

## Two new species of the genus *Coomansinema* Ahmad and Jairajpuri, 1989 (Nematoda: Dorylaimida) with a key to its species

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### Summary

Two new species of the genus *Coomansinema* Ahmad and Jairajpuri, 1989 are described and illustrated. *C. japonicum* n. sp. is characterized by having medium size body (L= 1.40 – 1.45 mm); lip region truncate with completely amalgamated lips; amphideal fovea goblet – shaped; 16 – 20 µm long odontostyle; 23 – 25 µm long odontophore; comparatively anterior position of the second pair of pharyngeal glands; amphidelphic female genital system; longitudinal vulva; males with 48 – 54 µm long spicules; 7 – 8 spaced ventromedian supplements and tail long filiform in female and short conoid in male. *C. longicaudatum* n. sp. is characterized by having medium size body (L= 1.1 – 1.3 mm); lip region truncate, continuous with completely amalgamated lips; amphideal fovea cup – shaped; 16 – 17 µm long odontostyle; 19 – 20 µm long odontophore; comparatively anterior position of the second pair of pharyngeal glands; amphidelphic female genital system; transverse vulva, intestinal – prerectum junction with a tongue – like structure and 210 – 269 µm long filiform tail. A key to its seven valid species is provided.

**Keywords:** *Coomansinema*; description; Japan; key to species; new species

### Introduction

Ahmad and Jairajpuri (1989) established the genus *Coomansinema* and designated *C. dimorphicauda* as its type species reported from India. They differentiated the new genus on the basis of amalgamated, truncate and continuous lip region, without labial or post-labial sclerotization, odontostyle massive, slightly sinuate with thickened tip and wide lumen, anterior position of the second pair of pharyngeal glands and with sexual dimorphism in tail shape, female tail cupola-shaped with slightly dorsally bent terminal process and males with conoid-rounded without any process. Though *Coomansinema* lacks any labial sclerotization, but due to the position of its second pair of ventrosublateral pharyngeal gland nuclei and their orifices, this genus was placed under Thorneimatinæ Siddiqi, 1969. Recently, *Coomansinema* has been studied

by Andrassy (2012) who accepted its position among the genera of the family Thorneimatinæ. Ahmad (1993) added a new species, *C. oryzae* with transverse vulva from paddy fields in India. Dhanam and Jairajpuri (2002) added two more species *C. alduri* and *C. digiticauda* from India, whereas, Ahmad and Shaheen (2004) further described a new species *C. brevicauda* with spike-like tail from Costa Rica, quite different from the other known species of *Coomansinema*. Andrassy (2012) reported a new species *C. taiwanense* from Taiwan with longest odontostyle and lower number of ventromedian supplements and discussed in detail the taxonomic position of the genus *Coomansinema*. Vinciguerra *et al.*, (2014) described new species *C. istvani* from forest in Ecuador.

Khan (1995), while redescribing *Timminema pakistanicum*, synonymized *Coomansinema* with *Timminema* without giving any valid ground of justification. Andrassy (2012) did not accept this

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synonymy. We fully agree with Andr ssy's views and consider *Coomansinema* distinctly different from *Timminema*.

In the present paper two new species of this genus collected from Japan are described and illustrated. A key to species is also provided.

## Materials and Methods

Soil samples were processed using Cobb's (1918) sieving and decantation and modified Baermann's funnel techniques. The nematodes were extracted and fixed in hot formalin-glycerol fixative, dehydrated by the slow evaporation method (Seinhorst 1959), and mounted in anhydrous glycerin. Permanent mounts were prepared using the paraffin wax ring method (de Maeseneer & d'Herde 1963). The measurements were taken with an ocular micrometer and drawings made using a drawing tube. Some of the best preserved specimens were photographed using a Nikon Eclipse 80i microscope and a Nikon DS digital camera. Raw photographs were edited using Adobe® Photoshop®.

## Results

### *Coomansinema japonicum* n. sp.

(Figs. 1 & 2)

Measurements: See Table 1

Description: Adult: Moderately slender nematodes of medium size, 1.40 – 1.45 mm long. Body cylindrical, slightly curved ventrad upon fixation, tapering towards both ends but more so towards the posterior end because of the tapering long filiform tail. Cuticle three-layered, especially distinguishable at caudal region, a thinner outer layer bearing very fine transverse striations through the entire body, thicker intermediate layer with radial striations and thin inner layer; thickness 2 µm at anterior region and mid body, and 3 – 5 µm on tail. Lateral chord 6 – 10 µm wide at mid body, occupying about one-eighth to one-fifth (12 – 18 %) of mid-body diameter. Lip region truncate, continuous with body, 2.4 – 3.0 times as wide as high and about one-fourth (21 – 27 %) of body diameter at neck base; lips amalgamated; labial papillae not interfering with labial contour. Amphid fovea goblet-shaped, its aperture occupying about half of lip region diameter. Guiding ring simple, single, at 0.7 – 1.0 times lip region diameter from anterior end. Odontostyle cylindroid, rather robust, with distinctly thickened tip, 1.4 – 1.5 times the lip region diameter long, its aperture about one-third of its length, ventral arm slightly bent near middle giving a rather sinuate appearance. Odontophore linear, rod-like, 1.0 – 1.5 times the odontostyle length. Pharyngeal expansion gradual; expanded portion 5.6 – 6.8 times as long as wide, 2.6 – 3.2 times as long as body diameter, and occupying about 45 – 50 % of total neck length. Nerve ring at 30 – 40 % of neck length from anterior end. Pharyngeal gland nuclei located as follows: D = 62 – 63 %; AS1 = 16 – 17 %; AS2 = 19 – 21 %; PS1 = 51 – 52 %; PS2 = 52 – 54 % as per Andr ssy (1998); D0 = 53 – 59 %; DN = 56 – 61 %; DO – DN

=2.3 – 4.5 %; S1N1 = 62 – 66 %; S1N2 = 69 – 77 %; S2N = 82 – 84 %; S2O = 84 – 85 % as per Loof and Coomans (1970). Cardia rounded conoid, gradually tapering to a fine pointed tip.

