

Puccinia fritschii sp. nov. – a new rust species from Iran

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Abstract: Abbasi, M. & Darvishnia, M. 2015: *Puccinia fritschii* sp. nov. – a new rust species from Iran. *Schlechtendalia* **28**: 77–79.

A new microcyclic rust species, *Puccinia fritschii*, found in Iran on leaves of *Tulipa* spp., is described, illustrated and discussed, supplemented by an identification key to rust species on tulips. The new species is unique by its teliospore walls covered by irregular coarse warts and ridges.

Zusammenfassung: Abbasi, M. & Darvishnia, M. 2015: *Puccinia fritschii* sp. nov. – eine neue Rostpilzart aus dem Iran. *Schlechtendalia* **28**: 77–79.

Eine neue mikrozyklische Rostpilzart auf Blättern von *Tulipa* spp. aus dem Iran, *Puccinia fritschii*, wird beschrieben, abgebildet und diskutiert, ergänzt durch einen Bestimmungsschlüssel der Rostpilzarten auf Tulpen. Die neue Art ist einmalig durch Teleutosporenwände mit unregelmäßig groben Warzen und Graten.

Key words: *Pucciniales*, *Tulipa*, Western Asia, mycobiota.

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Introduction

The genus *Tulipa*, comprising about 100 species, is distributed from Asia to North Africa and contains 35 species in the Iranian Plateau (Iran, Afghanistan, western Pakistan, eastern Iraq, southern Azerbaijan, and southern Turkmenistan). 22 species are distributed in Iran (Ghahreman *et al.* 2007). To our knowledge, until now only two *Puccinia*, one *Uromyces* and one *Aecidium* species have been described on *Tulipa* spp. A new, hitherto undescribed *Puccinia* species found in Iran on *Tulipa* is described and compared with other tulip rusts. A key to the rust fungi on *Tulipa* spp. is also provided.

Material and Methods

Infected plants were collected in 2007 and 2011 from two adjacent provinces in western Iran. The collections were later examined in a mixture of lactic acid, glycerol and water (Kirk *et al.* 2008) and photographed using a Zeiss Axiophot microscope. Identification was carried out through comparison with current taxonomic literature dealing with rust fungi. Voucher specimens including holotype specimen were deposited at IRAN.

Result

Puccinia fritschii M. Abbasi, **sp.nov.**

Fig 1

Mycobank, MB 815316

Etymology: named after the German botanist and *Allium* specialist Reinhard M. Fritsch who collected the type material.

Diagnosis: Resembling *P. tulipae*, but teliospores much larger, 48–55 × 35–42 µm, and covered with irregular coarse warts and ridges (vs. 30–44 × 21–32 µm and verrucose in *P. tulipae*).

Spermogonia, aecia and uredinia not developed. Telia amphigenous, chestnut brown, pulverulent, gregarious in eye-shaped or ellipsoid groups, surrounded by the torn epidermis. Teliospores broadly ellipsoid to oblong, walls pale brown to brown, 7–9 µm thick, covered with irregular coarse warts and ridges, 48–55 × 35–42 µm, germ pore in upper cell apical, occasionally subapical, in lower cell at the point of attachment of pedicel; pedicel colorless, deciduous, short.

Holotype: On *Tulipa biflora* Pall., Iran, Markazi province, Lateh-Dar, N slope of Lateh mount, 33°59'15''N, 50°07'70''E, 2630 m alt., R.M. Fritsch, M. Keusgen and M. Abbasi, 11 May 2007, III (IRAN 16154).

Additional material examined (paratype): On *Tulipa* subgenus *Eriostemones*, Iran, Lorestan province, Aligodarz, M. Azad, 10 May 2011, III (IRAN 16153)

