

***Gireterakis hamirpurens* n. sp. (Nematoda: Heterakidae) parasitic on Indian porcupine *Hystrix indica* from district Hamirpur, Himachal Pradesh India**Rakesh Chandel<sup>1\*</sup> and Vandana Sharma<sup>2</sup><sup>1</sup>Associate Professor in Zoology, G.C. Palampur Distt. Kangra (Himachal Pradesh), India.<sup>2</sup>Assistant Professor in Zoology, G.C. Bilaspur Distt. Bilaspur (Himachal Pradesh), India.

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**ABSTRACT :** *Gireterakis hamirpurens* n. sp. (Nematoda: Heterakidae) recovered from the caecum of Indian Porcupine *Hystrix indica*, collected at village Rail Bara district Hamirpur (Himachal Pradesh) India is described. The new species differs from the congeners, mainly based on the number and pattern of caudal papillae, length and shape of spicules. caudal papillae 12 pairs (4 papillae lateral, pedunculated and fleshy, 8 pairs ventral in position, small and sessile) 6 pairs precloacal, 2 pairs ad cloacal and 4 pairs post cloacal out of 4 post cloacal one pair is dorsal in position. spicules 1.44-1.488 mm long, equal, complex with hook-shaped tips. The genital cone/cloacal opening consists of two projections, each with six finger-like digitations out of six two further bifurcate distally.

**Keywords:** *Gireterakis*, porcupine, *Hystrix indica*, Rail Bara, Hamirpur.

**INTRODUCTION**

During the survey of nematode parasites a large number of specimens recovered from the caecum of Indian Porcupine, *Hystrix indica* Kerr (1792), the carcass of the host found dead along the road side at village Rail Bara district Hamirpur (Himachal Pradesh) India. These nematodes are intermediate in size generally belongs to genera *Heterakis* and *Ascaridia* of family Heterakidae, Railliet and Henry (1912) having Pre-cloacal sucker. The anterior end bent ventrally and having cephalic cordon. The new species has been described and discussed in the light of already known species and has been found new to the science. The two known species of the genera are also recovered from the same host from the different localities of the country.

**Materials and Methods:** The specimens were recovered from the caecum of the host Indian porcupine *Hystrix indica* at village Rail Bara district Hamirpur, Himachal Pradesh in the month of August, 2010. The worms were killed and fixed in 3-4% formalin and bulk cleared in lactophenol for microscopic examination. The sketches re incorporated were made with the help of camera lucida and measurements were taken with the help of stage and ocular micrometer and photographs were taken with the help of Leica Microscope DMLS2 camera DFC 320 and scanning micrographs JSM6100. All the specimens (holotypes, paratypes and allotypes) were deposited in the parasitic collection of Parasitology Lab. Department of Biosciences HPU Shimla, India.

**Description:** (1 Holotype, 1 Paratype and 8 allotype) Body stout and large, show sexual dimorphism, whitish when alive, curved ventrally from anterior, cuticle transversely striated, lips three each with two papillae and an amphid), cervical cordon three straight, tubular arising from the inter-labial space bearing a pair of papillae on either side of each cordon; buccal cavity without teeth (Fig. 1, 2, 3, 9, 10, 13 and 14; oesophagus terminating into a pyriform sac containing valves; cervical papillae in the anterior region of oesophagus; excretory pore prominent just posterior to nerve ring (Fig. 2).

**Male:** Body 22.224-22.455 long, 0.557-0.63 in maximum thickness; cervical cordons 0.269-0.342 deep; oesophagus 2.025-2.112 long; cervical papillae 0.52-0.54, nerve ring 0.672-0.675 and excretory pore 0.855-0.864 from antriad; tail 0.495-0.624 long; caudal alae well developed fusing ventrally anterior to rounded precloacal sucker; caudal papillae 12 pairs (4 papillae lateral, pedunculated and fleshy, 8 pairs ventral in position, small and sessile) 6 pairs precloacal, 2 pairs ad cloacal and 4 pairs post cloacal out of 4 post cloacal one pair is dorsal in position (Fig. 4, 5, 12, 16, 17 and 18); spicules 1.44-1.488 long, equal, complex with hook-shaped tips (Fig. 4, 5, 15 and 16); cloacal opening with two projections, each projection bears 6 finger digitations out of 6, 2 digitations further bifurcated (Fig. 6, 16, 17).