Female: Genital system didelphic-amphidelphic, both sexual branches almost equally developed, anterior 173 – 205 µm long or 11 – 13 % of body length and the posterior 195 – 255 µm long or 13 – 17 % of body length. Ovaries large sized, usually surpassing the sphincter level, the anterior measuring 44 – 144 µm and posterior 90 – 170 µm long; oocytes arranged first in two or more rows, then in a single row. Oviducts consisting a slender proximal part with traces of sperms, measuring 110 µm or 2.1 (anterior) and 90 µm or 1.7 (posterior) times the corresponding body diameter long; oviduct-uterus junction marked by a sphincter; uterus a short, simple, tube-like structure filled with sperms, measuring 97 µm or 1.8 (anterior) and 110 µm or 2.1 (posterior) times the corresponding body diameter long (n=1, all the other females being gravid). Vagina extending inwards, 22 – 26 µm or about two-fifths to half of the corresponding body diameter; *pars proximalis vaginae* 12 – 14 × 6 – 8 µm, with somewhat sigmoid walls and surrounded by weak musculature; *pars refringens vaginae* well developed with two triangular pieces with rounded edges, 7 – 8 × 4 – 5 µm, their combined width 14–15 µm and a third pentagon-shaped intermediate piece; *pars distalis vaginae* well developed, 4 – 5 µm long. Vulva a pre-equatorial longitudinal slit. Prerectum 2.1 – 3.5, rectum 1.5 – 1.8 anal body diam. long. Tail 8 – 11 anal body diam. long, tapering gradually behind anus into long filiform tail, terminus in some specimens dorsally bent otherwise ventrally; hyaline part 23 – 26 % of total tail length. Caudal pores two pairs, one lateral, another sub-dorsal.

Male: Slender nematodes of medium size, 1.12 – 1.33 mm. Genital system diorchic, with opposed testes. In addition to the ad-cloacal pair, situated at 6 – 7 µm from cloacal aperture, a series 7 – 8 regularly spaced ventromedian supplements starting at a distance of 45 – 51 µm from the ad-cloacal pair, each ventromedian 12 – 13 µm apart. Spicules total length 48 – 54 µm along the arc, 1.2 – 1.3 times that at the chord, 5.0 times the maximum width and 1.8 – 2.1 times the body diam. at the cloacal aperture. Curvature 126 – 139°. Dorsal contour regularly convex, ventral contour bearing prominent hump and hollow, the former located at 28 – 33 % of spicule total length from its anterior end. Head well developed, occupying 21 – 24 % of total length, its dorsal contour conspicuously curved and longer than the ventral. Median piece 10 – 12 times as long as wide, occupying 30 % of spicules maximum width, reaching spicule terminal tip. Posterior end 3 – 4 µm wide. Lateral guiding pieces, 8.6 – 10 times as long as wide and about one-fourth of spicules length. Tail convex conoid with broadly rounded terminus. Caudal pores two on each side.

Type habitat and locality: Soil collected from natural forest, Yaku town, Yakushima Island, Japan; 30°18'15" N 130°34'33.2" E collected by Dr. Mizukubo of National Agricultural Research Center, Tsukuba, Japan.