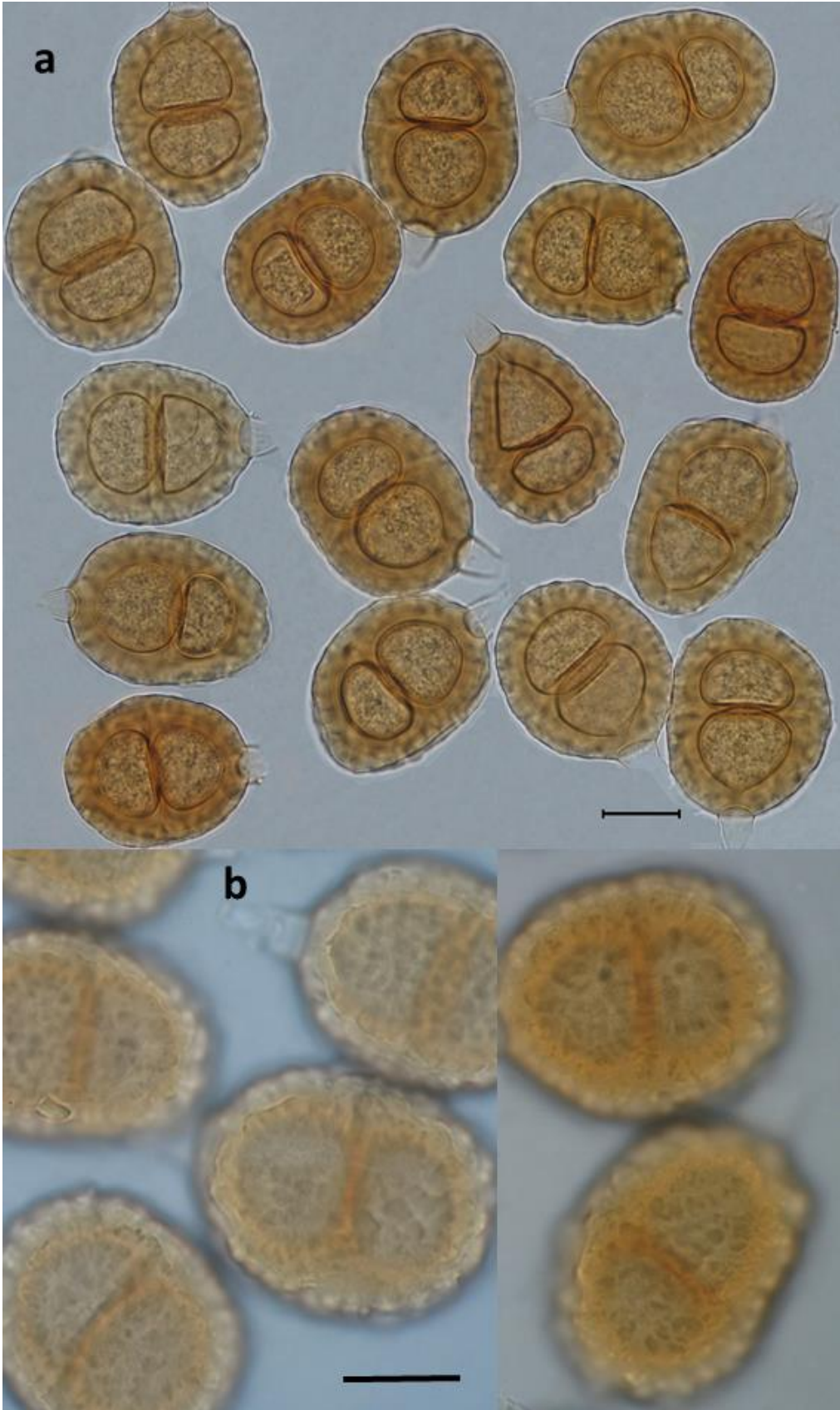


Fig. 1: *Puccinia fritschii*, (a) teliospores, (b) teliospore wall ornamentation. Bars – 20 μ m.

Discussion

Two *Puccinia* species, viz. *P. prostii* Moug. and *P. tulipae* J. Schröt., have previously been described on *Tulipa* spp. *Puccinia prostii* differs from *P. fritschii* in having teliospores with large spines, and *P. tulipae* has smaller teliospores with verrucose walls (Ulyanischev 1978). *Tulipa biflora* and the host of the second collection, *Tulipa* sp., belong in *Tulipa* subgen. *Eriostemones* (Christenhusz et al. 2013). *Tulipa biflora* is widespread (Egypt, Macedonia, Crimea, Russia, Asia from Saudia Arabia to Xinjiang and West Siberia). *Puccinia tulipae* is possibly confined to tulips belonging in *Tulipa* subgen. *Tulipa*, although this species has also been reported on *T. biflora* in Ulyanischev (1978). This record might be based on a misidentification and confusion with *P. fritschii*, which needs, of course, re-examination of the material concerned. There is a record of *P. liliacearum* Duby on *Tulipa sintenisii* Baker (Bahcecioglu and Kabaktepe 2012). The material concerned has not been examined (not available), but a record of *P. liliacearum*, confined to hosts of the *Hyacinthaceae*, on a tulip species (*Liliaceae*) is rather doubtful. In any case, *P. fritschii* is readily distinguishable from *P. liliacearum* which has teliospores with thinner smooth walls. Furthermore, *Puccinia* sp. has been reported on *Tulipa* sp. from Greece (Holevas et al. 2000). This material was also not available for a re-examination and can therefore not be evaluated. Based on the following key, rust fungi reported on *Tulipa* spp. can be identified:

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|--|----------------------------------|
| 1 Only spermogonia and aecia present, aecia in groups; aeciospore 23–32 × 18–22 µm..... | |
| | <i>Aecidium tulipae</i> |
| 1* Only Telia present | 2 |
| 2 Teliospores one-celled, with anastomosed ridges on the wall | <i>Uromyces erythronii</i> |
| 2* Teliospores two-celled | 3 |
| 3 Teliospore wall ornamented with up to 15 µm long sharply pointed spines ... | <i>Puccinia prostii</i> |
| 3* Teliospores without spines | 4 |
| 4. Teliospore wall verrucose, teliospores 30–44 × 21–32 µm | <i>Puccinia tulipae</i> |
| 4* Teliopore wall with irregular coarse warts and ridges, teliospores 48–55 × 35–42 µm | |
| | <i>Puccinia fritschii</i> |

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