

Opisthodorylaimus n. gen., and some new and known species of Dorylaimoidea (Nematoda) from India

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SUMMARY

A new genus *Opisthodorylaimus* closely related to *Thornenema* Andrassy, 1959 and *Mesodorylaimus* Andrassy, 1959 is proposed, along with the description of three new species, viz., *O. maqsoodi* n. sp. (type), *O. caudatus* n. sp., and *O. chamoliensis* n. sp. It differs from *Thornenema* in having an unsclerotized lip region and a broad odontostyle, while from *Mesodorylaimus* it differs in having an opisthomodelphic reproductive system as well as a broad odontostyle. *Jairajpuria oryzae* n. sp. differs from *J. shamimi* Baqri & Jana, 1980 in the shape of lip region, posteriorly situated vulva, unsclerotized vagina and in the absence of a sphincter at the oviduct-uterus junction. *Dorylaimus siddiqii* n. sp. is close to *D. thornei* Andrassy, 1969, but differs in having a shorter and narrower body, differently shaped lip region, smaller and narrower odontostyle and in the absence of vulval papillae. *Calodorylaimus indicus* n. sp. differs from *C. octo* Andrassy, 1969 in having a smaller body, shorter odontostyle, longer oesophagus, posterior vulva and smaller spicules and tail. The male of *Thornenema cavalcantii* is redescribed. *Laimydorus pseudostagnalis* and *Afrodorylaimus geniculatus* are reported for the first time from India.

RÉSUMÉ

Opisthodorylaimus n. gen. et quelques espèces, nouvelles et connues, de Dorylaimoidea (Nematoda) de l'Inde

Opisthodorylaimus nov. gen. proche de *Thornenema* Andrassy, 1959 et de *Mesodorylaimus* (De Man, 1912) Andrassy, 1959, est proposé ; il comprend trois espèces : *O. maqsoodi* n. sp. (type), *O. caudatus* n. sp. et *O. chamoliensis* n. sp. ; il diffère des deux genres cités par un odontostyle épais et plus particulièrement de *Thornenema* par la région labiale non sclérotisée et des *Mesodorylaimus* par un système reproducteur opisthomodelphique. *Jairajpuria oryzae* n. sp. diffère de *J. shamimi* Baqri & Jana, 1980 par la forme de la région labiale, la vulve située plus en arrière, le vagin non sclérotisé et l'absence de sphincter à la jonction de l'utérus avec l'oviducte. *Dorylaimus siddiqii* n. sp., proche de *D. thornei* Andrassy, 1969, s'en différencie par le corps plus court et plus mince, la forme de la région labiale, l'odontostyle plus court et plus fin et l'absence de papilles vulvaires. *Calodorylaimus indicus* n. sp. diffère de *C. octo* Andrassy, 1969 par le corps et l'odontostyle plus courts, l'oesophage plus long, la vulve située plus en arrière et une queue et des spicules plus courts. Le mâle de *Thornenema cavalcantii* est redécrit. *Laimydorus pseudostagnalis* et *Afrodorylaimus geniculatus* sont signalés en Inde pour la première fois.

Several nematode species belonging to the superfamily Dorylaimoidea were found in soil samples collected from different places in India. Among these specimens, three species of nematodes which have gonads and oesophageal gland nuclei and orifices like *Thornenematids* but are otherwise very similar to *Mesodorylaimus* Andrassy, 1959 were found and considered to represent undescribed species of a new genus, *Opisthodorylaimus*. One new species of each of the genera *Jairajpuria* Baqri & Jana, 1980,

Dorylaimus Dujardin, 1845 and *Calodorylaimus* Andrassy, 1969 were found and are described below. In addition, supplementary data are provided on three already described species, two of them not previously reported from India.

Measurements were taken and observations made on specimens mounted in glycerine after being killed in hot 4% formalin and dehydrated by the slow method.

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Opisthodorylaimus n. gen.

DIAGNOSIS

Thornenematidae, Thornenematinae (?). Body usually 1.0-1.5 mm long. Cuticle smooth or with fine transverse striations. Lip region continuous. Cephalic framework not sclerotized. Odontostyle broad and thick with wide aperture, about one-third of its length. Guiding ring single, but may appear double. Odontophore rod-like. Oesophagus muscular, abruptly enlarging near the middle. Cardia elongate-conoid. Female reproductive system opisthomodelphic. Vulva transverse or longitudinal, with or without sclerotization. Anterior uterine sac very small or absent. Prerectum in males short, within the range of supplements. Spicules slightly arcuate; lateral guiding pieces rod-like; ventromedian supplements subcontiguous. Tail elongate conoid to long filiform in females and short conoid in males.

TYPE SPECIES

Opisthodorylaimus maqsoodi n. sp.

OTHER SPECIES

O. caudatus n. sp.
O. chamoliensis n. sp.

RELATIONSHIP

The new genus *Opisthodorylaimus* comes close to the genera *Thornenema* Andrassy, 1959, and *Mesodorylaimus* but differs from both in having a broad odontostyle with wide aperture. It further differs from *Thornenema* in having an unsclerotized lip region and from *Mesodorylaimus* in having opisthomodelphic reproductive system.

REMARKS

The fact that *Opisthodorylaimus* n. gen. has affinities on one hand with *Thornenema* (Thornenematidae, Thornenematinae), and on the other hand with *Mesodorylaimus* (Dorylaimidae, Mesodorylaiminae), clearly suggests a possible need for re-appraisal of familial groups under Dorylaimoidea. Until more material is available and the inter-relationships of various groups are better understood, we have provisionally placed the new genus under Thornenematidae, Thornenematinae.

Opisthodorylaimus maqsoodi n. sp.

(Fig. 1)

DIMENSIONS

Female (paratypes; n = 10) : L = 1.30-1.42 (1.36) mm; a = 28-33 (31); b = 4.2-4.5 (4.4); c = 4-5 (5); c' = 10-12 (11); V = 40-45 (42); G₂ = 13-15 (14); odontostyle = 19-21 (19) μm; odontophore = 23-25 (24) μm; oesophagus = 299-312 (305) μm; prerectum = 41-45 (44) μm; rectum = 29-39 (35) μm; tail = 264-311 (293) μm; ABD = 25-27 (26) μm.

Female (holotype) : L = 1.33 mm; a = 32; b = 4.4; c = 5; c' = 10; V = 42; G₂ = 14; odontostyle = 21 μm; odontophore = 23 μm; oesophagus = 300 μm; prerectum = 41 μm; rectum = 35 μm; tail = 264 μm; ABD = 26 μm.

Male (paratypes; n = 3) L = 1.06-1.16 (1.11) mm; a = 26-27 (27); b = 3.8-4.1 (3.9); c = 32-33 (32); c' = 1.14-1.20 (1.17); T = 55-57 (56); odontostyle = 19-20 (19) μm; odontophore = 23-25 (24) μm; oesophagus = 270-297 (291) μm; spicules = 38-39 (39) μm; lateral guiding pieces = 6-7 (7) μm; ventromedian supplements = 10-11 (10); prerectum = 57-78 (67) μm; rectum = 42-44 (43) μm; tail = 32-36 (34) μm; ABD = 28-30 (29) μm.

DESCRIPTION

Female : Body straight or slightly curved ventrally upon fixation, tapering towards both extremities. Cuticle finely striated, 2 μm thick at midbody and 5 μm on tail. Lateral chords about one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncated, continuous with body contour, 13-15 μm, or about one-third of body-width, at base of oesophagus. Amphids stirrup-shaped, their apertures 6-7 μm wide or about half of the corresponding body-width. Odontostyle 1.2-1.5 lipwidths long, its aperture about one-third of its length. Guiding ring single at 10-11 μm or 0.7-0.8 lip-width from anterior end. Odontophore rod-like, 1.1-1.3 times the odontostyle length. Nerve ring at 108-120 μm from anterior end. Expanded portion of oesophagus occupying 43-46% of oesophageal length. Cardia elongate-conoid, 16-19 μm long. Location of oesophageal gland nuclei and their orifices as in Table 1.

