Description of Rhabdolaimus sclerorectum sp. n. (Nematoda: Rhabdolaimidae) from Aligarh, India

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Summary.- Rhabdolaimus sclerorectum sp. n. is described and illustrated (L = 0.47-0.67; a = 24-29; b = 4.7-5.6; c = 3.7-4.1; c’ = 6.9-9.0; V = 39-43%). The new species is characterised by its medium-sized body; stoma armed anteriorly with a large claw-shaped dorsal tooth and two smaller conical, sub-ventral teeth; pharynx with pyriform valvate basal bulb; a pair of pseudocolomocytes posterior to cardia; didelphic genitalic system with reflexed ovaries; vagina with round sclerotised thickenings; rectum with thick sclerotised posterior lining; and tail with a long and cylindrical terminal spinneret.

Key-words: Description, India, new species, Rhabdolaimus sclerorectum, taxonomy.

Resumen.- En esta contribución se describe e ilustra Rhabdolaimus sclerorectum sp. n. (L = 0.47-0.67; a = 24-29; b = 4.7-5.6; c = 3.7-4.1; c’ = 6.9-9.0; V = 39-43%). La nueva especie se distingue por su tamaño corporal medio; stoma armado con un diente dorsal anterior grande y con forma de garra, y dos dientes subventrales más pequeños y cónicos; faringe con un bulbo basal piriforme y provisto de valvas; un par de pseudocolomocitos situados más atrás del cardias; sistema genital dideláfico con ovarios reflejos; vagina con ensanchamientos esclerotizados redondeados; recto con un grueso revestimiento interno en su región posterior; y cola provista de una larga espinera terminal cilindroidea.

Palabras clave: Descripción, India, nueva especie, Rhabdolaimus sclerorectum, taxonomía.

INTRODUCTION


MATERIAL AND METHODS

The nematodes were isolated from soil samples using sieving and decantation and modified Baerman’s funnel techniques. For light microscopy the nematodes were fixed in 4% formaldehyde solution, processed to anhydrous glycerine by the slow method (Seinhorst, 1962), and mounted in glycerine. All measurements, drawings and morphological observations were made on an Olympus BX51 DIC Microscope.
DESCRIPTION

*Rhabdolaimus scleroretum* sp. n.
(Figs 1 & 2)

*Measurements:* See Table I.

*Female:* Body medium-sized, 0.47-0.67 mm long, ventrally arcuate, tapering at both extremities but more so towards posterior end. Cuticle with two layers, smooth without discernible striations in LM, devoid of somatic setae. Lip region low, 6-7 μm wide, 2 μm high, almost continuous with body contour. Lips fused; labial and cephalic sensilla not visible under LM; oral aperture hexagonal with very short radiating arms in *en face* view. Amphidial apertures small, elliptical, about one lip width from anterior end. Cheilostom small and inconspicuous. Rest of stoma tubular with thick cuticularised walls, 25-35 μm long, 1.5-2.5 μm wide. A conspicuous claw-shaped dorsal tooth, measuring 1.5-2.0 μm and two very small triangular subventral teeth located anteriorly. Stoma anisomorphic, with a thickened piece in dorsal wall close to its base. Pharyngeal sleeve surrounds stoma at level of teeth and forms an ellipsoidal swelling at stomal base. Pharyngeal corpus 96-125 μm long, cylindroid, basal bulb pyriform, valvate, muscular, 14-21 x 11-15 μm in dimension. Pharyngeal lumen thick and prominent. Nerve ring at 56-70 μm from anterior end. Excretory pore not visible. Cardia conoid, 4-6 μm long. Intestine thin-walled with wide lumen. One pair of pseudocoelomocytes at about 1.5 body diameters from base of pharyngeal bulb. Rectum one anal body-width long, posterior rectal wall thickly sclerotised distally to half its length. Reproductive system amphidelphic, oocytes dorsally reflexed; anterior ovy usually longer than posterior one. Intra-uterine eggs not observed. Vagina one-fourth to one-third of corresponding body diameter in length, with round, thick cuticularised pieces. Vulva a small transverse slit, pre-equatorial. Tail long, tapering gradually, with 7-10 μm long, cylindroid terminal spinneret. Caudal glands rarely conspicuous.

*Male:* Not found.

Diagnosis and relationships: The new species is characterised by having a mediumsized body; stoma armed anteriorly with a large claw-shaped dorsal tooth and two very small conical subventral teeth; pharynx with pyriform valvate basal bulb; a pair of pseudocoelomocytes posterior to cardia; didelphic genital system with reflexed oocytes, anterior usually longer; vagina with round cuticularised thickenings; rectum with thickly sclerotised posterior lining and a long and cylindroid terminal spinneret.

The new species most closely resembles *R. terestris* De Man, 1880 in morphometric details but differs in having a smooth, non-striated double layered cuticle; a pair of pseudocoelomocytes posterior to cardia; vagina with rounded conspicuous thickenings; thickened and cuticularised rectal lining; a relatively obtuse, and less tapering terminal spinneret [cuticle finely annulated; pseudocoelomocytes not reported; vagina with elliptical thickenings; rectal lining not thickened or sclerotised; terminal spinneret conical, more tapering in *R. terestris* De Man, 1880 [apud Andrássy (1984) and Eyualem and Coomans (1996)].

*R. scleroretum* sp. n. differs from *R. minor* Cobb, 1914 in having a larger body; smaller α value; having a smooth, cuticle; relatively anteriorly placed amphids; a pair of pseudocoelomocytes posterior to cardia; vagina with cuticularised thickenings and thickened cuticularised rectal lining; tail length less than vulva-anus distance and terminal spinneret visibly distinct from tail end [L = 0.28-0.33 mm; α = 10.0-16.5; cuticle finely annulated; amphids up to 2 lip widths from anterior end; pseudocoelomocytes not reported; vaginal thickenings not reported; rectal lining not thickened or sclerotised; tail as long as the vulva-anus distance and terminal spinneret not markedly distinct from tail end in *R. minor* Cobb, 1914 [apud Andrássy (1984) and Eyualem and Coomans (1996)].

