in length and 0.456 (0.323-0.588) in breadth. Uterus tubular, elongated, originates from ootype, reaches medially towards anterior side, filled with eggs and measures 2.382 (2.353-2.412) in length and 0.338 (0.235-0.441) in breadth. Egg oval to rounded and measures 0.206 (0.176-0.235) in length and 0.103 (0.088-0.117) in breadth. Excretory canal long, running across the proglottid longitudinally on both sides of proglottid and measures 3.265 (3.235-3.294) in length and 0.044 (0.029-0.089) in width. Vitellaria granular, arranged in two rows.

Discussion

Genus Proteocephalus was established with type species P. filicollis from Gastrosteus aculeatus. The present form differs in having broader scolex, suckers five, large, neck absent, mature proglottids slightly broader than long, cirrus pouch pyriform, genital pore marginal, testes 55-60, ovary bilobed, ootype oval and vitellaria granular. Present worm comes closer to reported species of the genus Proteocephalus in general topography of organs but differs from P. filicollis in having scolex rounded, testes 75-90 in numbers, vitellaria follicular and collected from Sticklebacks. It differs from P. exigius, in having small scolex; mature proglottids longer than broad, testes 35-55 in numbers, uterus with 4-5 lateral branches on each side, vitellaria follicular and collected from White fish. The new species differs from P. dubius, in having scolex, mature proglottids longer than broad, testes 50-60 in numbers, uterus with 7-14 lateral ramifications, vitellaria follicular and collected from Perches. The observed species differs from P. neglectus, in having testes 75 in numbers and uterus with 7-9 lateral branches, vitellaria follicular and collected from Trout. Proteocephalus granulatis Sp. Nov. differs from P. thymali, in having Scolex almost rounded, mature segments longer than broad, testes 50-60 in numbers, vagina anterior to cirrus pouch and uterus with 5-6 branches on each side. It differs from P. fluviatilis, in having scolex small, testes 73-98 in numbers, vagina anterior to cirrus pouch, uterus large with lateral out pockets, vitellaria follicular and collected from Micropterus dolomieu. Newer worms differs from P. osburnii, in having testes 50-60 in numbers, vagina anterior to cirrus pouch, ovary large, irregular in outline, uterus small and straight, vitellaria follicular and collected from Small mouth bass. The observed specimen differs from P. vitellaris, in having scolex large, cylindrical with circular flattened apex, testes 257 in numbers, vagina anterior to cirrus pouch and collected from Bagarius yaralli. New form differs from P. gobiornum in having testes 25-35 in numbers, vagina anterior to cirrus pouch, uterus with 3-5 lateral branches, vitellaria follicular and collected from Gobies. Proteocephalus granulatis Sp. Nov. differs from P. parallactius, in having Scolex triangular or dome shaped, mature segments longer than broad, testes 42-90 in numbers, vagina posterior to cirrus pouch, ovary 'W' shaped and collected from Cristivomer namaycush. It differs from P. primaverus in having scolex unarmed, testes
Fig. 1: Collection Site and Fish Host


From the above discussion it is clear that the species under discussion is new to science and differs from known valid species of genus Proteocephalus Weinland, 1858 in respect to major taxonomic characteristics. Considering all significant differentiating features of newer worms, authors are inclined to raise a new species Proteocephalus granularis Sp.Nov. The present species is named on account of having granular vitellaria.

Taxonomic Summary
Type species: Proteocephalus granularis Sp.Nov.
Host: Mystus seenghala
Habitat: Intestine
Locality: Kandhar, District Nanded (M.S.), India.
Prevalence: Twenty eight mature tapeworms collected from Sixteen infected host out of Two Hundred Fourteen examined.
Scolex

Fig. 2: Microphotoplate of *Proteocephalus ganularis* Sp. Nov.

**Period of collection:** February, 2011 to January, 2013.

**No. of Specimen:** 28

**Accession number:** PGDZ/YMN/1-07/ February, 2011 to January, 2013

**Deposition:** Research and PG Department of Zoology, Yeshwant Mahavidyalaya, Nanded.

**Etymology:** The species is named on account of having granular vitellaria.

A Revised Key to the Species of the genus *Proteocephalus* Weinland

<table>
<thead>
<tr>
<th>Description</th>
<th>Species</th>
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<tbody>
<tr>
<td>1) Mature segment longer than broad</td>
<td>-</td>
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<tr>
<td>2) Mature segment broader than long</td>
<td>-</td>
</tr>
<tr>
<td>3) Testes below 100 in numbers</td>
<td>-</td>
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<tr>
<td>4) Testes above 100 in numbers</td>
<td>-</td>
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<tr>
<td>5) Vagina anterior to cirrus pouch</td>
<td>-</td>
</tr>
<tr>
<td>6) Vagina posterior to cirrus pouch</td>
<td>-</td>
</tr>
<tr>
<td>7) Scolex triangular in shape</td>
<td>- P. <em>fluviatilis</em></td>
</tr>
<tr>
<td>8) Scolex rounded in shape</td>
<td>- P. <em>filicollis</em>, Rud</td>
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<tr>
<td>9) Scolex conical anteriorly and broad</td>
<td>- P. <em>osburnii</em></td>
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<tr>
<td>10) Suckers four in numbers</td>
<td>- P. <em>longicollis</em></td>
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<td>11) Suckers five in numbers</td>
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Scolex

Fig. 3: Camera Lucida diagramme of *Proteocephalus ganularis* Sp. Nov.
## References


