

**PARASITIC MICROFUNGI OF THE TATRA MOUNTAINS.
2. *PSEUDOCERCOSPORELLA TATRENSIS* SP. NOV.
ON *ACONITUM FIRMUM* SUBSP. *FIRMUM***

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Abstract. *Pseudocercospora tatrensis* Mułenko & Bacigálová *sp. nov.* is described and illustrated from living leaves of *Aconitum firmum* Rchb. subsp. *firmum* collected in the Tatra National Park (Western Carpathians, Poland). The new species is discussed and compared with other species occurring on members of the plant family Ranunculaceae.

Key words: mycobiota, new species, mitosporic fungus, hyphomycetes, Poland

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INTRODUCTION

The mitosporic genus *Pseudocercospora* Deighton consists of 81 species of fungi parasitizing living host plants belonging to about 40 families, distributed in all continents. The species are specialized plant pathogenic fungi, mostly causing leaf spots, with narrow host ranges, not exceeding the limits of a single plant family (Braun 1995). Five species of this genus have been described from hosts belonging to the Ranunculaceae, viz., *Pseudocercospora aconiti* Chevassut, *P. ranunculacearum* U. Braun, *P. thalictri* (Bondartsev) U. Braun, *P. thalictri-cola* (Vassiljevsky) U. Braun and *P. trollii* (Sacc. & G. Winter) U. Braun (Braun 1995). In 1983, a *Pseudocercospora* collection was found on *Aconitum firmum* Rchb. subsp. *firmum* in the Tatra Mts in Poland, which proved to belong to a new, undescribed species. This host plant is a subalpine to alpine species, especially common in the Tatra Mts (Western Carpathians, Poland and Slovakia), where it is characteristic for tall-herb and tall-grass communities. It is also known from forests, thickets along streams and alpine meadows (Mitka 2003).

TAXONOMY

Pseudocercospora tatrensis* Mułenko & Bacigálová, *sp. nov. (Fig. 1)

Differt a P. aconiti et P. trollii conidiophoris late subcylindraceis-conicis vel ampulliformibus, (2–)4–6(–7) μm latis.

HOLOTYPE (designated here): POLAND. WESTERN CARPATHIANS, Tatra Mts, Tatra National Park, Gładkie Uplaziańskie, N slope, on living leaves of *Aconitum firmum* Rchb. subsp. *firmum* (Ranunculaceae) in subalpine forest, 1520 m a.s.l., 17 Aug. 1983, *leg. W. Mułenko* (LBLM 8575!).

ETYMOLOGY. Epithet derived from the locality (area) of the type collection (Tatra Mts).

On living leaves, leaf spots amphigenous, numerous, angular or oval, pale olivaceous-brown to dark brown, margin indefinite or with a narrow dark brown border. Colonies amphigenous, punctiform, in small tufts, scattered, pale to dark brown, sometimes blackish. Mycelium internal, subcuticular, intraepidermal to intercellular. Hyphae hyaline, septate, branched, forming

