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## Taxonomy of the Genus *Promuntazium* Siddiqi, 1982 (Dorylaimida: Tylencholaimidae) With Description of Known Species from Jammu And Kashmir State, India

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### Abstract

A known species of the genus *Promuntazium* Siddiqi, 1982 are redescribed and illustrated. A diagnostic compendium and key to species of the genus is also provided.

**Keywords:** Description; key to species; compendium; *Promuntazium*.

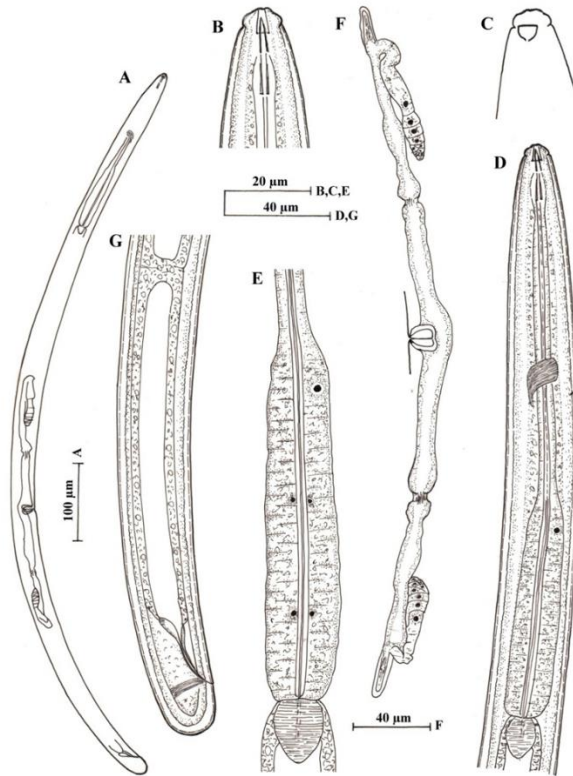
### Introduction

Siddiqi (1982) proposed the new genus *Promuntazium* with *P. pyxidorum* as its type species from Colombian rain forest soil. He differentiated *Promuntazium* from the genus *Mumtazium* Siddiqi, 1969 mainly by having didelphic female genital system, and short rounded tail. Ahmad and Jairajpuri (1983) added a second species to this genus from India. Ahmad and Araki (2003) redescribed *P. pyxidorum* from Japan whereas, Mushtaq, Naz and Ahmad (2007) further added a new species to this genus from Jammu and Kashmir, India. Siddiqi (2008) added further four new species to this genus from Cameroon making a total of seven species under this genus. In the present paper known species have been redescribed, diagnostic key and compendium (Table 2) has also been provided.

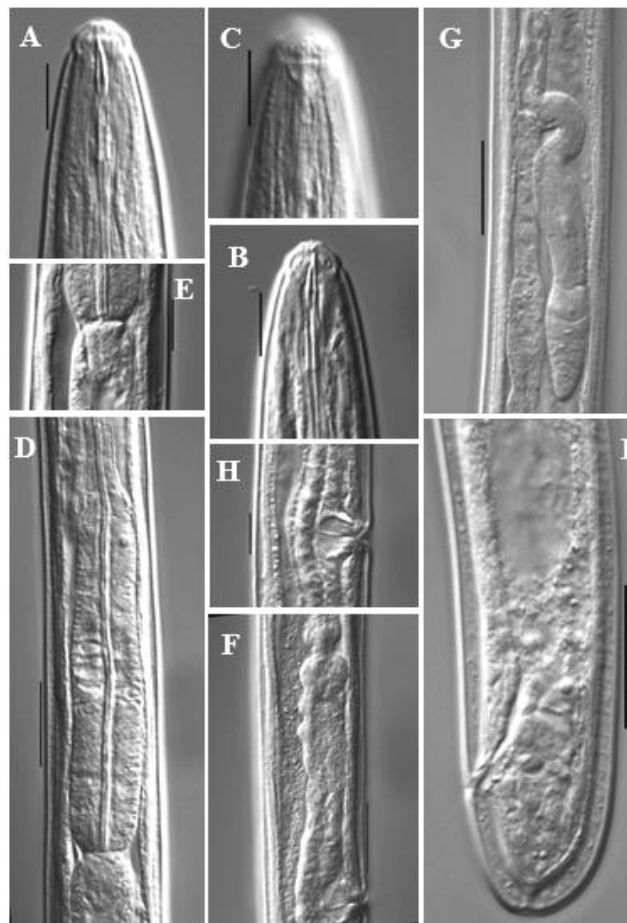
**Material and methods:** The nematodes were extracted from soil samples by Cobb (1918) sieving and decantation and modified Baermann's (1917) funnel technique. Nematodes obtained in clear water were killed and fixed in hot 4% formaldehyde, dehydrated in glycerol-alcohol by a slow method and mounted on slides in anhydrous glycerine. Measurements were taken using an ocular micrometer and 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. Morphometric included de Man's (1880) indices and the pharyngeal gland nuclei is expressed according to Loof and Coomans (1970).