Reproductive system opisthomodelphic. Vulva a transverse slit; vagina sclerotized distally, 11-13 μm or about one-third of corresponding body-width. Anterior uterine sac completely absent. Oviduct-uterus junction indistinct. Prerectum about two

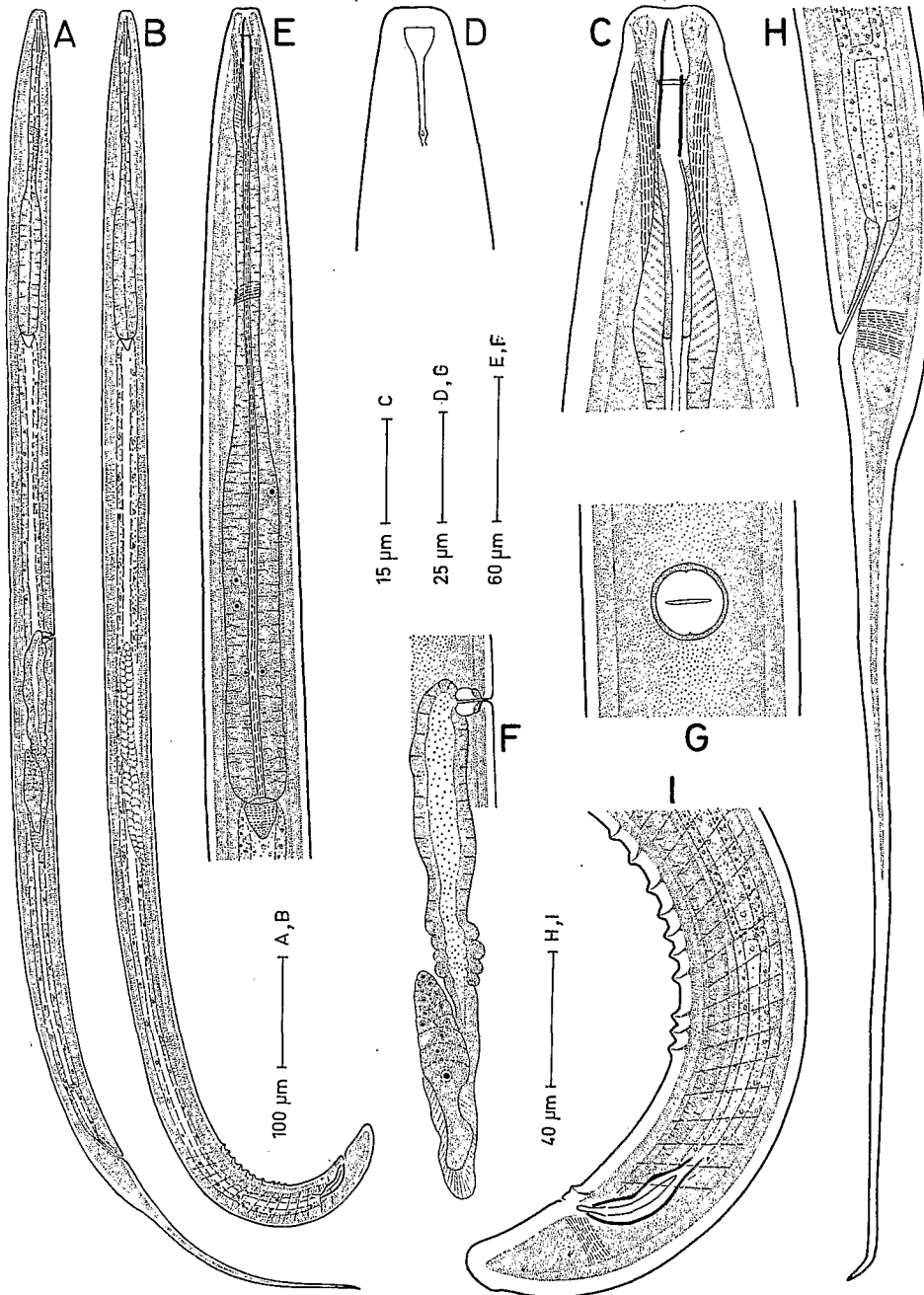


Fig. 1. *Opisthodorylaimus maqsoodi* n. sp. A : Entire female ; B : Entire male ; C : Anterior region ; D : Anterior end showing amphid ; E : Oesophageal region ; F : Female gonad ; G : Vulval region (dorsoventral) ; H : Female posterior region ; I : Male posterior region.

Table 1
Location of oesophageal gland nuclei and their orifices

Species	DO	DN	DO-DN	S ₁ N ₁	S ₁ N ₂	S ₂ N	S ₂ O
<i>Opisthodorylaimus maqsoodi</i> n. sp.	56-59	58-59	3.9-4.6	67-69	73-76	80-81	81-83
<i>Opisthodorylaimus caudatus</i> n. sp.	54-58	57-60	2.4-3.2	70-73	75-79	83-85	84-87
<i>Opisthodorylaimus chamoliensis</i> n. sp.	58-59	61-62	3.5-3.9	67-69	75-76	83-85	84-87
<i>Thornenema cavalcantii</i>	55-58	58-61	2.5-3.4	69-72	74-76	81-83	82-84
<i>Jairajpuria oryzae</i> n. sp.	67-69	69-72	3.1-4.1	78-80	83-86	87-89	89-91
<i>Dorylaimus siddiqii</i> n. sp.	58-60	59-61	1.8-2.3	76-79	80-83	90-92	92-93
<i>Calodorylaimus indicus</i> n. sp.	51-54	43-55	2.0-3.2	66-67	76-78	84-86	87-89
<i>Laimydorus pseudostagnalis</i>	46-48	49-51	2.5-2.8	66-69	73-76	82-84	84-85
<i>Afrodorylaimus geniculatus</i>	59-61	60-64	1.9-2.6	73-76	79-81	87-89	89-91

anal body-widths long. Rectum 1.1-1.5 anal body-widths long. Tail long filiform with 1-2 caudal pores on each side.

Male : Supplements an adanal pair and 10-11 closely spaced ventromedians. Spicules about 1.3 anal body-widths long. Lateral guiding pieces rod-shaped, about one-sixth of spicule length. Prerectum 2-3 anal body-widths long, terminating within the range of supplements. Tail short, bluntly-conoid, with 1-2 caudal pores on each side.

TYPE HABITAT AND LOCALITY

Soil around roots of mosses and grasses, from Bheol, district Mandi, Himachal Pradesh, India; collected in May 1977.

TYPE SPECIMENS

Holotype female on slide *Opisthodorylaimus maqsoodi* n. sp./1; paratype males and females on slides *O. maqsoodi* n. sp./2-5; deposited in the nematode collection of Zoology Department, Aligarh Muslim University, Aligarh. A female paratype and a male paratype deposited at Muséum national d'Histoire naturelle, Laboratoire des Vers, Paris, France.

The new species has been named after Dr. Maqsood Ahmad in recognition of his work on the dorylaim nematodes of India.

Opisthodorylaimus caudatus n. sp.

(Fig. 2)

DIMENSIONS

Female (paratypes; n = 8) : L = 1.35-1.57 (1.41) mm; a = 31-34 (32); b = 4.0-4.5 (4.1); c =

12-15 (13); c' = 4-5 (4); V = 47-48 (48); G₂ = 13-20 (15); odontostyle = 18-19 (18) μm; Odontophore = 21-23 (22) μm; oesophagus = 326-345 (336) μm; prerectum = 39-48 (44) μm; rectum = 39-44 (43) μm; tail = 90-115 (107) μm; ABD = 27-30 (28) μm.

Female (holotype) : L = 1.43 mm; a = 32; b = 4.3; c = 13; c' = 4; V = 47; G₂ = 20; odontostyle = 18 μm; odontophore = 23 μm; oesophagus = 326 μm; prerectum = 45 μm; rectum = 40 μm; tail = 113 μm; ABD = 27 μm.

Mussoorie population; Females (5) : L = 1.28-1.48 (1.37) mm; a = 42-44 (43); b = 4.0-4.6 (4.2); c = 11-15 (13); c' = 4-5 (4); V = 44-48 (46); G₂ = 9-16 (13); odontostyle = 18-19 (18) μm; odontophore = 22-23 (22) μm; oesophagus = 315-327 (319) μm; prerectum = 41-46 (43) μm; rectum = 38-40 (39) μm; tail = 97-114 (105) μm; ABD = 27-28 (27) μm.

