



<http://dx.doi.org/10.11646/zootaxa.3826.2.1>

<http://zoobank.org/urn:lsid:zoobank.org:pub:9279B0A4-B92D-4132-8DD4-CEB9E0DFFE03>

Description of *Abursanema iranicum* n. gen., n. sp. (Nematoda: Hexatylinea, Sphaerularioidea) from Iran and its phylogenetic relationships

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Abstract

Abursanema iranicum n. gen., n. sp. is described and illustrated based on morphological, morphometric and molecular characters. The new genus is characterized by its smooth outer and annulated inner cuticle, having two incisures in lateral field, lacking stylet knobs, having pyriform terminal bulb with stem-like extension projecting into the intestine and lacking of bursa in male. The new genus belongs to the family Paurodontidae. It most closely resembles the genera *Paurodontoides* and *Paurodontus*, but has affinities based on male characters with *Gymnotylenchus* of the family Neotylenchidae too. From *Paurodontoides*, it differs by the absence of stylet knobs and having six sectors in the head framework. Compared to *Paurodontus*, the new genus differs by the absence of stylet knobs, structure of the pharynx and absence of a bursa in male. It differs from *Gymnotylenchus* mainly by lacking of stylet knobs, presence of a basal pharyngeal bulb with an extension into the intestine and in the structure of the spicules. Molecular phylogenetic studies of the new genus using 706 bp partial sequences of the 28S rDNA D2/D3 segment revealed it forming a clade with two species of *Sphaerularia* in both Bayesian Inference (BI) and maximum likelihood (ML) analyses with 1.00 Bayesian posterior probability (BPP) and 0.96 bootstrap support values (BS). Using 942 bp partial sequences of 18S ribosomal RNA gene, the new genus formed a clade with a species of *Deladenus* with 0.86 BPP and 0.62 BS in BI and ML methods, respectively. With both BI and ML methods, this clade forms a larger highly supported clade with two species of *Sphaerularia*.

Key words: 18S rDNA, 28S rDNA D2/D3, Iran, new genus, new species, phylogeny, Sphaerularioidea, taxonomy

Introduction

The family Paurodontidae was erected by Thorne, 1941 and according to Siddiqi (2000), currently contains one subfamily Paurodontinae Thorne, 1941 and seven valid genera: *Paurodontus* Thorne, 1941, *Bealius* Massey & Hinds, 1970, *Luella* Massey, 1974, *Misticus* Massey, 1967, *Neomisticus* Siddiqi, 1986, *Paurodontella* Husain & Khan, 1968 and *Paurodontoides* Jairajpuri & Siddiqi, 1969. On the affinity of Paurodontidae with Sphaerulariidae Lubbock, 1861, Siddiqi (2000) states: “most probably, this family is a junior synonym of Sphaerulariidae since the type genus and other genera included in it are morphologically similar and are suspected of having similar life cycles to members of the latter group”. In morphology, members of both families have a stem-like extension at the base of the terminal bulb, but biologically, the entomoparasitic forms of Paurodontidae are unknown, as is also the case for our new genus. Chizhov (2004) accepted the general framework of Siddiqi’s opinion, and Andrassy (2007) accepted Paurodontidae as a junior synonym of Sphaerulariidae. We believe such a synonymy will make it easier to study members of this diverse group of nematodes. In general, the diversity and occurrence of hexatylenchid nematodes is poorly known in Iran. From this diverse group of nematodes, two species, *Hexatylenchus mulveyi* Das, 1964 and *Stictylenchus mucronatus* (Thorne & Malek, 1968) Siddiqi, 1986 have been reported from Iran (Kheiri, 1972, Gharakhani *et al.*, 2009). Recently, Jahanshahi Afshar *et al.* (2014) reported two additional Iranian species of the superfamily Sphaerularioidea Lubbock, 1861 (Poinar, 1975). During our extensive surveys on tylenchid nematodes from Iran, a new species representing a new genus of the family Paurodontidae was recovered. The objectives of

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