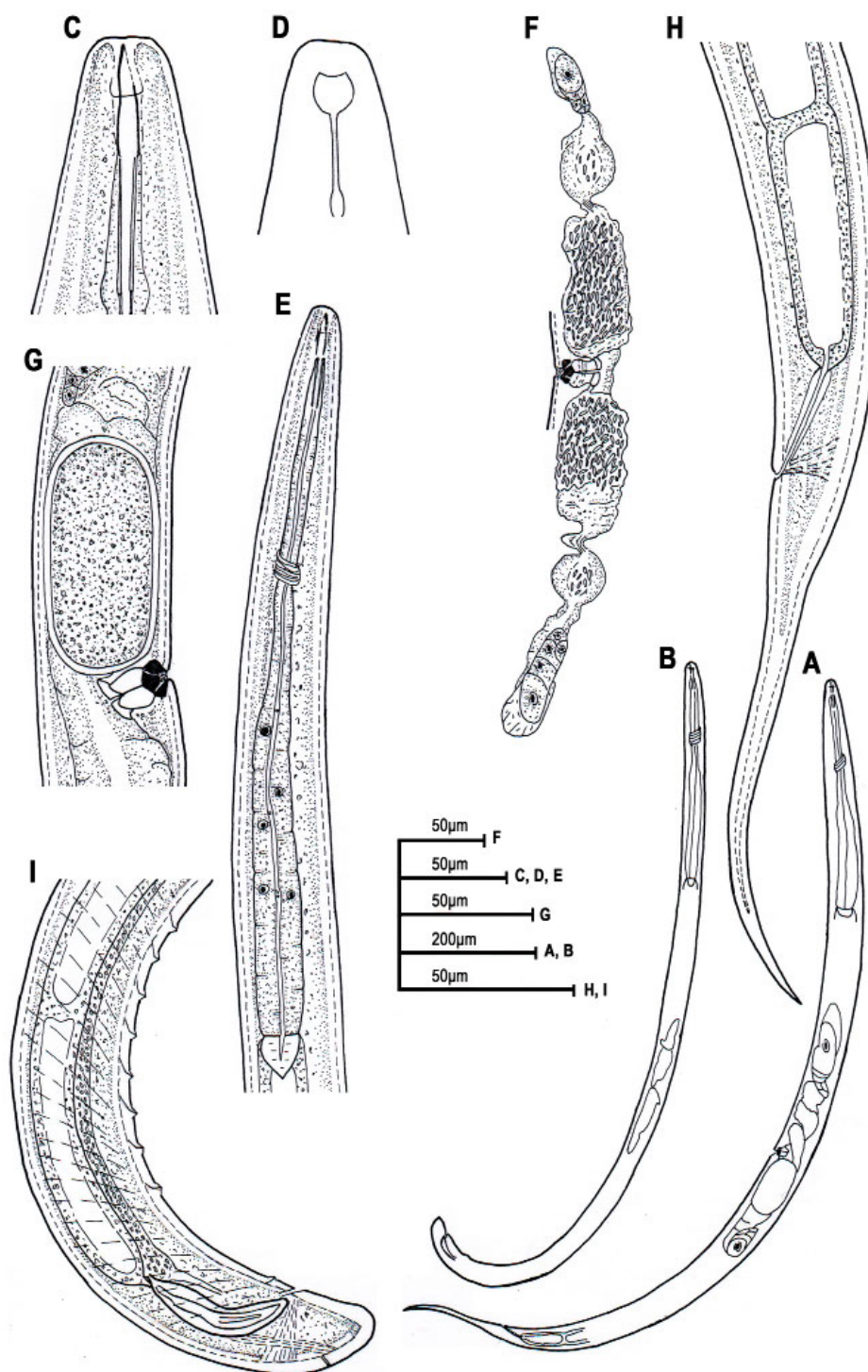


Fig. 1. *Coomansinema japonicum* n. sp. (A) Entire female; (B) entire male; (C) anterior region; (D) anterior end showing amphid; (E) pharyngeal region; (F) female genital system; (G) vulval region with egg; (H) female posterior region; (I) male posterior region.



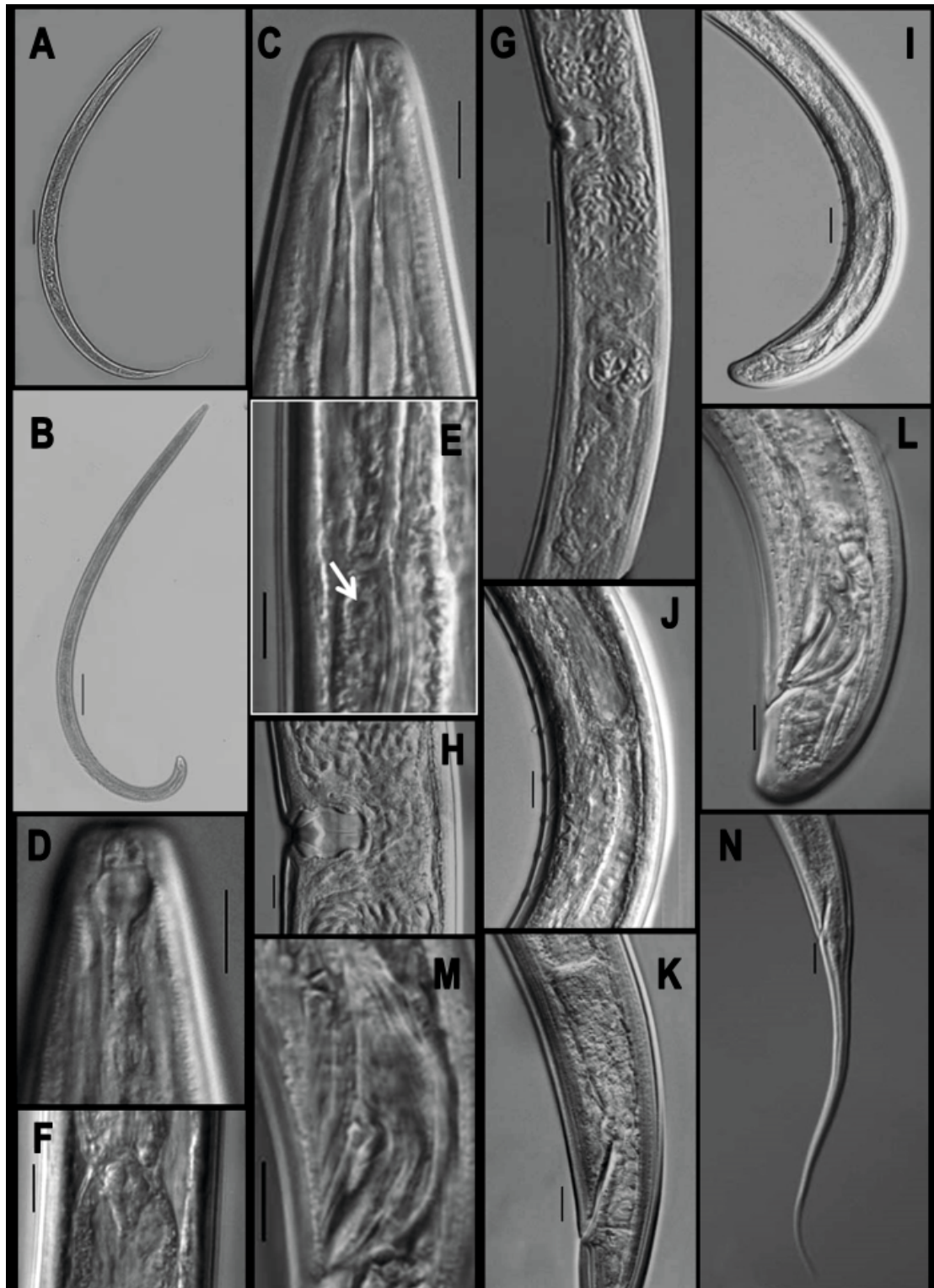


Fig.2. *Coomansinema japonicum* n. sp. (A) Entire female; (B) entire male; (C) anterior region; (D) anterior end showing amphid; (E) pharyngeal expansion arrow head pointing towards dorsal gland nuclei; (F) pharyngo-intestinal junction; (G) female genital branch (posterior); (H) vulval region; (I) male posterior region; (J) ventromedian supplements; (K) posterior region showing prerectum; (L) male caudal region; (M) male spicules; (N) female caudal region. (Scale bars: A, B = 100  $\mu$ m; C, D, E, F, H, K, J, L, M = 10  $\mu$ m; G, I, N = 20  $\mu$ m).