DESCRIPTION

Female : Body slightly curved ventrally upon fixation, tapering towards extremities. Cuticle finely striated, 2 μm thick at midbody and 4-5 μm on tail. Lateral chords about one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncated, continuous with body contour, 12-13 μm or about one-third of body-width at base of oesophagus. Amphids stirrup-shaped, their apertures 5-6 μm or about half of the corresponding body-width wide. Odontostyle 1.4-1.6 lip-region widths long, its apertures about one-third of its length. Guiding ring single, at 10-11 μm or 0.7-0.8 lip-width from anterior end. Odontophore simple,

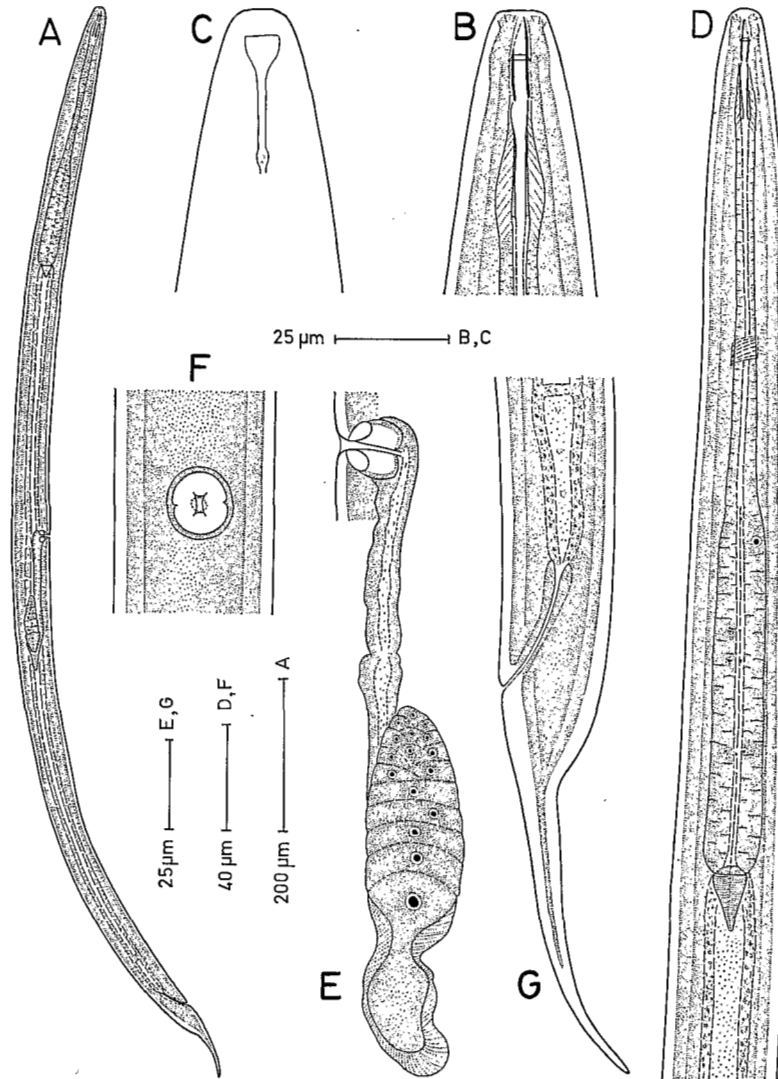


Fig. 2. *Opisthodorylaimus caudatus* n. sp. A : Entire female ; B : Anterior region ; C : Anterior region showing amphid ; D : Oesophageal region ; E : Female gonad ; F : Vulval region (dorsoventral) ; G : Female posterior region.

rod-like, 1.1-1.3 times the odontostyle length. Nerve ring at 120-130 μm from anterior end of body. Expanded portion of oesophagus occupying 42-46% of oesophageal length. Cardia elongate-conoid, 19-23 μm long. Location of oesophageal gland nuclei and their orifices as in Table 1.

Reproductive system opisthomonodelphic. Vulva longitudinal, vagina 19-20 μm or about half of the corresponding body-width long. Anterior uterine sac absent. Sphincter present at oviduct-uterus junction of the posterior sexual branch. Prerectum 1.5-1.6 anal body-width long. Rectum 1.4-1.5 anal body-

width long. Tail elongate-conoid, dorsally curved with two caudal pores on each side.

Male : Not found.

TYPE HABITAT AND LOCALITY

Soil around roots of sheesham, *Dalbergia sissoo*, from Rajpur, district Dehradun, Uttar Pradesh, India ; collected in March 1978.

Other habitat and locality : Soil around roots of ferns and mosses from Mussoorie, district Dehradun, Uttar Pradesh.

TYPE SPECIMENS

Holotype on slide *Opisthodorylaimus caudatus* n. sp./1; paratypes on slides *Opisthodorylaimus caudatus* n. sp./2-5; deposited in the nematode collection of Zoology Department, Aligarh Muslim University, Aligarh. A female paratype deposited at Muséum national d'Histoire naturelle, Laboratoire des Vers, Paris, France.

DIFFERENTIAL DIAGNOSIS

Opisthodorylaimus caudatus n. sp. comes close to *O. maqsoodi* n. sp., but differs in the shape and location of vulva, and in having a shorter and differently shaped tail ($c = 4.6-5.3$; $V = 40-45$; vulva transverse, tail long filiform in *O. maqsoodi* n. sp.).

***Opisthodorylaimus chamoliensis* n. sp.**
(Fig. 3)

DIMENSIONS

Female (paratype) : $L = 1.24$ mm ; $a = 30$; $b = 4.3$; $c = 5$; $c' = 11$; $V = 40$; $G_2 = 12$; odontostyle = $18 \mu\text{m}$; odontophore = $21 \mu\text{m}$; oesophagus = $285 \mu\text{m}$; prerectum = $36 \mu\text{m}$; rectum = $32 \mu\text{m}$; tail = $254 \mu\text{m}$; ABD = $23 \mu\text{m}$.

Female (holotype) : $L = 1.21$ mm ; $a = 34$; $b = 4.6$; $c = 5$; $c' = 12$; $V = 36$; $G_2 = 11$; odontostyle = $18 \mu\text{m}$; odontophore = $21 \mu\text{m}$; oesophagus = $262 \mu\text{m}$; prerectum = $39 \mu\text{m}$; rectum = $31 \mu\text{m}$; tail = $246 \mu\text{m}$; ABD = $21 \mu\text{m}$.

DESCRIPTION

Female : Body slightly curved ventrally upon fixation, tapering towards extremities. Cuticle finely striated, $2 \mu\text{m}$ thick at midbody and $4-5 \mu\text{m}$ on tail. Lateral chords about one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncated, slightly offset from body by a depression, $13 \mu\text{m}$ or about one-third of body-width at base of oesophagus. Amphids stirrup-shaped, their apertures $5-6 \mu\text{m}$ or about half of corresponding body-width wide. Odontostyle about 1.4 lip-widths long, its aperture about one-third of its length. Guiding ring single, at $10-11 \mu\text{m}$ or 0.7-0.8 lip-width from anterior end. Odontophore simple, rod-like, about 1.2 times the odontostyle length. Nerve ring at $109-121 \mu\text{m}$ from anterior end of

body. Expanded portion of oesophagus occupying 43-44% of oesophageal length. Cardia elongate-conoid, 18-19 μm long. Location of oesophageal gland nuclei and their orifices as in Table 1.

Reproductive system opisthomonodelphic. Vulva longitudinal with heavily muscular lips. Vagina about half of corresponding body-width long. Anterior uterine sac very small. Sphincter present at oviduct-uterus junction of the posterior sexual branch. Pre-rectum 1.6-1.8 anal body-widths long. Rectum about 1.4 anal body-widths long. Tail long filiform with pointed terminus with 1-2 caudal pores on each side.

Male : Not found.

TYPE HABITAT AND LOCALITY

Soil around roots of mosses and grasses, from Mandal, district Chamoli, Uttar Pradesh; collected in October 1979.

TYPE SPECIMENS

Holotype on slide *Opisthodorylaimus chamoliensis* n. sp./1; paratype on slide *Opisthodorylaimus chamoliensis* n. sp./2; deposited in the nematode collection of Zoology Department, Aligarh Muslim University, Aligarh.