***Gireterakis hamirpurens* n. sp.**

**FIGURES**

1. Anterior end, lateral view
2. Anterior end, ventral view
3. Cephalic, (Enlarge) enface view
4. Posterior end of male, lateral view
5. Posterior end of male, ventral view
6. Cloacal region (enlarged), ventral view
7. Vulvar region of female, lateral view
8. Posterior end of female, lateral view

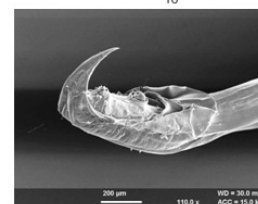
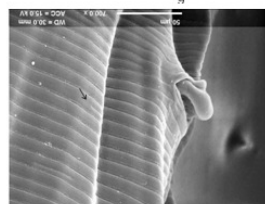
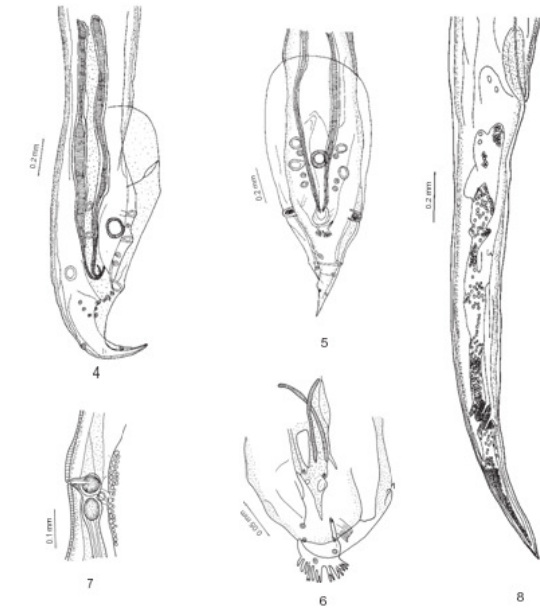
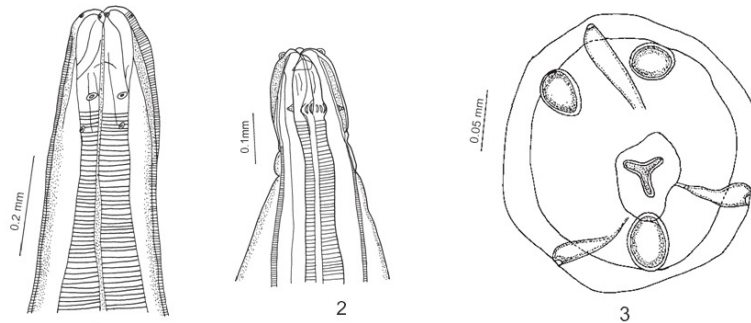
**SEM Photographs**

9. Anterior end showing cephalic cordon and papillae

10. Anterior end showing buccal teeth
11. Vulvar region
12. Posterior end of male showing sucker and cloaca

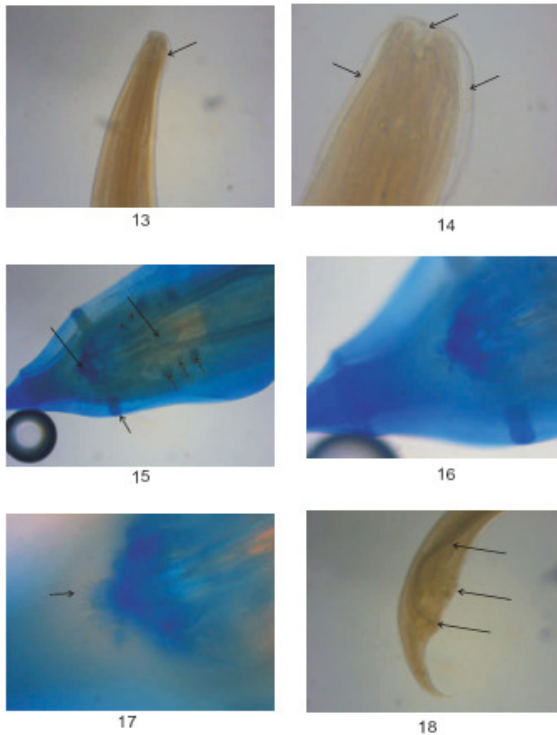
**LEICA Photographs**

13. Anterior end of female, lateral view
14. Anterior end of female (Enlarged), lateral view
15. Posterior end of male, ventral view
16. Posterior end of male showing cloacal cone
17. Posterior end of male showing cloacal cone digitation
18. Posterior end of male, lateral view