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**Description**  
***Promuntazium indicum* Mushtaq, Naz and Ahmad, 2007**



**Fig. 1:** *Promuntazium indicum* Mushtaq, Naz and Ahmad, 2007. A. Entire female; B. Anterior region; C. Anterior end showing amphid; D. Pharyngeal region; E. Pharyngeal bulb; F. Female genital system; G. Female posterior region.



**Fig. 2:** *Promuntazium indicum* Mushtaq, Naz and Ahmad, 2007. A. & B. Anterior region; C. Anterior end showing amphid; D. Pharyngeal bulb; E. Pharyngo-intestinal junction; F. & G. Female genital system; H. Vulval region; I. Female posterior region. (Scale bar A-C, E, H = 10 µm; D, F, G, I = 20 µm)

**Table 1.** Measurements of *Promuntazium indicum* Mushtaq, Naz and Ahmad, 2007  
(All measurements in  $\mu\text{m}$ )

Characters	Females
n	4
L	1012.2 $\pm$ 44.3 (958-1064)
Body diameter at neck base	29.7 $\pm$ 0.8 (29-31)
Body diameter at mid body	31.2 $\pm$ 0.8 (30-32)
Body diameter at anus	23 $\pm$ 1.2 (22-25)
a	32.3 $\pm$ 0.8 (30.9-33.2)
b	4.5 $\pm$ 0.8 (4.3-4.8)
c	55.9 $\pm$ 6.0 (47.9-62.5)
c <sup>^</sup>	0.7 $\pm$ 0.08 (0.7-0.9)
V	60.0 $\pm$ 0.74 (59.2-61)
G <sub>1</sub>	17.0 $\pm$ 0.50 (16.3-17.6)
G <sub>2</sub>	17.0 $\pm$ 1.8 (15.2-20)
Lip region diameter	9.0
Lip region height	3.3 $\pm$ 0.4 (3-4.5)
Amphid aperture	3.8 $\pm$ 0.5 (3-4.5)
Odontostyle length	8 $\pm$ 0.7 (7-9)
Odontophore length	10.0
Guiding ring from anterior end	5.8 $\pm$ 0.2 (5.5-6)
Nerve ring from anterior end	88 $\pm$ 2.3 (86-92)
Neck length	219.5 $\pm$ 6.7 (210-229)
Expanded part of Pharynx	85.2 $\pm$ 4.0 (79-90)
Cardia length	13.2 $\pm$ 0.8 (12-14)
Anterior genital branch	172.7 $\pm$ 4.7 (167-180)
Posterior genital branch	172.5 $\pm$ 17.0 (153-196)
Vaginal length	14 $\pm$ 1.2 (12-15)
Vulva from anterior end	608.2 $\pm$ 26.6 (581-645)
Prerectum length	138 $\pm$ 13 (125-151)
Rectum length	20 $\pm$ 1.6 (18-22)
Tail length	18.25 $\pm$ 1.7 (16-20)