DIFFERENTIAL DIAGNOSIS

Opisthodorylaimus chamoliensis n. sp. comes close to *O. maqsoodi* n. sp. and *O. caudatus* n. sp., but differs from the former in having a smaller body, in the shape of vulva and in having an anterior uterine sac ($L = 1.30-1.42$ mm; vulva transverse and anterior uterine sac absent in *O. maqsoodi* n. sp.). From *O. caudatus* n. sp., it differs in having an anteriorly located vulva, in the presence of an anterior uterine sac, and in the shape and size of the tail ($c = 11-15$; $V = 44-48$; anterior uterine sac absent; tail elongate-conoid in *O. caudatus* n. sp.).

***Thornenema cavalcantii* (Lordello, 1955)**
Andrássy, 1959
(Fig. 4)

DIMENSIONS

Females (*Dharamsala* population; $n = 5$) : $L = 1.06-1.07$ (1.06) mm ; $a = 31-33$ (32) ; $b = 4.0-4.2$ (4.1) ; $c = 11-12$ (12) ; $c' = 4-5$ (4) ; $V = 45-46$ (45) ; $G_2 = 13-16$ (14) ; odontostyle = $11-12$ (12) μm ;

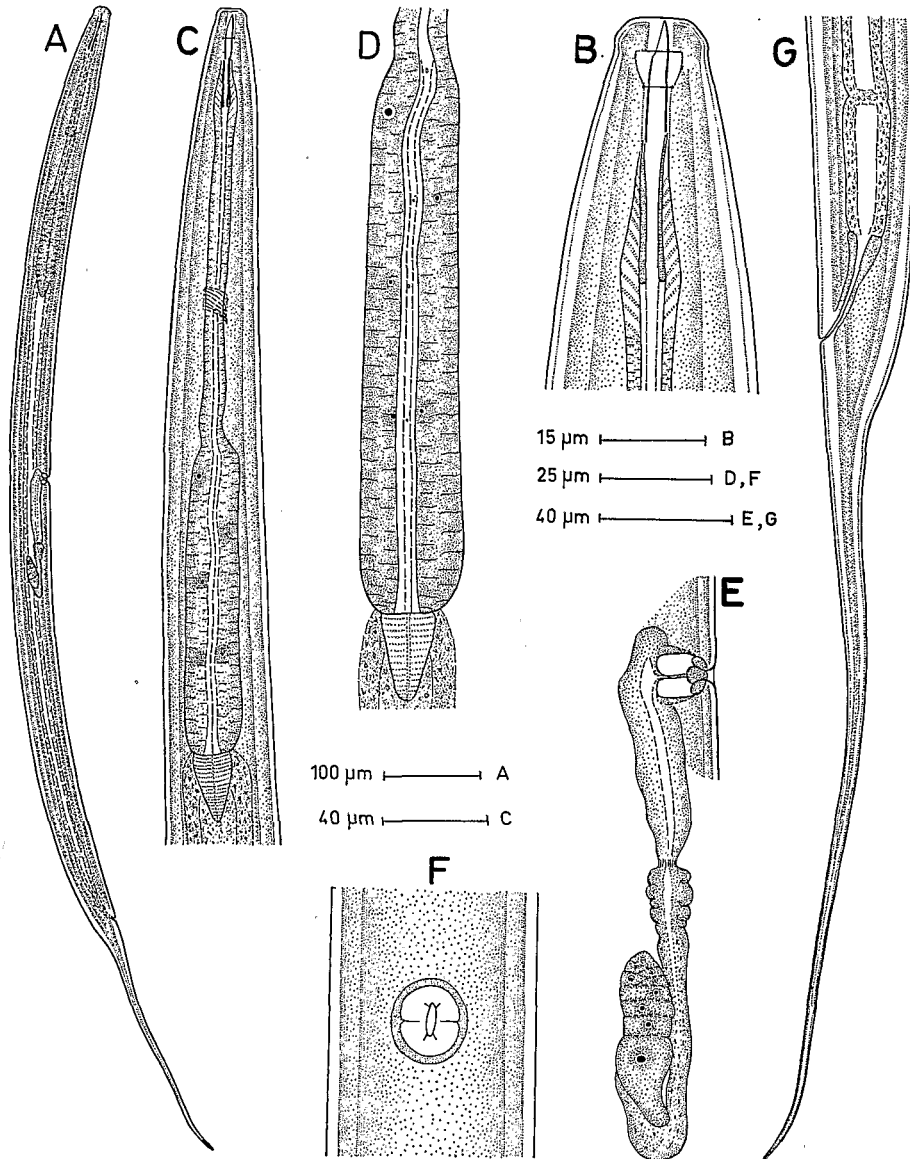


Fig. 3. *Opisthodorylaimus chamoliensis* n. sp. A : Entire female ; B : Anterior region ; C : Oesophageal region ; D : Expanded part of oesophagus ; E : Female gonad ; F : Vulval region (dorsoventral) ; G : Female posterior region.

odontophore = 16-17 (16) μm ; oesophagus = 252-266 (261) μm ; prerectum = 42-50 (46) μm ; rectum = 27-33 (29) μm ; tail = 88-90 (88) μm ; ABD = 20-21 (21) μm .

Females (Chamoli population ; n = 5) : L = 0.95-1.05 (1.01) mm ; a = 32-33 (33) ; b = 3.8-4.2 (4.0) ; c = 10-11 (10) ; c' = 4-5 (5) ; V = 43-46 (44) ; G_2 = 12-16 (14) ; odontostyle = 11-12 (12) μm ; odontophore = 16-17 (17) μm ; oesophagus = 245-248

(246) μm ; prerectum = 50-55 (52) μm ; rectum = 26-27 (26) μm ; tail = 93-104 (98) μm ; ABD = 20-21 (21) μm .

Male (Dharamsala population) : L = 1.19 mm ; a = 34 ; b = 4.5 ; c = 50 ; c' = 1.09 ; T = 65 ; odontostyle = 12 μm ; odontophore = 17 μm ; oesophagus = 261 μm ; spicules = 35 μm ; lateral guiding pieces = 8 μm ; ventromedian supplements = 5 ; prerectum = 90 μm ; tail = 24 μm ; ABD = 22 μm .