*R. scleroretum* sp. n. further differs from *R. aquaticus* De Man, 1880 in having relatively smaller α and β values; a pair of pseudocoelomocytes posterior to cardia; thickened, cuticularised rectal lining and a terminal spinneret about 4-5 times longer than wide [α = 26-46; β = 10.0-14.4; pseudocoelomocytes not reported; rectal lining not thickened or sclerotised; a small terminal spinneret about twice longer than wide in *R. aquaticus* De Man, 1880 [apud Andrássy (1984) and Eyualem and Coomans (1996)].

*R. scleroretum* sp. n. differs from *R. brachyurus* Meyl, 1954 in having larger β value; a pair of pseudocoelomocytes posterior to cardia; more anteriorly placed vulva; thickened, sclerotised rectal lining and a terminal spinneret, about 4-5 times longer.
TABLE I. Measurements (in μm) of *Rhabdolaimus sclerectum* sp. n. [mean ± SD (range)].

<table>
<thead>
<tr>
<th>Character</th>
<th>n</th>
<th>Holotype ♀</th>
<th>Paratypes ♂♂</th>
</tr>
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<tbody>
<tr>
<td>Body length</td>
<td>531</td>
<td>537.87±58.04 (469-665)</td>
<td></td>
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<tr>
<td>Body width</td>
<td>22</td>
<td>20.0±2.0 (18-22)</td>
<td></td>
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<tr>
<td>Stoma length</td>
<td>35</td>
<td>28.4±3.9 (25-35)</td>
<td></td>
</tr>
<tr>
<td>Stoma width</td>
<td>1.5</td>
<td>1.7±0.6 (1.3-2.0)</td>
<td></td>
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<tr>
<td>Pharyngeal length</td>
<td>112</td>
<td>110.0±13.9 (96-125)</td>
<td></td>
</tr>
<tr>
<td>Nerve ring from anterior end</td>
<td>60</td>
<td>64.5±7.8 (58-70)</td>
<td></td>
</tr>
<tr>
<td>Anal body width</td>
<td>17</td>
<td>16.9±0.9 (15-18)</td>
<td></td>
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<tr>
<td>Tail length</td>
<td>136</td>
<td>155.6±24.5 (129-174)</td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>24</td>
<td>27.0±2.8 (24-29)</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>4.7</td>
<td>5.0±0.14 (4.7-5.6)</td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>3.9</td>
<td>3.85±0.26 (3.67-4.09)</td>
<td></td>
</tr>
<tr>
<td>c'</td>
<td>8.0</td>
<td>7.96±0.78 (6.90-9.04)</td>
<td></td>
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<tr>
<td>V (%)</td>
<td>42</td>
<td>40.9±1.2 (39-43)</td>
<td></td>
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<tr>
<td>G₁</td>
<td>14.8</td>
<td>18.8±4.5 (9-15)</td>
<td></td>
</tr>
<tr>
<td>G₂</td>
<td>10.2</td>
<td>8.4±1.6 (6-11)</td>
<td></td>
</tr>
</tbody>
</table>

than wide [c' = 5-6; pseudocelomocytes not reported; V=50-56%; rectal lining not thickened or cuticularised; and a short terminal spinneret about twice as long as wide in *R. brachyurus* Meyl, 1954 [apud Andrássy (1984)].

**Type habitat and locality:** Soil samples from an uncultivated field of Jamalpur locality, Aligarh, India.

**Type material:** Holotype female and ten female paratypes on slides 'Rhabdolaimus sclerectum sp. n. / 1-7' deposited in the 'Nematode Collection' of the Department of Zoology, Aligarh Muslim University, Aligarh. Two paratype females on slide 'Rhabdolaimus sclerectum sp. n. / 8' deposited in the Nematology Laboratory at Wageningen University and Research Center (WUR), 6700 ES Wageningen, The Netherlands.

**Remarks:** Earlier Ali et al. (1971) described *Rogerus rosae* from India, which was synonymised with *R. terrestris* by Andrássy (1984). Our specimens differ from that population in having a double, unstriated cuticle; a smaller c' -value; a pair of pseudocelomocytes posterior to cardia; thickened, cuticularised rectal lining and a relatively cylindrical and shorter terminal spinneret (cuticle single with fine striations, c' = 9-10; pseudocelomocytes not reported; rectal lining not thickened or sclerotised, terminal spinneret sharply conical, 11.5 μm long in *Rogerus rosae* (=Rhabdolaimus terrestris)).

**Key to species of Rhabdolaimus De Man, 1880**

1 - Body length less than 1 mm ...................... 2
2 - Body length more than 1 mm ...................... 3
2 - Rectal lining sclerotised ...................... 4
3 - Rectal lining not sclerotised .................. 5
4 - Longitudinal striations present ................ 6
5 - Longitudinal striations absent .................. 7
6 - Tail 5-6 ABD long .............................. 8
7 - Tail 9-12 ABD long .............................. 9
8 - Spinneret small about two times longer than wide ........................................... *aquaticus*
9 - Spinneret large about four times longer than wide ........................................... *terrestris*
9 - L < 400 μm, amphids 1.2-2.0 labial widths from anterior end .......................... *minor*
10 - L > 500 μm, amphids 0.8-1.2 lip widths from anterior end ........................... *terrestris*
ACKNOWLEDGEMENTS

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REFERENCES


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