**Female:** Medium sized nematodes, slightly curved upon fixation; body cylindrical tapering slightly towards the anterior extremity. Cuticle with two distinct layers, 2-3  $\mu\text{m}$  thick at midbody and 3-4  $\mu\text{m}$  on tail. Cuticle typical tylencholaimoid: outer layer thin with constant thickness throughout the body; inner layer with irregular outline and loose; radial refractive elements present. Lateral chords occupying about one-third of the midbody diameter. Dorsal body pores indistinct. Ventral body pore one, located at 90-100  $\mu\text{m}$  from anterior end. Lateral body pores very minute, 3-4 from anterior end to pharynx base, 6 from pharynx base to vulva and 5-6 from vulva to tail. Lip region low, cap-like, set off by a deep constriction, 2.2-3.0 times as wide as high or about one-third as wide as body diameter at neck base. Lips rounded, amalgamated. Amphids cup-shaped, their aperture located at the level of cephalic constriction and occupying about one-third of lip region diameter. Odontostyle asymmetrical, 0.7-1.0 times the lip region diameter long, dorsally arcuate, thick as compared to ventral arm, forms a wider lumen, aperture one-fourth of the odontostyle length. Guiding ring simple, refractive, at 0.6 times lip region diameter from anterior end. Odontophore rod-like, 1.1-1.4 times the odontostyle length. Pharynx extending gradually, basal expansion occupying about 38-39% of total neck length. Cardia conoid to rounded, about one-third of the corresponding body diameter long. Pharyngeal gland nuclei clear and close to pharyngeal expansion, DN at 144-147  $\mu\text{m}$  from anterior end. Nerve ring located at 37-42% of neck length. Genital system amphidelphic both branches almost equally developed. Ovary reflexed, measuring 64-86  $\mu\text{m}$  (anterior) and 52-84  $\mu\text{m}$  (posterior), not reaching the oviduct-uterus junction; oocytes arranged in single row except near tip.

Oviduct joining the ovary sub terminally, measuring 98-105 $\mu\text{m}$  (anterior) and 85-115  $\mu\text{m}$  (posterior), consisting of a slender portion and moderately developed *par dilatata*. Oviduct-uterus junction marked by well-developed sphincter. Uterus a comparatively wide tubule, measuring 67-75  $\mu\text{m}$  (anterior) and 66-81  $\mu\text{m}$  (posterior). Vulva apparently a transverse slit. Vagina cylindrical; *pars proximalis vaginae* 5-8  $\mu\text{m}$  long, its wall encircled by muscles; *pars distalis vaginae* short, 1.5-2  $\mu\text{m}$  long with slightly curved walls; *pars refringens absent*. Prerectum 5.4-6.0 and rectum 0.7-1.0 times anal body diameter long. Tail short, hemispheroid, 0.7-0.9 times anal body diameter long, with a distinct terminal caudal pore.

**Male:** Not found.

**Habitat and locality:** Soil collected from around the roots of apple (*Pyrus malus*) trees from district Barahmullah, Jammu and Kashmir State, India.

**Remarks:** Mushtaq, Naz and Ahmad (2007) described *P. indicum* from soil around the deodar roots of primary forest at Pahalgam, Jammu and Kashmir, India. The description and measurements of the present population confirms well with the type population except in having comparatively longer odontostyle and odontophore (*vs* 5.5-6.0  $\mu\text{m}$  and *vs* 8-9  $\mu\text{m}$ ); lateral body pores present (*vs* indistinct); longer prerectum (*vs* 54.4-55  $\mu\text{m}$ ); anterior and posterior genital branches almost of equal length (*vs* anterior genital branch comparatively longer than posterior); slightly shorter tail (*vs* 20-22.4  $\mu\text{m}$ ) and male absent (*vs* present).