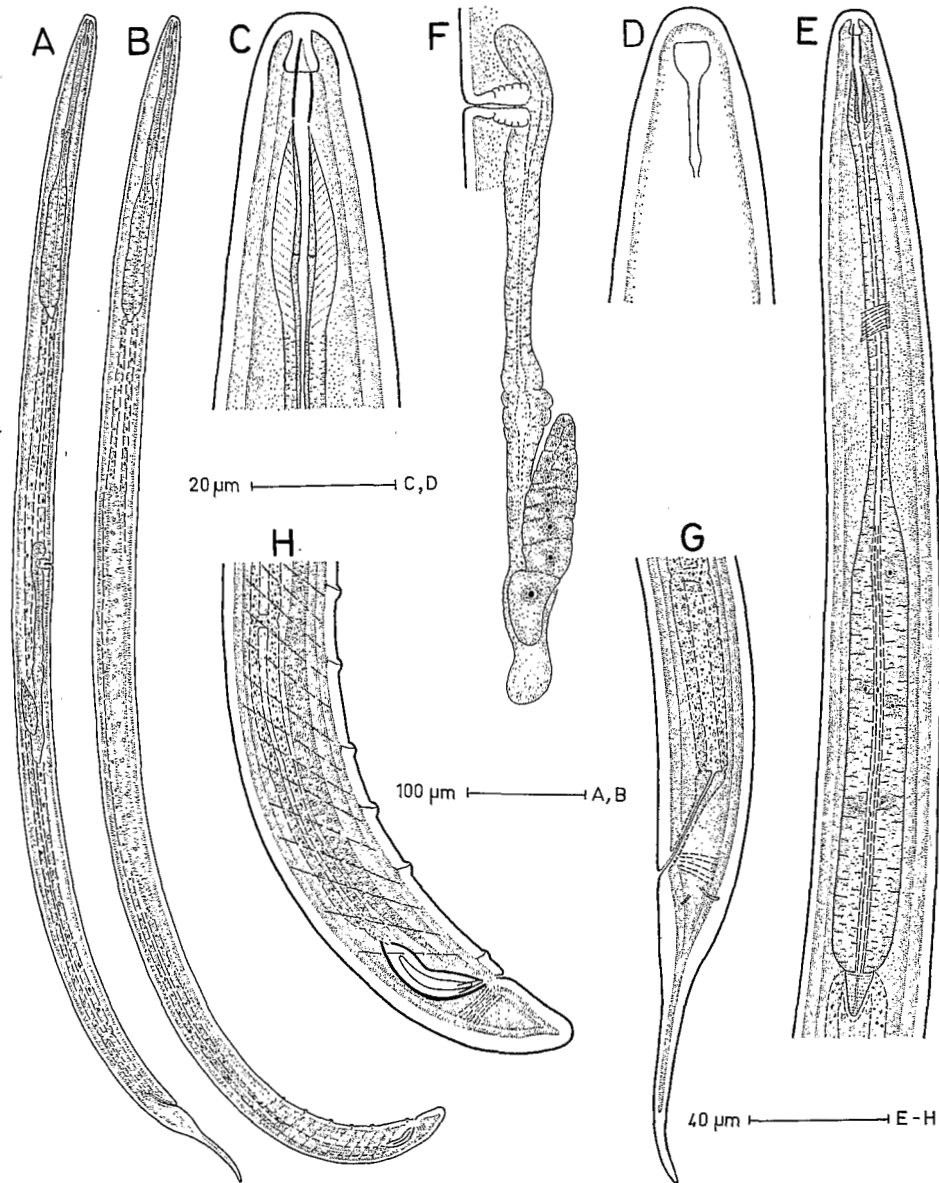


Fig. 4. *Thorriinema cavalcantii*. A : Entire female ; B : Entire male ; C : Anterior region ; D : Anterior region showing amphid ; E : Oesophageal region ; F : Female gonad ; G : Female posterior region ; H : Male posterior region.

DESCRIPTION

Body slightly ventrally arcuate upon fixation, tapering towards both extremities. Cuticle finely striated, thickest at tail. Lateral chords about one-eighth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region smoothly rounded, continuous with body contour, 10-11 µm or about one-third of body-

width at base of oesophagus. Cephalic framework weakly sclerotized. Amphids stirrup-shaped, their apertures 5-6 µm or about half of lip-width. Odontostyle slightly longer than lip-width, its aperture about two-fifths of its length. Guiding ring single. Odontophore rod-like, 1.2-1.4 times the odontostyle length. Nerve ring encircling anterior slender part of oesophagus at 93-100 µm from anterior end. Expanded portion of oesophagus occupying 46-51% of

total oesophageal length. Location of oesophageal gland nuclei and their orifices as in Table 1.

Testes diorchic, opposed, anteriorly outstretched, posterior reflexed. Supplements an adanal pair and five regularly spaced ventromedians, first ventromedian a little above the spicular range. Spicules dorylaimoid, 1.6 anal body-widths long, lateral guiding pieces rod-like about one-fourth of spicule length. Prerectum about four anal body-widths long. Tail short, conoid with two caudal pores on each side.

HABITAT AND LOCALITY

Soil around roots of *i) Citrus* sp. from Dharamsala, district Kangra, Himachal Pradesh; *ii) wild tree* from district Chamoli, Uttar Pradesh.

REMARKS

Thornenema cavalcantii was described from Brazil by Lordello (1955) based on a single female. Loof (1964) described two females from Venezuela. Siddiqi (1965) reported this species from India. Monteiro (1970) for the first time recorded its male, and the illustration of the male tail showed peg-like structure attached to the tail. The present male of *T. cavalcantii* has a typical *Thornenema* like tail as described by Baqri and Jairajpuri (1967) for *T. baldum*, and has a smaller number of supplements compared with that reported by Monteiro (1970). The females of the present population correspond well with those described by Lordello (1955), Loof (1964) and Siddiqi (1965).

Jairajpuria oryzae n. sp.

(Fig. 5)

DIMENSIONS

Female (paratypes; $n = 8$); $L = 0.72-0.85$ (0.82) mm; $a = 30-32$ (31); $b = 5.2-5.3$ (5.3); $c = 10-12$ (11); $c' = 4-5$ (4); $V = 39-42$ (41); $G_1 = 3-4$ (3); $G_2 = 16-21$ (18); odontostyle = 11-12 (12) μm ; odontophore = 15-16 (15) μm ; oesophagus = 150-159 (155) μm ; prerectum = 48-75 (60) μm ; rectum = 18-25 (20) μm ; tail = 68-84 (78) μm ; ABD = 15-18 (17) μm .

Female (holotype): $L = 0.85$ mm; $a = 30$; $b = 5.3$; $c = 12$; $c' = 5$; $V = 41$; $G_1 = 3$; $G_2 = 20$; odontostyle = 12 μm ; odontophore = 15 μm ; oesophagus = 159 μm ; prerectum = 48 μm ; rectum = 18 μm ; tail = 68 μm ; ABD = 17 μm .

Male (paratypes; $n = 4$): $L = 0.69-0.80$ (0.74) mm; $a = 29-30$ (29); $b = 4.6-5.0$ (4.7); $c = 28-40$ (34); $c' = 1.2-1.4$ (1.3); $T = 34-39$ (36); odontostyle = 11-12 (12) μm ; odontophore = 15-16 (16) μm ; oesophagus = 150-159 (155) μm ; spicules = 22-24 (23) μm ; lateral guiding pieces = 3-4 (4) μm ; ventromedian supplements = 4-5 (4); prerectum = 75-82 (78) μm ; tail = 21-25 (23) μm ; ABD = 17-18 (18) μm .

DESCRIPTION

Female: Body slightly ventrally curved upon fixation, tapering gradually towards both extremities. Cuticle finely striated, 1 μm thick at midbody and 3-4 μm on tail. Lateral chords about one-fifth to one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region sclerotized, offset, slightly wider than adjoining body, 7-8 μm or about one-third of body-width at base of oesophagus. Amphids stirrup-shaped, their apertures 4-5 μm or about half of corresponding body-width. Odontostyle 1.4-1.5 lip-widths long, its aperture about one-third of its length. Guiding ring single, 6-7 μm or 0.7-0.9 lip-width from anterior end. Odontophore rod-like, 1.2-1.4 times the odontostyle length. Nerve ring encircling anterior slender part of oesophagus at 64-75 μm from anterior end. Expanded portion of oesophagus occupying 32-36% of oesophageal length. Cardia short, conoid with rounded terminus. Location of oesophageal gland nuclei and their orifices as in Table 1.

Reproductive system opisthomonodelphic. Vulva transverse, vagina thick-walled about one-third of vulval body-width. Anterior uterine sac 27-30 μm or about one vulval body-width long. Posterior branch normal. Oviduct-uterus junction indistinct. Prerectum 3-5 anal body-widths long. Rectum about one anal body-width long. Tail elongate-conoid, tapering gradually to rounded terminus, with one or two caudal pores on each side.

Male: Supplements an adanal pair and 4-5 regularly spaced ventromedians. Spicules dorylaimoid, 1.2-1.4 anal body-widths long. Lateral guiding pieces rod-shaped, about one-sixth of spicule length. Prerectum 4-5 anal body-widths long. Tail short, bluntly conoid with two caudal pores on each side.

TYPE HABITAT AND LOCALITY

Soil around roots of paddy, *Oryza saliva* L., from district Bhubaneswar, Orissa state, India; collected in March 1979.