Table 1. Measurements of *Coomansinema japonicum* n. sp.  
(All measurements in  $\mu\text{m}$  except L in mm)

Characters	Holotype female	Paratype females	Paratype males
n	1	4	3
L	1.42	$1.43 \pm 0.21$ (1.40 – 1.45)	$1.23 \pm 0.84$ (1.12 – 1.33)
Body diameter at neck base	53	$53.5 \pm 3.4$ (48 – 57)	$38.6 \pm 5.2$ (34 – 46)
Body diameter at mid body	51	$53.0 \pm 3.7$ (47 – 56)	$39.0 \pm 2.4$ (36 – 42)
Body diameter at anus	21	$22.7 \pm 0.8$ (22 – 24)	$26.0 \pm 0.8$ (25 – 27)
a	28	$27.2 \pm 1.6$ (25.7 – 29.7)	$31.8 \pm 0.4$ (31.3 – 32.2)
b	4.0	$4.5 \pm 0.2$ (4.0 – 4.6)	$3.6 \pm 0.1$ (3.5 – 3.8)
c	6.8	$6.8 \pm 1.0$ (6.0 – 8.5)	$56.3 \pm 0.7$ (55.5 – 57.1)
c'	10	$9.4 \pm 1.1$ (7.7 – 10.9)	$0.80 \pm 0.0$ (0.80 – 0.88)
V	49	$47.6 \pm 1.2$ (46.0 – 49.3)	–
G1	13.3	$13.2 \pm 0.8$ (11.8 – 14.2)	–
G2	16.5	$15.6 \pm 1.6$ (13.4 – 17.6)	–
Lip region diameter	12	$12.5 \pm 0.5$ (12.0 – 13.0)	$12.6 \pm 0.5$ (12.0 – 13.0)
Lip region height	5	$4.3 \pm 0.5$ (4 – 5)	$4.6 \pm 0.5$ (4 – 5)
Amphid aperture	6	$6.1 \pm 0.2$ (6 – 6.5)	$6.3 \pm 0.5$ (6 – 7)
Odontostyle length	19	$17.7 \pm 1.5$ (16 – 20)	$19.3 \pm 0.5$ (19 – 20)
Odontophore length	23	$24 \pm 1.0$ (23 – 25)	$22 \pm 2.2$ (20 – 25)
Guiding ring from anterior end	12	$10 \pm 0.0$ (10 – 10)	$10 \pm 0.0$ (10 – 10)
Nerve ring from anterior end	127	$121.7 \pm 2.0$ (120 – 125)	$124 \pm 2.9$ (120 – 127)
Neck length	355	$321.2 \pm 12.5$ (308 – 337)	$340.6 \pm 16.1$ (318 – 354)
Expanded part of pharynx	170	$150.5 \pm 3.6$ (145 – 155)	$155.3 \pm 8.8$ (143 – 163)
Cardia length	23	$15.7 \pm 1.6$ (13 – 17)	$14 \pm 0.8$ (13 – 15)
Anterior genital length	189	$190.2 \pm 11.4$ (173 – 205)	–
Posterior genital length	235	$221.2 \pm 23.3$ (195 – 255)	–
Vaginal depth	26	$24.5 \pm 1.5$ (22 – 26)	–
Vulva from anterior end	700	$684.2 \pm 20.6$ (665 – 719)	–
Prerectum length	48	$74.2 \pm 20.6$ (52 – 78)	$90 \pm 8.2$ (80 – 100)
Rectum length	38	$37.7 \pm 1.1$ (36 – 39)	$43.3 \pm 0.9$ (42 – 44)
Tail length	210	$213.7 \pm 26.8$ (170 – 240)	$22 \pm 1.6$ (20 – 24)
Spicules length	–	–	$50.6 \pm 2.5$ (48 – 54)
Lateral guiding pieces	–	–	$30.3 \pm 3.7$ (26 – 35)
Ventromedian supplements	–	–	$7.6 \pm 0.5$ (7 – 8)

Type specimens: Holotype female and a paratype male on slide *Coomansinema japonicum* n. sp./1; paratype females and males on slides *Coomansinema japonicum* n. sp./2-4; deposited in the nematode collection of the Department of Zoology, Aligarh Muslim University, Aligarh.

Etymology: The new species is named *Coomansinema japonicum* n. sp. because it is recorded from Japan.

