A new species of *Tranzschelia* (Uredinales) on *Prunus mahaleb*

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Abbasi M. & M. Scholler (2005). A new species of *Tranzschelia* (Uredinales) on *Prunus mahaleb*. Sydowia 57 (2): 149–153.

Tranzschelia arasbaranica sp. nov. (Uredinales) is described on *Prunus mahaleb* from Iran. The species can be distinguished from related species by a combination of teliospore features including size, position of germ pores, and cell wall thickness. A key to Iranian *Tranzschelia* species on Prunoideae based on teliospore features is provided.

Keywords: Uredinales, *Tranzschelia, Prunus,* Rosaceae, Iran.

The genus *Tranzschelia* Arthur (Uropyxidaceae, Uredinales) consists of autoecious species on Ranunculaceace (microcyclic or macrocyclic) and of heteroecious macrocyclic species on Ranunculaceae (aecial host) and Prunoideae (telial host). Of some of the species assumed to be heteroecious no aecial hosts are known yet. There are about 15 *Tranzschelia* species worldwide occurring circumglobally in the northern temperate region (Cummins & Hiratsuka 2003).

So far, five of the 15 species of *Tranzschelia* (Uredinales) are known from Iran on Prunoideae (Rosaceae), namely *T. discolor* (Fuckel) Tranzschel & M.A. Litv., *T. hyrcanica* M. Abbasi & Gjaerum, *T. iranica* M. Abbasi & Gjaerum, *T. microcerasi* Tranzschel & M.A. Litv., and *T. pruni-spinosae* (Pers.) Diet. One species, *T. pruni-spinosae,* which has previously been reported to occur on various host species by Ershad (1995), was found to differ from its type specimen (Abbasi & Ershad 1995, Abbasi & Gjaerum 1997). The species, however, was recently found elsewhere in the northern provinces on *Prunus cerasifera* Ehrh. s. str. and on *P. cerasifera* Ehrh. subsp. *caspica* N.N. Luneva. We will discuss these records in detail within the framework of a monographic study of the genus *Tranzschelia.* In this article, we introduce a new species of *Tranzschelia,* which represents the sixth one described from Iran.

Material and methods

Spores from dried specimens were mounted in lactophenol, examined with an Olympus BH2 Nomarski Differential Interference Contrast Microscope (DIC), and photographed with a PM-10 AD photomicrographic system. Fifty spores per specimen were randomly selected and measured.

Results

Tranzschelia arasbaranica M. Abbasi & M. Scholler, sp. nov. (Fig. 1)

Spermogonia et aecia ignota. Uredinia pauca, hypophylla, maculas parvas brunneas, sparsas, pulverulentas, cinnamomeo-brunneas formantia, paraphysibus spathulatis vel clavatis, hyalinis vel aureis, tenuitunicatis, nonnumquam sursum modice inspissatis intersparsa; urediniosporae clavatae, obovoideae, fusiformes vel oblongae, 32.5–47.5 × 12.5–17.5 µm, parietibus aureobrunneis, deorsum pallidioribus, in latere 1.5 µm crassis, sursum ad 7.5 µm inspissatis, echinulatae spinis in parte inferiore longissimis, sursum fere laeves, 3–4 poris germinationis in parte aequatoriali vel superiore praeditae. Telia hypophylla, maculas parvas brunneas formantia, sparsa, erumpentia, cito nuda, nonnumquam confluentia, pulverulenta, atro-brunea; teliosporae fasciulatae, late obovoideae vel clavatae, 40–60 (–67) × 22.5–31 µm, conspicue constricta ad septum, cellula superiore oblata, oblonga vel plus minusve globosa, dense et conspicue echinulata, cellula inferiore obovoidea, clavata vel oblonge-ellipsoidea, conis parvis obtecta vel fere laevi, pariete castaneo, in latere 2.5–4 µm crasso, sursum paulatim ad 6.5 µm inspissato, poro germinationis in cellula superiore apicali, subapicali vel aequatoriali, in cellula inferiore prope septum posito, pedicello tenui hyalino.

Spermogonia and aecia unknown. Uredinia few, hypophyllous, on small brown spots, scattered, pulverulent, cinnamon-brown, paraphysate, with paraphyses spathulate or clavate, hyaline to golden, wall thin, sometimes slightly thickened at apex; urediniospores clavate, obovoid, fusiform or oblong, 32.5–47.5 × 12.5–17.5 µm, wall golden-brown, paler at the base, 1.5 µm thick at the sides, thickened up to 7.5 µm above, echinulate, spines larger at the base of the spore, smooth at apex, germ pores 3–4 in an equatorial zone or toward the upper third. Telia hypophyllous, on small brown spots, scattered, erumpent, soon naked, sometimes confluent, pulverulent, blackish brown. Teliospores in fascicles, broadly obovoid or clavate, 40–60(–67) × 22.5–31 µm, deeply constricted at the septum, upper cell oblate, oblong or more or less globose, densely and coarsely echinulate, lower cell obovoid, clavate or oblong-ellipsoid, with smaller cones or almost smooth, wall chestnut-brown, 2.5–4 µm thick at the sides, gradually thickening towards the apex to up to 6.5 µm, germ pore in the upper cell apical, subapical or equatorial, in the lower cell near the septum, pedicels thin, hyaline, attached in groups at base.

Etymology: Named after the type locality, Arasbaran forest, NW Iran.

Holotypus: On *Prunus mahaleb* L. (Rosaceae), Iran, E Azarbaijan, Ahar, Arasbaran forest, Ooli, alt. 1000 m, 30. 8. 1998, leg. Gh. H. Tavanai (IRAN 12359F), (isotype in KR; KR 12355).