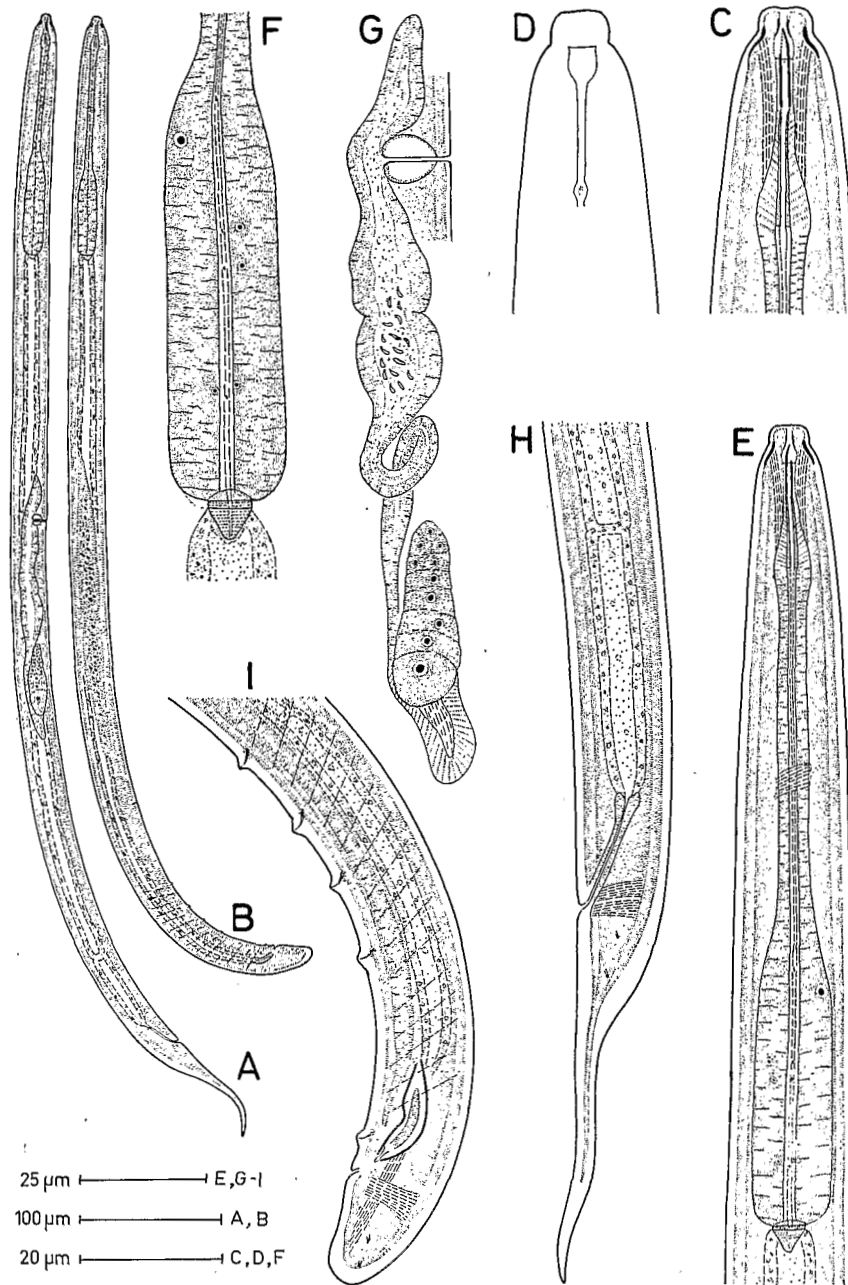


Fig. 5. *Jairajpuria oryzae* n. sp. A : Entire female ; B : Entire male ; C : Anterior region ; D : Anterior region showing amphid ; E : Oesophageal region ; F : Expanded part of oesophagus ; G : Female gonad ; H : Female posterior region ; I : Male posterior region.

TYPE SPECIMENS

Holotype female on slide *Jairajpuria oryzae* n. sp./1; paratype males and females on slides *Jairajpuria oryzae* n. sp./2-5; deposited in the nematode collection of Zoology Department, Aligarh Muslim University, Aligarh. A paratype female and a male deposited at Muséum national d'Histoire naturelle, Laboratoire des Vers, Paris, France.

DIFFERENTIAL DIAGNOSIS

Jairajpuria oryzae n. sp. differs from *J. shamimi* Baqri & Jana, 1980 in having slightly longer body, differently shaped lip region and amphids, posteriorly situated vulva, unsclerotized vagina and in the absence of sphincter at oviduct-uterus junction ($L = 0.6-0.7$ mm; $V = 44-50$; vagina sclerotized and a well developed sphincter present at oviduct-uterus junction in *J. shamimi*).

***Dorylaimus siddiqii* n. sp.**

(Fig. 6)

DIMENSIONS

Female (paratype) : $L = 2.17$ mm; $a = 38$; $b = 4.3$; $c = 14$; $c' = 5.5$; $V = 49$; $G_1 = 14$; $G_2 = 15$; odontostyle = 37 μ m; odontophore = 31 μ m; oesophagus = 530 μ m; prerectum = 149 μ m; rectum = 42 μ m; tail = 150 μ m; ABD = 29 μ m.

Female (holotype) : $L = 2.23$ mm; $a = 35$; $b = 4.5$; $c = 14$; $c' = 5.3$; odontostyle = 37 μ m; odontophore = 29 μ m; oesophagus = 488 μ m; prerectum = 120 μ m; rectum = 30 μ m; tail = 155 μ m; ABD = 29 μ m.

Male (paratypes; $n = 3$) : $L = 1.59-1.86$ (1.72) mm; $a = 28-35$ (32); $b = 3.9-4.0$ (3.9); $c = 53-64$ (59); $c' = 1.16-1.17$ (1.16); $T = 53-55$ (54); odontostyle = $35-36$ (36) μ m; odontophore = $27-30$ (29) μ m; oesophagus = $391-470$ (450) μ m, spicules = $50-51$ (50) μ m; ventromedian supplements = $31-34$ (32); prerectum = $188-213$ (195) μ m; tail = $29-30$ (30) μ m; ABD = $34-35$ (34) μ m.

DESCRIPTION

Female : Body curved ventrally upon fixation, tapering towards both extremities. Cuticle finely striated, marked with 34 longitudinal ridges in the middle. Lateral chords about one-quarter of body-width at midbody.

Lip region narrower than adjoining body, slightly marked off by a depression, $11-12$ μ m or about one-fifth of body-width at base of oesophagus. Lips amalgamated, labial papillae not projecting above contour of lip region. Amphids stirrup-shaped, apertures $5-6$ μ m or about half of corresponding body-width. Odontostyle about three lip region widths long, its aperture $7-8$ μ m or about one-fifth of the odontostyle length. Guiding ring "double" at $20-23$ μ m or $1.6-1.9$ lip-widths from anterior end. Odontophore simple, rod-like, $0.7-0.8$ times the odontostyle length. Nerve ring at $146-162$ μ m from anterior end of body. Expanded portion of oesophagus occupying $44-50\%$ of the total oesophageal length. Cardia elongate-conoid, $29-30$ μ m or about half of the corresponding body-width long. Location of oesophageal gland nuclei and their orifices as in Table 1.

Reproductive system amphidelphic. Vulva transverse, vagina $23-24$ μ m or less than half of corresponding body-width long. Sphincter present at oviduct-uterus junction of the sexual branches. Prerectum $4-5$ anal body-widths long. Rectum about one anal body-width long. Tail elongate, gradually tapering, with one or two caudal pores on each side.

Male : Supplements one adanal pair and contiguous series of $31-34$ ventromedians. Spicules about 1.4 anal body widths long, with a simple median piece. Lateral guiding pieces more or less rod-shaped. Prerectum $6-7$ anal body-widths long, extending well beyond the range of supplements. Tail convex-conoid with rounded terminus, with one or two caudal pores on each side.

TYPE HABITAT AND LOCALITY

Soil around roots of paddy, *Oryza sativa* L., from Bhubaneswar, Orissa state, India; collected in March 1979.

TYPE SPECIMENS

Holotype female and a paratype male on slide *Dorylaimus siddiqii* n. sp. /1; other paratypes on slides *Dorylaimus siddiqii* n. sp./2-4; deposited in the nematode collection of Zoology Department, Aligarh Muslim University, Aligarh. Paratype female and a male paratype deposited at Muséum national d'Histoire naturelle, Laboratoire des Vers, Paris, France.