Diagnosis and relationships: *Coomansinema japonicum* n. sp. is characterized by having 1.40 – 1.45 mm (female) and 1.12 – 1.33 mm (male) long body; truncate, continuous lip region with completely amalgamated lips; amphid fovea goblet-shaped, guiding ring single, comparatively anterior position of the second pair of pharyngeal glands; amphidelphic female genital system; longitudinal vulva and long filiform tail 170 – 240  $\mu$ m and males with dorylaimoid spicules 48 – 54  $\mu$ m long; 7 – 8 equally spaced ventro-median supplements and short conoid tail with rounded terminus. The new species differs from all the known species of the genus *Coomansinema* in having long filiform tail. However, in the presence of longitudinal vulva, this new species comes close to *C. dimorphicauda* and *C. taiwanense*, but differs from the former in having large body (1.4 – 1.45 vs 1.25  $\mu$ m), shorter odontostyle (16 – 20 vs 22  $\mu$ m) and longer vs shorter digitate tail ( $c=6-8.5$  vs 43;  $c'=7.7-10.9$  vs 1.0). From latter, it differs in having shorter body (1.4 – 1.45 vs 1.5 – 1.88 mm) narrow lip region (12 – 13 vs 17 – 19  $\mu$ m), shorter odontostyle (16 – 20 vs 26 – 28  $\mu$ m), anterior position of vulva ( $V=46-49.3$  vs 54 – 60), smaller spicules (48 – 54 vs 64 – 70  $\mu$ m) and long filiform tail ( $c=6-8.5$  vs 26 – 41;  $c'=7.7-10.9$  vs 1.1 – 1.7). From *C. brevicauda*, it differs by having narrow lip width (12 – 13 vs 15 – 17  $\mu$ m), longitudinal vulva (vs transverse), longer tail (vs tail initially cupola then strongly narrowed to filiform process). From *C. istvani* the new species differs in having shorter odontostyle (16 – 20 vs 20 – 27  $\mu$ m), longitudinal vulva (vs transverse) and longer tail 170 – 240 vs 17 – 31  $\mu$ m ( $c=6-8.5$  vs 35.8 – 68.8;  $c'=7.7-10.9$  vs 0.6 – 1.0).

#### ***Coomansinema longicaudatum* n. sp.**

(Figs. 3 & 4)

Measurements: See Table 2

Description: Female: Moderately slender nematodes of medium size, 1.1 – 1.3 mm long. Body cylindrical, slightly curved ventrad upon fixation, tapering towards both ends but more so towards the posterior end because of the tapering long filiform tail. Cuticle three-layered, especially distinguishable at caudal region, where it consists of thinner outer layer bearing very fine transverse striations through the entire body, thicker intermediate layer with radial striations and thin inner layer; thickness 1.5 – 2.0  $\mu$ m in the anterior region, 2.0  $\mu$ m at mid body and 3.0  $\mu$ m on tail. Lateral chords 6 – 9  $\mu$ m wide at mid body, occupying about one-seventh to one-fifth (15 – 21 %) of mid body diameter. Lip region rounded, continuous with body, 2.2 – 2.7 times as wide as high and about one-third (28 – 31 %) of body diameter at neck base; lips amalga-

mated. Amphid fovea cup-shaped, its aperture occupying about half to three-fifths (50 – 63 %) of lip region diameter. Guiding ring single, at 0.8 – 1.0 times lip region diameters from anterior end. Odontostyle cylindroid, rather robust, with distinctly thickened tip, 1.3 – 1.7 times the lip region diameter long, its aperture about one-third of its length, ventral arm slightly bent near middle giving a rather sinuate appearance. Odontophore linear, rod-like, 1.1 – 1.3 times the odontostyle length. Anterior region of pharynx enlarging gradually at 57 – 60 % of neck length; basal expansion 5.5 – 6.5 times as long as wide, 3.1 – 3.2 times as long as body diameter, occupying about 40–48 % of neck length. Pharyngeal gland nuclei located as follows: D = 62 – 65 %; AS1 = 10 – 12 %; AS2 = 16 – 18 %; PS1 = 46 – 47 %; PS2 = 50 – 53 % as per Andr ssy (1998); DO = 58 – 62 %; DN = 61 – 63 %; DO-DN = 2.4 – 3.9 %; S1N1 = 69 – 72 %; S1N2 = 71 – 75 %; S2N = 81 – 84 %; S2O = 83 – 85 % as per Loof and Coomans (1970). Nerve ring at 38 – 40 % of total neck length. Cardia first rounded conoid, then gradually tapering to a fine rounded terminus. Genital system didelphic-amphidelphic; both sexual branches almost equally well developed, anterior 85 – 99  $\mu$ m long or 7 – 8 % of total body length and the posterior 90 – 118  $\mu$ m long or 7 – 9 % of body length. Ovaries small sized, usually not surpassing the sphincter level, measuring anterior 30 – 43  $\mu$ m and the posterior 40 – 56  $\mu$ m long; oocytes arranged first in two or more rows, then in a single row. Oviducts consisting a slender proximal part and a well developed *pars dilatata*, measuring 42 – 50  $\mu$ m or 1.0 – 1.3 (anterior) and 46–48  $\mu$ m or 1.2–1.7 (posterior) times the corresponding body diameter long. Oviduct-uterus junction marked by a sphincter. Uterus a short, simple, tube-like structure without trace of sperms, measuring 42 – 52  $\mu$ m or 1.0 – 1.3 (anterior) and 41 – 53  $\mu$ m or 1.0 – 1.2 (posterior) times the corresponding body diameter long. Vagina extending inwards, about two-fifths to one-half (40 – 50 %) of corresponding body diameter; *pars proximalis vaginae* 10 – 12  $\times$  6 – 7  $\mu$ m with somewhat sigmoid walls, surrounded by weak musculature; *pars refringens vaginae* well developed, comma-shaped, 5 – 6  $\times$  2 – 3  $\mu$ m, their combined width 11  $\times$  12  $\mu$ m, distal part of both close to each other but their proximal part far apart; *pars distalis vaginae* well developed, 5 – 6  $\mu$ m long. Vulva a transverse slit. Intestinal-prerectum junction with a well developed conical tongue-like structure. Prerectum 1.2 – 1.9, rectum 1.3 – 1.6 anal body diam. long. Tail long filiform, 9 – 11 anal body diam. long; hyaline part 29 – 31 % of total tail length. Caudal pore two pairs, one lateral, another sub-dorsal.