**Key to species of the genus *Promuntazium***

- 1 – Body length L= 0.52-0.70 mm.....2
- Body Length L= 0.72-1.44 mm.....3
- 2 – Pharyngeal bulb occupying 34-38 % of total neck length; male absent; tail convex-conoid.....tongonum
- Pharyngeal bulb occupying 40-45% of total neck length; tail hemispheroid; male Present.....salvarum
- 3 – Tail hemispheroid.....promiscuum
- Tail convex-conoid with bluntly rounded terminus.....4
- 4 – V= 61-66%.....pyxidorum
- V = 55-61%.....5
- 5 – Odontostyle 7-8 µm, odontophore 11-12 µm.....elongatum
- Odontostyle 5-6 µm, odontophore 8-9 µm.....6
- 6 – Prerectum 2.4 times anal body diameter; spicules 37 µm; two ventromedian supplements.....indicum
- Prerectum 4-4.5 times anal body diameter; spicules 34-35; three ventromedian supplements mammiform.....provulvatum

**Table 2.** Morphometrics of species belonging to the genus *Promuntazium* Siddiqi, 1982 (measurements in µm, except L in mm).

Character species	n	L (mm)	a	b	c	ε	V	lrd (µm)	ods (µm)	Neck length (µm)	ph.bulb length (µm)	abw (µm)	prerect. length (µm)	tail Length (µm)	spicule length	vms	geo.distru	reference
<i>elongatum</i>	6♀	1.25-1.44	31-40	4.9	49-60	0.8	55-61	11-12	7-8	242-260	97*	23-32	23-30	21-26			India	Ahmad & Jairajpuri, 1983
	1♂	1.38	43	5.0	60	0.9	-	-	8	237	-	23	58	23	30	3		
<i>indicum</i>	3♀	0.91-1.14	28-31	4.5	45.7	0.9	56-60	9-9.5	5.5	201-233	80-96	22-24	54.4-55	20-22.4			India	Mushtaq et al., 2007
	1♂	1.05	29.5	4.8	40.4	1.1	-	9.5	6.0	222	82.5	24	-	26	37	2		
<i>promiscuum</i>	4♀	0.86-0.91	27-30	4.2	41-48	0.8	60-61	8.0-8.5	4.7	198-200	77-90	22*	95-120	18-22			Camer oon	Siddiqi, 2008
	3♂	0.76-1.0	26-34	4.1	48-56	0.7	-	-	5.0	175-213	-	25*	-	20*	30-32	3		
<i>provulvatum</i>	4♀	0.85-0.99	25-29	4.2	39-43	0.9	55-56	8.5-9.5	5-6	200-205	82-86	27*	-	21-25			Kenya	Siddiqi, 2008
	3♂	0.97-1.05	28-32	4.8	38.8	1.0	-	-	5-5.5	205-220	80-90	27*	-	27*	34-35	3		
<i>pyxidorum</i>	11♀	0.71-0.91	28-37	3.7	43-59	0.7	61-66	7*	5-6	175*	76-90	20*	-	17*			Colom bia Japan Korea	Siddiqi, 2008 Ahmad & Araki, 2003 Ahmad et al., 2009
	1♂	0.71	31	3.8	59	1.0	60-64	-	5	-	-	-	-	-				
	4♀	0.76-0.87	27-31	3.8	47.7	0.9	64.5	7.5-8.0	6.5	182-218	77-98	18-20	64-76	16-18	25	2		
	1♀	0.78	26.2	4.3	41.4	0.9	61.9	10	6	219	100	21	20	19				
<i>salvarum</i>	7♀	0.65-0.70	23-30	3.5	41-52	0.7	63-65	8*	4.6	165-185	73-78	18*	65-84	13-15			Fiji Island	Siddiqi, 2008
	1♂	0.57	30.2	3.9	41	0.9	-	-	5.2	-	63	-	-	13*	24	2		
<i>tongonum</i>	7♀	0.52-0.67	22-29	3.4	33-45	0.8	62-66	8*	4.8	150-175	58-68	17*	65-72	15-18			Togo	Siddiqi, 2008

lrd = Lip region diameter  
 ph. bulb = Pharyngeal bulb  
 abw = Anal body diameter  
 geo. distru = Geographical distribution

ods = Odontostyle  
 prerect. = Prerectum  
 vms = Ventromedian supplements  
 (\*) = Calculated measurements from illustrations.

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