DIFFERENTIAL DIAGNOSIS

Dorylaimus siddiqii n. sp. comes close to *D. thornei* Andrassy, 1969 but differs from it in having a shorter

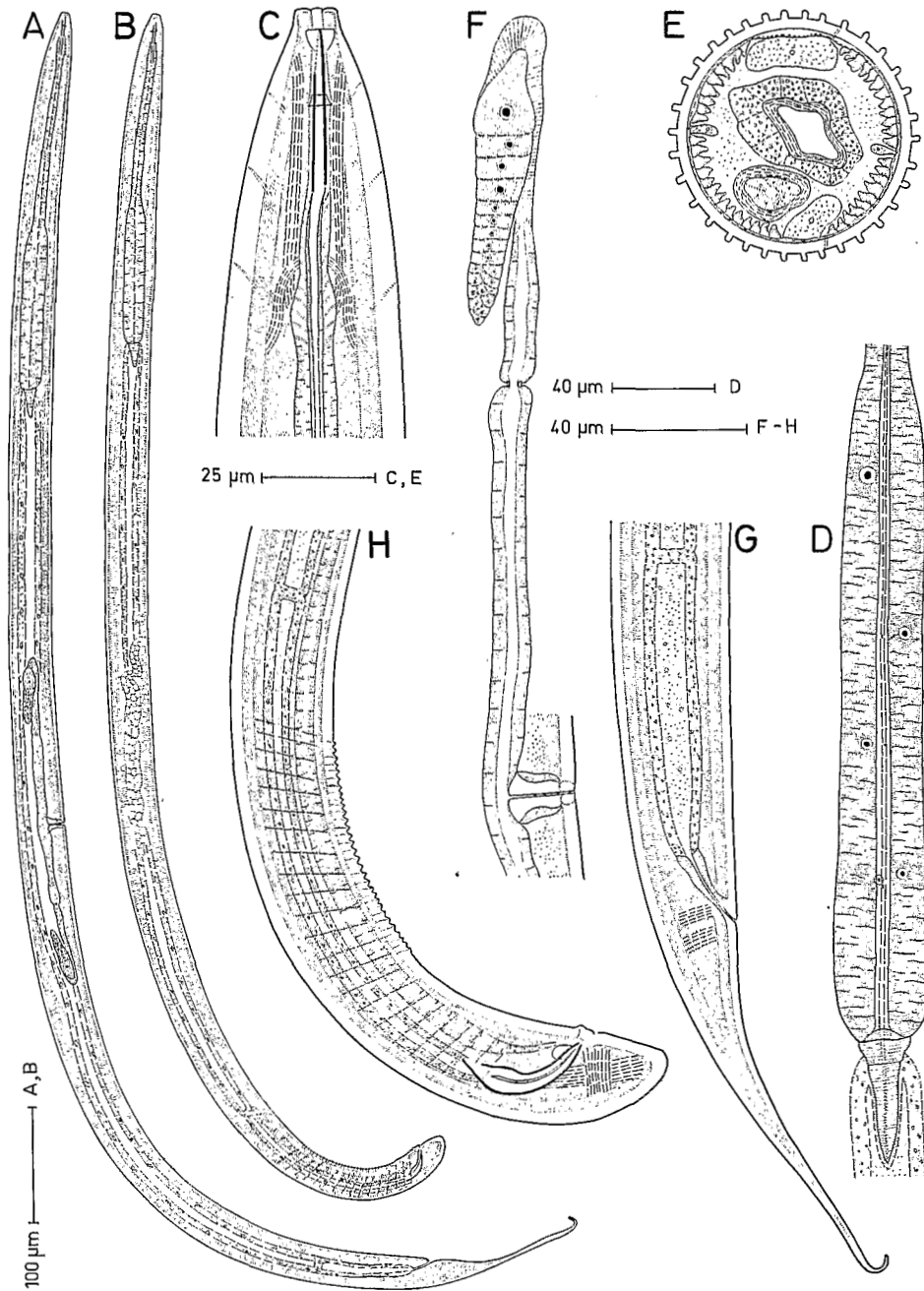


Fig. 6. *Dorylaimus siddiqii* n. sp. A : Entire female ; B : Entire male ; C : Anterior region ; D : Expanded part of oesophagus ; E : Cross-section through midbody ; F : Female genital branch (anterior) ; G : Female posterior region ; H : Male posterior region.

and narrower body, differently shaped lip region, smaller and narrower odontostyle, in the absence of vulval papillae, and in having a longer prerectum (L = 2.7-2.8 mm.; a = 27-28; lip region 22 µm

wide; odontostyle 40 µm long; a pair of vulval papillae on each side of vulva, and prerectum 3 anal body-widths long in *D. thornei*).

The new species has been named after Dr. M. Rafiq

Siddiqi of the Commonwealth Institute of Parasitology, St. Albans, England in recognition of his work on dorylaimus.

Laimydorus pseudostagnalis

(Micoletzky, 1927)

Siddiqi, 1969

DIMENSIONS

Females (n = 5) : L = 2.35-2.76 (2.56) mm ; a = 45-47 (46) ; b = 4.8-5.4 (5.1) ; c = 9-10 (10) ; c' = 9-10 (10) ; V = 44-48 (47) ; G₁ = 15-17 (16) ; G₂ = 15-18 (16) ; odontostyle = 26-27 (27) μm ; odontophore = 27-29 (28) μm ; oesophagus = 481-507 (491) μm ; prae-rectum = 128-202 (155) μm ; rectum = 36-51 (42) μm ; tail = 259-274 (265) μm ; ABD = 26-28 (26) μm.

Males (n = 2) : L = 2.21-2.47 (2.34) mm ; a = 40-46 (43) ; b = 4.4-4.7 (4.6) ; c = 96-98 (97) ; c' = 1.30-1.34 (1.32) ; T = 61-63 (62) ; odontostyle = 27 μm ; odontophore = 29 μm ; oesophagus = 496-518 (507) μm ; spicules = 49-50 (50) μm ; ventromedian supplements = 26-27 (27) ; prae-rectum = 390-412 (401) μm ; tail = 23-24 (24) μm ; ABD = 30-31 (31) μm.

HABITAT AND LOCALITY

Soil around roots of water weeds from Kandla port, Gandhidham, Gujarat state, India.

REMARKS

The Indian specimens are similar to the type specimens except that the former have a slightly shorter body and longer tail (L = 3.7 mm ; c = 13 in type specimens).

Calodorylaimus indicus n. sp.

(Fig. 7)

DIMENSIONS

Female (*paratypes* ; n = 6) : L = 2.17-2.56 (2.29) mm ; a = 35-48 (41) ; b = 4.8-5.3 (5.0) ; c = 5-7 (6) ; c' = 14-20 (16) ; V = 44-45 (44) ; G₁ = 14-16 (15) ; G₂ = 10-16 (13) ; odontostyle = 26-28 (27) μm ; odontophore = 29-31 (29) μm ; oesophagus = 434-476 (450) μm ; prae-rectum = 90-147 (105) μm ; rectum = 37-42 (41) μm ; tail = 326-432 (391) μm ; ABD = 24-25 (25) μm.

Female (*holotype*) : L = 2.31 mm ; a = 41 ; b = 5.4 ; c = 5 ; c' = 19 ; V = 44 ; G₁ = 15 ; G₂ = 14 ; odontostyle = 25 μm ; odontophore = 31 μm ; oesophagus = 421 μm ; prae-rectum = 126 μm ; rectum = 36 μm ; tail = 444 μm ; ABD = 23 μm.

Female (*Howrah population* ; n = 4) : L = 2.08-2.14 (2.12) mm ; a = 48-49 (48) ; b = 4.3-4.7 (4.5) ; c = 6-7 (7) ; c' = 14-16 (15) ; V = 43-47 (46) ; G₁ = 14-15 (15) ; G₂ = 14-16 (15) ; odontostyle = 24-25 (24) μm ; odontophore = 28-30 (29) μm ; oesophagus = 448-472 (456) μm ; prae-rectum = 111-118 (115) μm ; rectum = 34-36 (35) μm ; tail = 316-339 (326) μm ; ABD = 21-23 (22) μm.

Male (*paratypes* ; n = 5) : L = 1.67-1.83 (1.74) mm ; a = 29-38 (34) ; b = 3.9-4.1 (4.0) ; c = 98-107 (104) ; c' = 0.6-0.7 (0.6) ; T = 55-57 (56) ; odontostyle = 26-28 (27) μm ; odontophore = 28-29 (29) μm ; oesophagus = 424-440 (429) μm ; spicules = 43-45 (44) μm ; lateral guiding pieces = 9-10 (10) μm ; ventromedian supplements = 20-22 (21) ; prae-rectum = 180-245 (218) μm ; tail = 16-17 (17) μm ; ABD = 24-25 (25) μm.