Male: Not found.

Type habitat and locality: Tall grasses from Koibuchimachi, Mito C, Ibaraki Prefecture, Japan; 36°20'29"N 140°26'48"E; collected by Dr. Masaki Araki on 07.12. 2011.

Type specimens: Holotype female on slide *Coomansinema longicaudatum* n. sp. /1; paratype females on slides *Coomansinema longicaudatum* n. sp. /2-8; deposited with the nematode collection of the Department of Zoology, Aligarh Muslim University, India.

Etymology: The new species is named *C. longicaudatum* n. sp. because of its long tail.

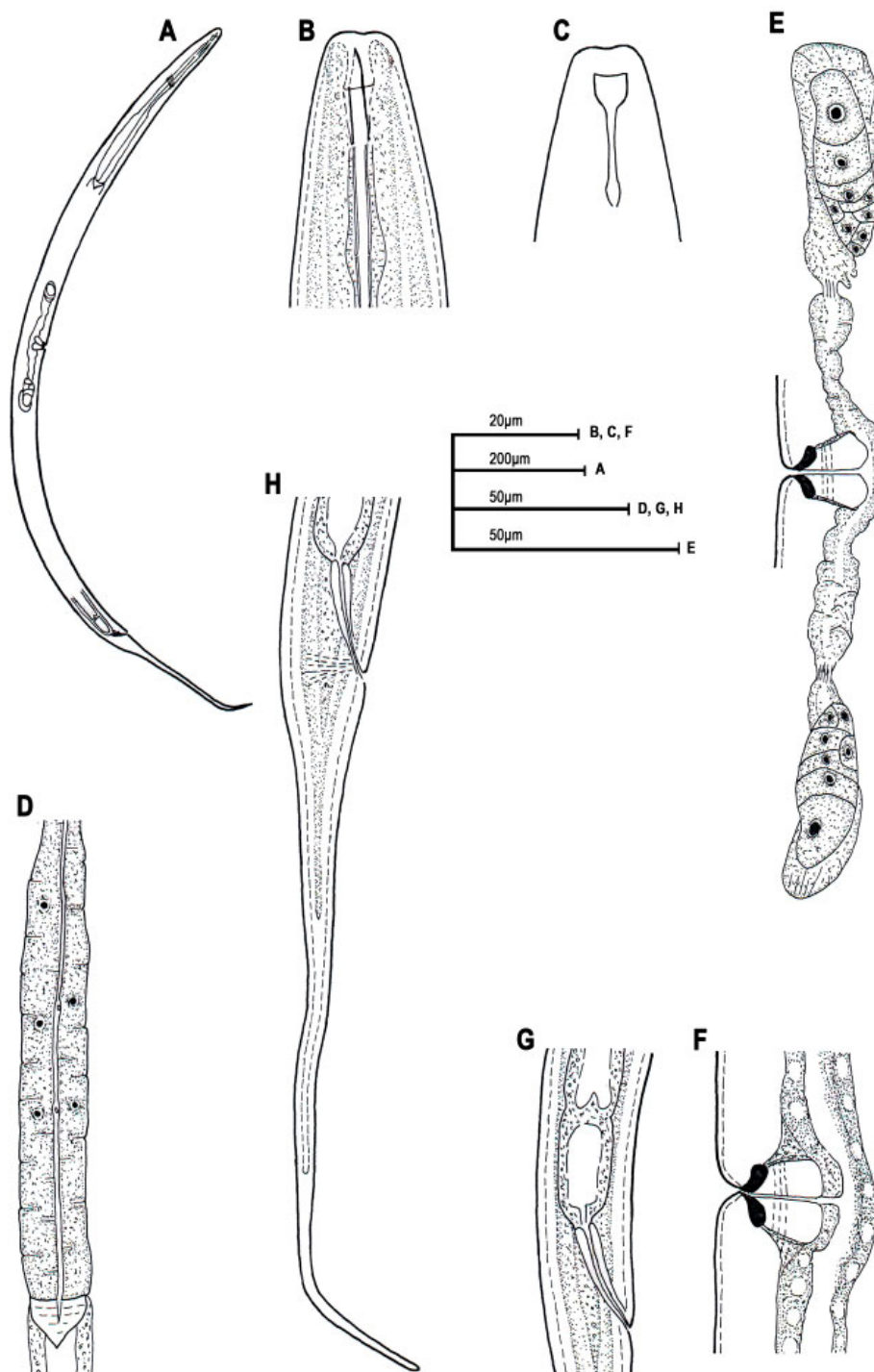


Fig.3. *Coomansinema longicaudatum* n. sp. (A) Entire female; (B) anterior region; (C) anterior end showing amphid; (D) pharyngeal region; (E) female genital system; (F) vulval region; (G) posterior region showing prerectum; (H) female posterior region.