11

12



**Female:** Body 26.10-26.51, 0.765-0.792 in maximum thickness; cordons 0.315 deep; oesophagus 2.34-2.475 long; cervical papillae 0.495-0.522, nerve ring 0.720-0.765 and excretory pore 0.855-0.945 from anterior; tail 2.025-2.07 long (Fig. 8), tapering with pointed tip; vulva in the anterior third of the body 7.38-7.47 (Fig. 7, 11); vagina thick muscular tube directed anteriorly; eggs 0.05×0.032-0.057 × 0.034 in size, globular and thick shelled (Fig. 7).

**Host:** Porcupine *Hystrix indica* Kerr (1792).

**Location :** Caecum

**Locality :** Rail Bara district Hamirpur (H.P.)

**Discussion:** This species in having three simple lips with two papillae, three straight, tubular cervical cordons each arising from the inter-labial space; male with well developed caudal alae, fusing in front of the small, slightly ring shaped pre-cloacal sucker; spicules equal, similar and complex; vulva in the anterior third of the body, has assigned as genus *Gireterakis* Lane (1917). This genus includes two identified species, *Gireterakis giardi* Lane (1917) from *Hystrix bengalensis* in India, in this species, teeth are absent in the buccal cavity, caudal papillae are 15 pairs (7 pairs precloacal, 2 pairs adcloacal and 6 pairs post-cloacal of which one pair present dorsally); gubernaculum and

teleton absent and *G. andersoni* Kalia and Gupta (1989) from *Hystrix Indica* in Himachal Pradesh, India, buccal cavity with three conoid teeth; caudal papillae 13 pairs (7 pairs precloacal, 2 pairs adcloacal and 4 pairs postcloacal, dorsal papillae absent); gubernaculum and teleton present. Hence in view of the differences, the present species is new to science and hence named *Gireterakis hamirpurensis* after the locality of the host.

**Species diagnosis:** Male 22.224-22.455, female 26.10-26.51 long; caudal papillae 12 pairs (6 pairs precloacal, 2 pairs adcloacal and 4 pairs postcloacal of which one pair is dorsal; spicules 1.44-1.488 long, equal, complex with hook-shaped tips; cloacal opening with two projections and each projection having 6 finger-like digitations of which 2 digitation bifurcated distally; vulva 7.38-7.47 from anterior; eggs 0.05-0.057 × 0.032-0.034, globular and thick shelled.

**Generic diagnosis:** Meteterakinae, Inglis (1967) Head with three rounded lips; cervical cordons three, straight, tubular arising from the inter-labial space, lateral alae running throughout the length of the body; buccal cavity with or without teeth; oesophagus differentiated into anterior vestibular part and posterior pyriform, valvulate sac; in male, caudal alae well developed, fusing in front of a small, slightly rounded precloacal sucker; caudal alae supported by three or four pairs of large fleshy papillae and numerous sessile papillae; spicules equal, complex; gubernaculum and teleton present or absent; female, tail elongated; vulva in the anterior third of the body, ovary didelphic; eggs thick shelled, parasites of porcupine *Hystrix* spp. in India.

## REFERENCES

- Inglis, W. G. (1967). The evolution, host relationship and classification of nematode superfamily Heterakoidea. *Bull. Br. Mus. Nat. Hist. (Zool.)* 15, 1-28.
- Kalia, D. C. and Gupta, N. K. (1989). *Gireterakis andersoni* n. sp. A second species record of the genus from India. *Indian Journal of Parasitology*, 13(1), 31-34.
- Kerr, R. (1792). Class I. Mammalia: containing a complete Systematic Description, Arrangement, and Nomenclature, of all the known Species and Varieties of the Mammalia, or Animals which give suck to their young. (Feb) 1792:27 unno. pp(33)-400.
- Lane, C. (1917). *Gireterakis giardi* ( n.g.,n. sp.) and other suckered nematodes. *Indian Journal of Medical Research*, 4, 754-765.
- Railliet, A. and Henry, A. (1912). Quelques nematodes parasites des reptiles. *Bull. Soc. Path. Exot.*, 5, 251-259.

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