Male (*Howrah population* ; n = 2) : L = 1.88-2.01 (1.94) mm ; a = 44-49 (46) ; b = 4.2-4.6 (4.4) ; c = 111-118 (114) ; c' = 0.7 ; T = 54-56 (55) ; odontostyle = 24-25 (24) μm ; odontophore = 28-29 (28) μm ; oesophagus = 429-444 (436) μm ; spicules = 40-41 (40) μm ; lateral guiding pieces = 8-9 (8) μm ; ventromedian supplements = 20-21 (20) ; prae-rectum = 202-246 (224) μm ; tail = 16-17 (16) μm ; ABD = 23-24 (23) μm.

DESCRIPTION

Female : Body slightly curved ventrally upon fixation, tapering towards extremities. Cuticle finely striated. Lateral chords about one-fourth of body-width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region almost continuous with body contour, 10-11 μm or about one-fourth of body-width at base of oesophagus. Amphids stirrup-shaped, aperture appearing bilobed, 5-6 μm or about half of corresponding body-width wide. Odontostyle 2.2-2.5 lip-region widths long, its aperture about one-third of its length. Guiding ring single, at 14-15 μm or about 1.5 lip-region widths from anterior end. Odontophore simple, rod-like, 1.1-1.2 times the odontostyle length. Nerve ring at 127-135 μm from anterior end of body. Expanded portion of oesophagus occupying 47-55% of total oesophageal length. Cardia elongate-conoid, 20-23 μm or about one-third of corresponding body-width long. Location of oesophageal gland nuclei and their orifices as in Table 1.

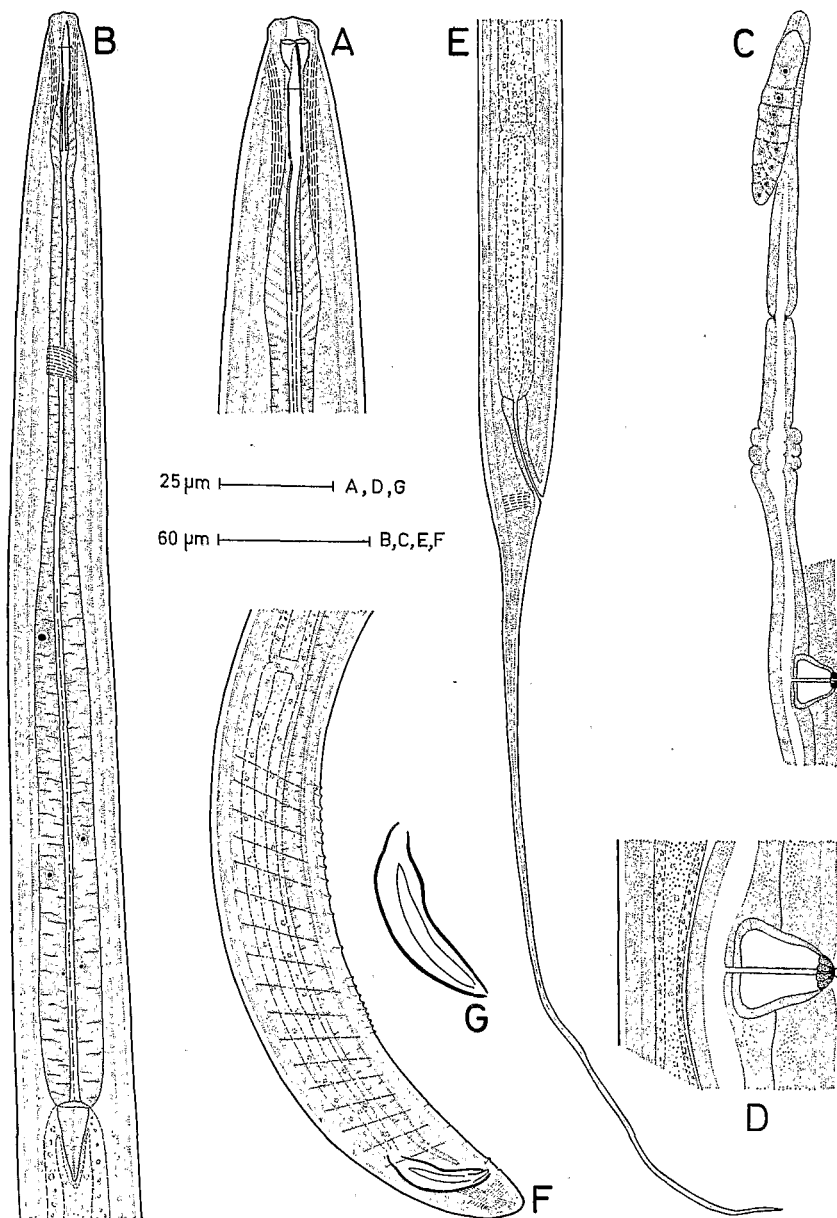


Fig. 7. *Calodorylaimus indicus* n. sp. A : Anterior region ; B : Oesophageal region ; C : Female genital branch (anterior) ; D : Vulval region ; E : Female posterior region ; F : Male posterior region ; G : Spicule.

Reproductive system amphidelphic. Vulva transverse, vagina thick-walled, 20-22 μm or about half of corresponding body-width. Oviduct-uterus junction indistinct. Prerectum 4-6 anal body-widths long. Rectum 1-2 anal body-widths long. Tail very long, filiform with acute terminus.

Male : Supplements an adanal pair and ventro-

medians arranged in two groups of 9-10 each, with 1-2 poorly developed in between. Spicules about two anal body-widths long. Lateral guiding pieces about one-fifth of spicule length. Prerectum about nine anal body-widths long, reaching well beyond range of supplements. Tail short, convex-conoid, with 2-3 caudal pores on each side.

TYPE HABITAT AND LOCALITY

Soil around roots of paddy, *Oryza sativa* L., from Imphal, Manipur, India; collected in September 1978.

OTHER HABITAT AND LOCALITY

Soil around roots of jute, *Corchoris* sp., from Howrah, West Bengal.

TYPE SPECIMENS

Holotype female and a paratype male on slide *Calodorylaimus indicus* n. sp./1; other paratype males and females on slides *Calodorylaimus indicus* n. sp./2-5; deposited in the nematode collection of Zoology Department, Aligarh Muslim University, Aligarh. A paratype female and a male deposited at Muséum national d'Histoire naturelle, Laboratoire des Vers, Paris, France.

DIFFERENTIAL DIAGNOSIS

Calodorylaimus indicus n. sp. differs from *C. octo* Andrassy, 1969 in having a smaller body, in the shape of the lip region, in having shorter odontostyle, longer oesophagus, posterior vulva and smaller spicules (L = 3.0-3.6 mm; b = 6.0; V = 36-37; odontostyle = 32-35 μ m; and spicules = 57-60 μ m in *C. octo*).

Afrodorylaimus geniculatus (Andrassy, 1961)
Andrassy, 1964

DIMENSIONS

Females (5): L = 1.18-1.26 (1.21) mm; a = 35-40 (37); b = 3.5-3.9 (3.7); c = 5-6 (6); c' = 11-14 (12); V = 49-53 (50); G₁ = 7-8 (8); G₂ = 8-9 (8); odontostyle = 23-24 (23) μ m; odontophore = 19-20 (20) μ m; oesophagus = 315-326 (320) μ m; pre-rectum = 42-46 (44) μ m; rectum = 26-30 (28) μ m; tail = 225-255 (240) μ m; ABD = 18-21 (19) μ m.

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Male: L = 1.19 mm; a = 32; b = 3.5; c = 33; c' = 1.4; T = 51; odontostyle = 24 μ m; odontophore = 19 μ m; oesophagus = 338 μ m; spicules = 36 μ m; lateral guiding pieces = 12 μ m; ventromedian supplements = 8; pre-rectum = 66 μ m; tail = 36 μ m; ABD = 26 μ m.

HABITAT AND LOCALITY

Soil around roots of grasses, from district Chamoli, Uttar Pradesh, India.

REMARKS

Afrodorylaimus geniculatus is reported here for the first time from India. The present specimens correspond fully with those described by Andrassy (1961).

ACKNOWLEDGMENTS

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