

RESUMO SIMPLES - HELMINTOLOGIA: SISTEMÁTICA, EPIDEMIOLOGIA E
CONTROLE

**APPLICATION OF SCANNING ELECTRON MICROSCOPY IN THE
MORPHOLOGICAL CHARACTERIZATION OF PROTOSPIRURA SP.**

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Nematodes of the genus *Protopirura* (Seurat, 1914) (Spiruridae) are characterized by a robust body with a striated cuticle and parasitize the stomach of mammals, being considered cosmopolitan nematodes. Species-level distinction within this genus is based on cephalic and reproductive characters, such as the number of teeth on the pseudolabia, the arrangement of cloacal papillae, and the position of the vulva. The main objective of this study was to visualize differential morphological structures of *Protopirura* sp. using Scanning Electron Microscopy (SEM). This work is part of a biodiversity project conducted in the Atlantic Forest and focuses on *Delomys dorsalis* (Hensel, 1872), a sigmodontine rodent endemic to the Neotropical region. Specimens were collected in the Itatiaia National Park (PNI), a conservation area

characterized by a humid climate and broad altitudinal variation. Rodents were captured at elevations ranging from 800 to 1,500 m using Tomahawk and Sherman traps and processed under biosafety standards with the appropriate institutional approvals. Authorizations for the collection and handling of animals were issued by the Chico Mendes Institute for Biodiversity Conservation (ICMBio) under permit No. 74498-11, and by the Ethics Committee on the Use of Animals (CEUA/IOC) under license No. L-036/2018-A1. For SEM analysis, one male and one female nematode were dehydrated in a graded ethanol series, subjected to critical-point drying, sputter-coated with gold, and examined using a scanning electron microscope at the Rudolf Barth Platform (IOC/Fiocruz). SEM analysis revealed, in the cephalic region of male and female, the presence of two pseudolabia, each composed of a prominent median lobe bearing four teeth and two smaller lateral lobes, each with two trifurcated teeth. Two pairs of cephalic papillae located above the pseudolabia and a pair of amphids were also identified. In the posterior region of male, four pairs of precloacal papillae were observed, followed by an unpaired papilla situated anterior to the cloacal opening. Posterior to the cloaca, two pairs of larger papillae were recorded, followed by four pairs of smaller papillae and a pair of phasmids adjacent to the last pair of small papillae. The genus *Protospirura* currently comprises 15 species distributed globally, with higher occurrence in Asia, Africa, North America, Oceania, and Europe. Its main hosts include rodents, felines, and moles. *Protospirura numidica* (Seurat, 1914) and its subspecies *Protospirura numidica criceticola* (Quentin, 1968) exhibit four teeth on the median lobes and two teeth on the lateral lobes, a feature corroborated by the SEM micrographs obtained in this study. In the posterior region of males, all species of the genus possess four pairs of papillae and a single precloacal papilla, structures conserved across taxa, with variation occurring mainly in the number and arrangement of postcloacal papillae. The subspecies *Protospirura numidica criceticola* is distinguished by two pairs of large papillae immediately posterior to the cloacal opening, four pairs of small papillae distributed along the tail extremity, and a pair of phasmids positioned near the last pair of small papillae, characteristics consistent with those observed in the specimens analyzed herein. In contrast, *Protospirura numidica* exhibits two pairs of large postcloacal papillae and only three pairs of small papillae in the terminal caudal region. In females, the vulva was in a post-equatorial position, as previously described for both *Protospirura numidica* and *Protospirura numidica criceticola*, further supporting the morphological correspondence with this subspecies. Based on these morphological findings,

this study indicates that the nematodes recovered from the rodent *Delomys dorsalis* correspond to the subspecies *Protospirura numidica criceticola*. Nevertheless, molecular and phylogenetic analyses will be incorporated into future investigations to provide a more robust and precise diagnosis of the specific identity of these parasites.

Palavras-chave: integrative taxonomy; nematodes and rodents.