Further material examined: On *P. mahaleb,* Iran, E Azarbaijan, Ahar, Arasbaran forest, Alhord, 4. 11. 1997, leg. Gh. H. Tavanai (IRAN 12358F, KR 12354).

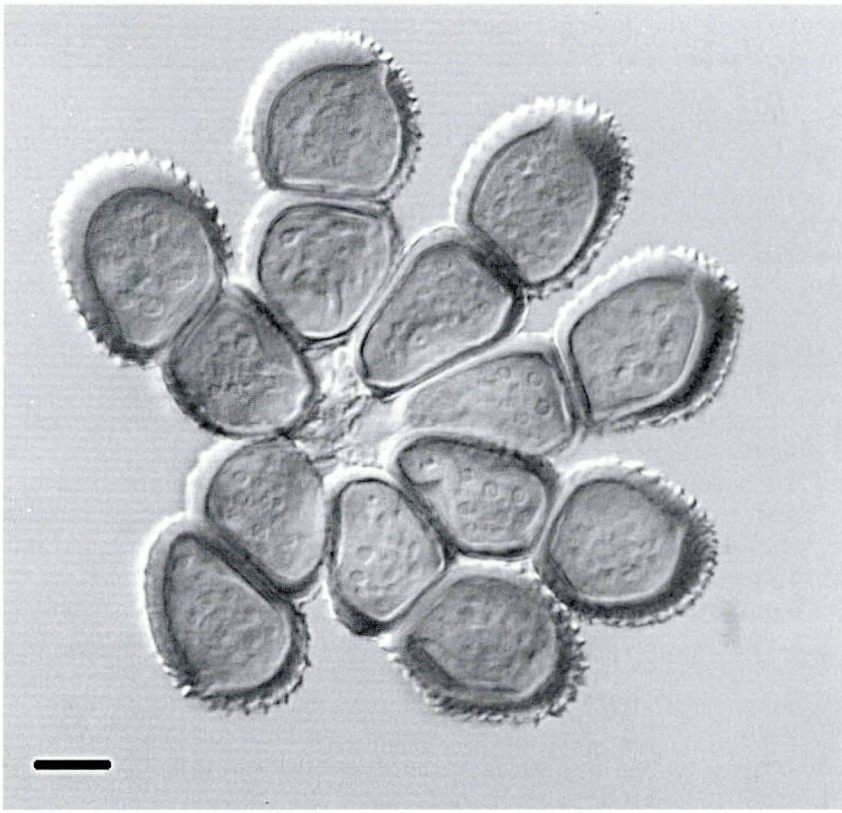

Fig. 1. A teliospore fascicle of *Tranzschelia arasbaranica* (IRAN 12359F). Bar = 10 μm.

Discussion

Six species of *Tranzschelia* are known from northern Iran indicating that this small area is the centre or one of the centres of diversity of *Tranzschelia*. The new species, *T. arasbaranica,* is the third species known to infect *Prunus mahaleb*. So far, two other species have been reported from this host plant, namely *T. pruni-spinosae* (in Bulgaria

and Romania; see Bontea 1985, Denchev 1995), and *T. discolor* (Europe, Caucasus; see Gäumann 1959: 205, Majewski 1977: 291 and Kuprevich & Ulyanishchev 1975: 155). The records mentioned above, however, are somewhat obscure and need to be revised.

Tranzschelia arasbaranica shares certain morphological characteristics with *T. microcerasi* Tranzschel & M. A. Litv. and *T. hyrcanica* M. Abbasi & Gjaerum. *T. microcerasi* differs from the here described species, however, by its clearly smaller and hardly constricted teliospores, while *T. hyrcanica*'s upper teliospore cell walls are not thickened at the apex and the lower teliospore cell has germ pores in equatorial position or near the pedicel.

Key to species of *Tranzschelia* on *Prunus* in Iran based on teliospore features:

1 Teliospores not in fascicles, on *P. cerasifera* ..... *T. pruni-spinosae* (Pers.) Dietel
1* Teliospores in fascicles 2
2 Upper teliospore cell wall not thickened apically, on *P. cerasifera, spinosa* ..... *T. hyrcanica* M. Abbasi & Gjaerum
2* Upper teliospore cell wall thickened apically 3
3 Upper and lower teliospore germ pore near the septum 4
3* Upper teliospore germ pore apical or subapical, the lower near the septum 5
4 Teliospores up to 44 µm long; cell wall apically thickened to 3–4 (–5) µm, on *P. armeniaca, cerasifera, domestica, dulcis, persica spinosa,* ..... *T. discolor* (Fuckel) Tranzschel & M. A. Litv.
4* Teliospores up to 54 µm long; cell wall apically thickened up to 7 µm, on *P. dulcis, elaeagnifolia, microcarpa* ..... *T. iranica* M. Abbasi & Gjaerum
5 Teliospores up to 47.5 µm long, broadly clavate, hardly constricted at the septum, on *P. leiocarpa, microcarpa, spinosissima,* ..... *T. microcerasi* Tranzschel & M. A. Litv.
5* Teliospores up to 67 µm long, broadly obovoid or clavate, deeply constricted at the septum, on *P. mahaleb* ..... *T. arasbaranica* M. Abbasi & M. Scholler

Acknowledgements

Mr. Gh. H. Tavanai, Research Center for Agriculture and Natural Resources, East Azarbaijan, Iran, collected and sent us material of *Tranzschelia* for publication and Prof. Walter Gams provided the Latin diagnosis. Studienstiftung Mykologie (Cologne) supported M. Abbasi to work on *Tranzschelia* at Naturkundemuseum Karlsruhe, Germany.

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(Manuscript accepted 10 October 2005)