

Morphological and genetic studies on *Raphidascaris acus* from the Caspian Sea

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Using exact morphologic and genetic studies, it has been recently shown that many nematode species are in fact species complex. In this case, there are not such studies related to the Genus *Raphidascaris* Railliet & Henry, 1915. Herein, the morphologic and genetic variations among the Iranian population of the species *Raphidascaris acus* (Bloch, 1779) Railliet & Henry, 1915 and the other allopatric populations with morphologic and genetic information were compared to show whether this species can be considered as a species complex. A total of 20 specimens of *R. acus* were collected from *Esox lucius* Linnaeus from the Caspian Sea and the morphology of the Caspian population of this species was surveyed for the first time using both light and scanning electron microscopy. Meanwhile, some parts of rDNA including ITS1, 5.8s and ITS2 were sequenced and presented as the genetic marker for this species. To understand whether *R. acus* can be considered as a species complex, the Caspian population of this species was compared morphologically with the allopatric populations of Czech and Canada and genetically with the allopatric population of Poland (Vistula lagoon). Morphologically, there was no difference between the Caspian and Czech populations but the Caspian and Canadian populations differed in the length of ejaculatory duct and the presence of the small triangular elevation between bases of subventral lips. The nucleotide difference between the Caspian and Polish populations was 4.48%. In comparison with the interspecific genetic distances in the genus *Raphidascaris*, this value is notable since among the congeners, the genetic distances between *R. acus* and three other species sequenced earlier namely *Raphidascaris lophii* (Wu, 1949), *Raphidascaris trichiuri* (Yin & Zhang, 1983) and *Raphidascaris longispicula* Li, Liu, Liu & Zhang, 2012, were 25.41%, 24.84% and 24.41%, respectively. In conclusion, based on morphological and genetic differences among the allopatric populations of *Raphidascaris acus*, this species is probably a species complex. Nonetheless, the definitive taxonomic decision in recognizing *R. acus* as a species complex and description of its sibling species depend on surveying the other allopatric populations.

Keywords: *Raphidascaris acus*; Caspian Sea; species complex