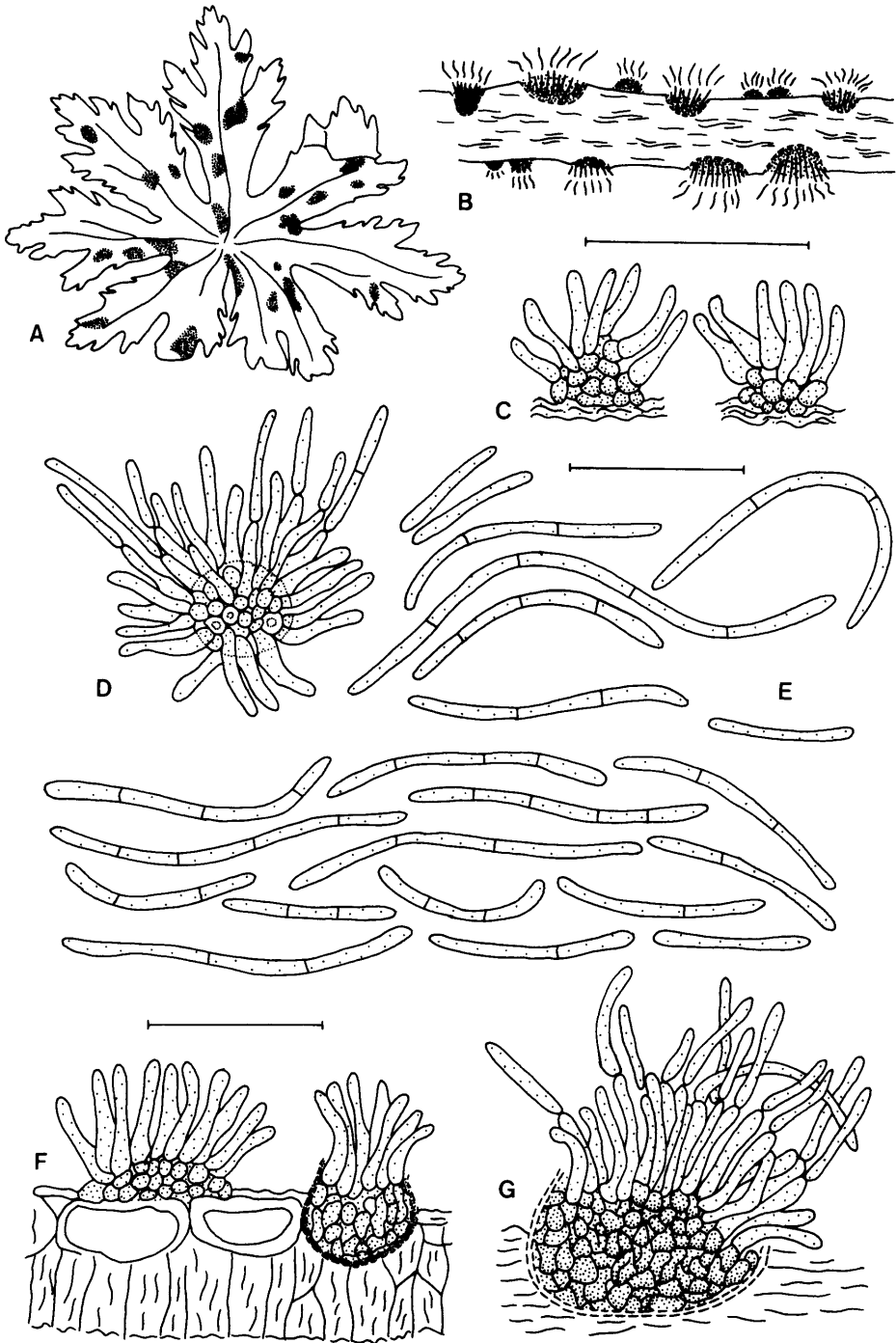


Fig. 1. Morphology of *Pseudocercospora tatrensis* Muñenko & Bacigálová, *sp. nov.* A – infected leaves ($\frac{1}{2}$ of orig. size), B – section through the leaf tissue with stromata and conidiophores (scale bar = 500 μ m), C, D, F, G – scheme of different types of stromata with conidiophores (scale bar = 50 μ m), E – conidia (scale bar = 50 μ m).

Table 1. Comparison of the species of *Pseudocercospora* on hosts of the family Ranunculaceae (according to Braun 1995).

Species	Host plant	Stroma (diameter in μm)	Conidiophores (in μm)	Conidia (in μm)
<i>P. ranunculacearum</i>	<i>Ranunculus sulphureus</i>	absent	5–13 \times 2–3 (aseptate)	60–130 \times 1.5–3.0 (1–4-septate)
<i>P. thalicticola</i>	<i>Thalictrum</i> spp.	15–50	5–10 \times 2–3 (aseptate)	25–80 \times 1.5–2.5 (1–3-septate)
<i>P. thalictri</i>	<i>Thalictrum</i> spp.	15–70	5–25 \times 2–3 (0–1-sept.)	(10–)20–40(–55) \times 1.5–3.5 (0–3-septate)
<i>P. trollii</i>	<i>Trollius</i> spp.	30–80	10–50 \times 1.5–3.5 (0–1-sept.)	40–120(–150) \times 1.0–3.5 (2–8(–12)-septate)
<i>P. aconiti</i>	<i>Aconitum vulparia</i>	20–50	5–25 \times 1.5–3.0 (aseptate)	70–150 \times 2–3 (1–6-septate)
<i>P. tatrensis</i>	<i>Aconitum firmum</i> subsp. <i>firmum</i>	10–75	15–35(–40) \times (2–)4–6(–7) (0–1-septate)	(20–)25–120(–130) \times (2.0–)2.5–3.5(–4.0) (0–6-septate)

well-developed, dense, stromatic hyphal aggregations (stromata), substomatal to subcuticular-intraepidermal, 10–75 μm diam., often somewhat erumpent, pigmented, composed of ellipsoid to somewhat angular-irregular, thick-walled, olivaceous hyphal cells. Conidiophores in small to moderately large fascicles, loose to moderately dense, rarely solitary, arising from internal hyphae or stromatic hyphal aggregations, erumpent through the cuticle or emerging through stomata, erect, straight to flexuous-sinuuous, subcylindrical-conic, ampulliform, unbranched, often attenuated towards the apex, sometimes narrowed or constricted at the base, 15–35(–40) \times (2–)4–6(–7) μm , 0–1-septate, hyaline, thin-walled, smooth; conidiophores mostly reduced to single conidiogenous cells, occasionally conidiogenous cells are integrated, terminal; conidial scars inconspicuous. Conidia formed singly, subcylindrical-filiform, (20–)25–120(–130) \times (1.5–)2.5–3.0(–4.0) μm , 0–6-septate, hyaline, thin-walled, smooth, apex obtuse to subacute, base truncate, subtruncate-rounded, 1–2 μm wide, hila unthickened, non-darkened.

DISCUSSION

The inconspicuous conidiogenous scars and hyaline conidia with unthickened hila clearly place *P. tatrensis* in the genus *Pseudocercospora* as

defined by Braun (1995). *Pseudocercospora tatrensis* is morphologically close to *P. aconiti*, described from France on *Aconitum vulparia* Rchb., but the latter species differs in having shorter and narrower cylindrical-filiform conidiophores, 5–25 \times 1.5–3.0 μm , and hyaline stromata. The conidiophores of *P. trollii* are also much narrower, 1.5–3.5 μm wide, and filiform-cylindrical. *Pseudocercospora thalictri*, known from East and South Europe and Central Asia, and the North American *P. thalicticola*, two taxa on *Thalictrum* spp., are distinguished from *P. tatrensis* by having much shorter, narrower conidiophores and shorter conidia. *Pseudocercospora ranunculacearum* on *Ranunculus sulphureus* Sol. in North America is quite distinct by its lacking stromata and very short and narrow conidiophores, formed singly or in small groups (Braun 1995). Host range, size of the stromata, conidiophores and conidia of the six *Pseudocercospora* spp. on hosts of the Ranunculaceae are given in Table 1.

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REFERENCES

- BRAUN U. 1995. A monograph of *Cercospora*, *Ramularia* and allied genera (phytopathogenic hyphomycetes). 1. IHW – Verlag, Eching bei München.
- MITKA J. 2003. The genus *Aconitum* L. (Ranunculaceae) in Poland and adjacent countries. A phenetic-geographic study. The Institute of Botany of the Jagiellonian University, Kraków.

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