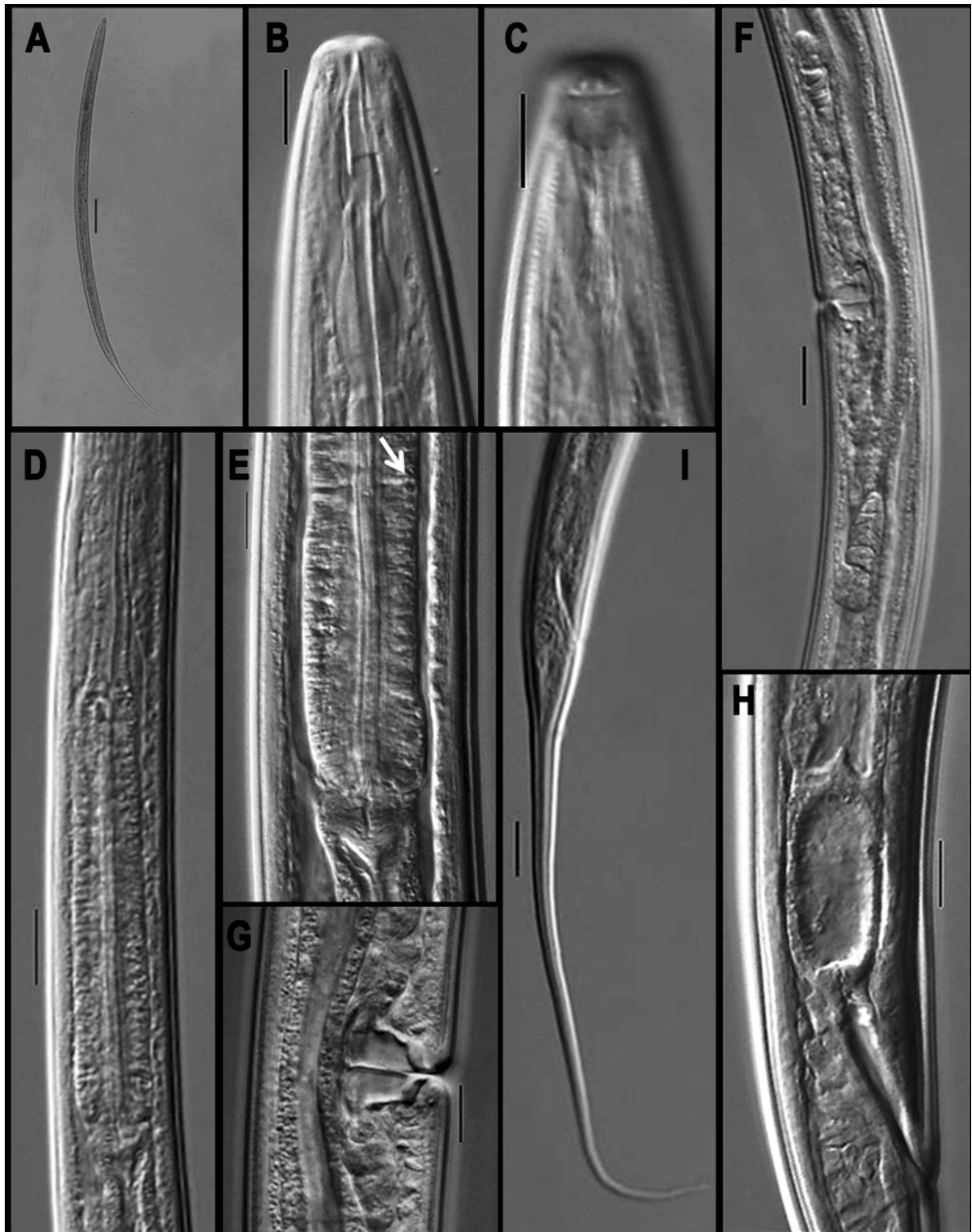


Fig.4. *Coomansinema longicaudatum* n. sp. (A) Entire female; (B) anterior region; (C) anterior end showing amphid; (D) expanded part of pharynx (E) pharyngeal base showing subventral gland nuclei and pharyngo-intestinal junction (arrow head pointing towards S2N); (F) female genital system; (G) vulval region; (H) posterior region showing prerectum; (I) caudal region. (Scale bars: A = 100 µm; B, C, E, G, H = 10 µm; D, F, I = 20 µm).



Table 2. Measurements of *Coomansinema longicaudatum* n. sp.  
(All measurements in  $\mu\text{m}$  except L in mm)

Characters	Holotype female	Paratype females
n	1	8
L	1.23	$1.23 \pm 0.66$ (1.12 – 1.35)
Body diameter at neck base	39	$37.9 \pm 1.7$ (35 – 40)
Body diameter at mid body	40	$38.9 \pm 1.5$ (37 – 41)
Body diameter at anus	22	$22.8 \pm 1.0$ (21 – 24)
a	33.3	$31.9 \pm 1.1$ (29.6 – 33.4)
b	4.1	$4.3 \pm 0.2$ (3.9 – 4.5)
c	5.0	$5.3 \pm 0.2$ (5.0 – 5.6)
c'	11.1	$10.2 \pm 0.6$ (9.1 – 11.2)
V	44.2	$43.8 \pm 1.7$ (41.8 – 47.5)
G1	8.0	$7.6 \pm 0.4$ (7.1 – 8.4)
G2	8.7	$8.4 \pm 0.5$ (7.5 – 9.1)
Lip region diameter	11	$11.1 \pm 0.3$ (11 – 12)
Lip region height	4	$4.5 \pm 0.5$ (4 – 5)
Amphid aperture	6	$6.5 \pm 0.5$ (6 – 7)
Odontostyle length	16	$16.9 \pm 0.3$ (16 – 17)
Odontophore length	20	$19.6 \pm 0.5$ (19 – 20)
Guiding ring from anterior end	10	$9.6 \pm 0.7$ (9 – 11)
Nerve ring from anterior end	115	$115.5 \pm 1.7$ (113 – 118)
Neck length	298	$290.1 \pm 7.2$ (283 – 306)
Expanded part of pharynx	122	$123.1 \pm 2.7$ (118 – 127)
Cardia length	14	$15.5 \pm 0.9$ (14 – 17)
Anterior genital length	99	$93.1 \pm 4.3$ (85 – 99)
Posterior genital length	107	$103.8 \pm 9.1$ (90 – 118)
Vaginal depth	20	$17.9 \pm 0.8$ (17 – 19)
Vulva from anterior end	544	$541.3 \pm 16.7$ (507 – 568)
Prerectum length	35	$35.1 \pm 4.1$ (30 – 40)
Rectum length	32	$33.8 \pm 1.6$ (32 – 37)
Tail length	245	$232.3 \pm 16.7$ (210 – 269)

Diagnosis and relationships: *C. longicaudatum* n. sp. is characterized by having 1.1 – 1.3 mm long body; lip region truncate, continuous with amalgamated lips; amphideal fovea cup-shaped; 16 – 17 µm long odontostyle; 19 – 20 µm long odontophore; comparatively anterior position of the second pair of pharyngeal glands; amphidelphic female genital system; transverse vulva; intestinal-prerectum junction with a tongue-like structure and 210 – 269 µm long filiform tail.

The new species closely resembles *C. japonicum* n. sp. in having long filiform tail in females but distinctly differs from it in the presence of a transverse vulva (vs longitudinal). It further differs from it in the shape of amphid (cup-shaped vs goblet-shaped), shorter odontostyle (vs odontostyle 16 – 20 µm), shorter prerectum (vs prerectum 35 – 108 µm) and in the absence of males (vs presence). Remarks. Ahmad and Jairajpuri (1989) placed the genus *Coomansinema* in the subfamily Thornemematinae Siddiqi, 1969 mainly because of anterior position of its second pair of ventrosublateral pharyngeal glands and their orifices. In the shape of its lip region, the nature of odontostyle and the position of second pair of subventral pharyngeal glands, *Coomansinema* closely resembles the genus *Opisthodorylaimus* Ahmad and Jairajpuri, 1982, except for having didelphic-amphidelphic females. All the *Opisthodorylaimus* species possess mono-opisthodelphic female genital system. Carbonell and Coomans (1986) while revising the genus *Opisthodorylaimus* recorded anterior uterine branch from completely absent (*O. filicaudatus*), mostly reduced to a uterine sac showing different degree of degeneration (*O. cavalcantii*) to anatomically complete (*O. paracavalcantii*) but never functional. Although, Gagarin (2004) described *O. major*, an amphidelphic species from fresh water

habitat in Russia, it is quite different from other known species of *Opisthodorylaimus* and do not fit in the generic diagnosis of *Opisthodorylaimus* and hence Andrassy (2007) rightly considered it a species *incertae sedis*. As of today the placement of these two new species seems most justified in the genus *Coomansinema* rather than *Opisthodorylaimus* till sequence data on species representing both these genera is not available.

In the presence of long filiform tail, the two new species also resembles the long-tailed dorylaim genera *Paradorylaimus* Andrassy, 1969 and *Laimydorus* Siddiqi, 1969. However, they distinctly differs from both in their characteristic wide, massive odontostyle, distinctly thickened at tip, and anterior position of S2N. As regards the tail shape, *Coomansinema* has a short conoid tail with slight projection at tip in the type species to characteristic elongation after the short conoid portion (cf. *C. oryzae*, *C. brevicauda*) and now the two newly described species has long filiform tail. Similar diversity in tail shape is quite common in the genus *Mesodorylaimus* Andrassy, 1959 and several other dorylaim genera.

Andrassy (2012) doubted the validity of *C. alduri* Dhanam and Jairajpuri, 2002 as the differences from *C. oryzae* reported in original description of *C. alduri* appear to be irrelevant. He also considered the position of *C. digiticauda* Dhanam and Jairajpuri, 2002 under *Coomansinema* rather doubtful because of the shape of its lip region being quite different from *Coomansinema* pattern, less anterior position of the second pair of pharyngeal glands, longer prerectum and a non-offset tail peg. We concur with Andrassy (2012) and the two species *C. alduri* and *C. digiticauda* are considered as *species inquirendae*.

#### Key to species of genus *Coomansinema*.

1. Female tail long filiform, usually more than 8 anal body width long.....2
  - Female tail shorter, usually less than 4 anal body width long.....3
2. Vulva transverse; c = 5.0-5.5; c' = 9.0-11.2.....*longicaudatum* n. sp. (Japan)
  - Vulva longitudinal; c = 6.0-8.5; c' = 7.7-10.9.....*japonicum* n. sp. (Japan)
3. Vulva longitudinal.....4
  - Vulva transverse.....5
4. Female 1.25 mm long; odontostyle 22 µm long; c' = 1.0; ventromedian supplements in male 12-15.....*dimorphicauda* Ahmad & Jairajpuri, 1989 (India)
  - Female 1.5-1.8 mm long; odontostyle 26-28 µm long; c' = 1.1-1.7; ventromedian supplements in male 7-8.....*taiwanense* Andrassy, 2012 (Taiwan)
5. Tail cupola-shaped with a very short finger-like, dorsally bent blunt process, female 0.9-1.5 mm long; odontostyle 20-27 µm long; c' = 0.6-1.0.....*istvani* Vinciguerra, Orselli & Clausi, 2014 (Ecuador)
  - Tail cupola-shaped with a long, narrow, dorsally bent process.....6
6. Female 1.7-1.9 mm long; c = 17-20; c' = 2.4-3.2; long tongue like structure present at intestine-prerectum junction; ventromedian supplements in male 12-13.....*oryzae* Ahmad, 1993 (India, Ecuador, Peru)
  - Female 1.3-1.6 mm long; c = 20-39; c' = 1.7-2.2; tongue like structure absent at intestine-prerectum junction; ventromedian supplements in male 10.....*brevicauda* Ahmad and Shaheen, 2004 (Costa Rica, Ecuador, Peru)

## Conflict of Interest

All authors have no potential conflict of interest pertaining to this submission to *Helminthologia*.

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