

Colletogloeum veratri-albi* – a new acervular coelomycete on *Veratrum album

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Abstract: *Colletogloeum veratri-albi*, distributed on *Veratrum album* and the closely allied *V. lobelianum* (= *V. album* subsp. *lobelianum*) in Europe, the Caucasus area and Transcaucasia, is described and illustrated. The new species is closely related to the North American *C. veratri* on *V. californicum*, but can easily be discriminated by obvious differences in the shape of the conidia, host range and geographical distribution.

Zusammenfassung: *Colletogloeum veratri-albi*, verbreitet auf *Veratrum album* und der eng verwandten Art *V. lobelianum* (= *V. album* subsp. *lobelianum*) in Europa, im Kaukasus und in Transkaukasien, wird beschrieben und abgebildet. Die neue Art ist eng verwandt mit *C. veratri* auf *Veratrum californicum* in Nordamerika, von der sie aber gut abgrenzbar ist durch klare Unterschiede in den Konidienmerkmalen, im Wirtsspektrum und in der geographischen Verbreitung.

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1. Introduction

ELLIS & EVERHART (1895) introduced *Marssonina veratri* Ellis & Everh. for a new coelomycete on *Veratrum californicum* in North America. A similar fungus on *V. album* s. lat. (very probably *V. lobelianum*) in the Caucasus area and Transcaucasia was assigned to this species and described as *M. veratri* f. *veratri-albi* Bäumler (in HOLLÓS 1902). Due to nomenclatural reasons, MAGNUS (1906) introduced the new name *Marssonina* Magnus for the homonymous generic name *Marssonina* J.C. Fischer (non H. Karsten), including the new combination *Marssonina veratri* (Ellis & Everh.) Magnus. The confusion of the true identity of European collections on *Veratrum album*, going back to PETRAK (1937), who reduced *M. veratri* to synonymy with *Gloeosporium veratri* (Allesch.) Höhn. (= *Fusoma veratri* Allesch.), was a serious, long lasting obstacle for a critical re-examination and reassessment of the fungi involved. The hyphomycete *Mycocentrospora veratri* (Peck) U. Braun [= *Cercospora veratri* Peck (= *Fusoma veratri*, = *Gloeosporium*

veratri, = *Fusarium veratri* (Allesch.) Höhn., = *Septogloeum veratri* (Allesch.) Wollenw.]) and the coelomycete *Colletogloeum veratri* (Ellis & Everh.) Morgan-Jones & R.A.Phelps (= *Marssonina veratri*, = *Marssonina veratri*) are two quite distinct, unrelated species (ONDŘEJ 1974, BRAUN 1991, MORGAN-JONES & PHELPS 1995a,b). MORGAN-JONES & PHELPS (1995b) discussed the history, generic affinity, nomenclature and taxonomy of *M. veratri* in detail and assigned this species to *Colletogloeum* Petr. New collections of the coelomycete on *Veratrum album* from Austria led to a re-examination and re-assessment of this fungus.

2. Material and methods

New collections of *Colletogloeum* sp. on *Veratrum album* from Austria and several older herbarium samples have been examined using standard light microscopy (Olympus BX50). The samples have been mounted in distilled water, pure lactic acid and lactic acid stained with aniline for microscopic examination. Most of the Austrian specimens examined are deposited at GZU (Herbarium, Institut für Pflanzenwissenschaften, Karl-Franzens-Universität Graz). A recent collection from Austria is distributed in the duplicate series Dupla Graecensia Fungorum (SCHEUER 2007: 3, in this issue). Additional collections examined are deposited at HBG (Herbarium Hamburgense, Biozentrum, Universität Hamburg).

3. Results

Detailed examinations of *Colletogloeum* specimens on *Veratrum album* and *V. lobelianum*, and a comparison with *C. veratri* on *Veratrum californicum*, using the comprehensive description of this species in MORGAN-JONES & PHELPS (1995b), which was based on type material, revealed obvious differences between the two fungi. Owing to the morphological peculiarities of the European collections, the different hosts and the geographical isolation, the fungus on *Veratrum album/V. lobelianum* and *C. veratri* on *V. californicum* are considered two distinct species, at which the European taxon needs to be described at species rank.

***Colletogloeum veratri-albi* U. Braun & Scheuer, sp. nova** (MB 510661)
Fig. 1, 2

- = *Marssonina veratri* f. *veratri-albi* Bäumler,
in Hollós, Növényt. Közlem. 1: 154 (1902)
- = *Marssonina veratri* auct. p.p.
- = *Gloeosporium veratri* auct. p.p.
- = *Colletogloeum veratri* auct. p.p.
- = *Colletogloeum veratri* auct. p.p.

A specie simillima, *C. veratri*, differt acervulis saepe griseo-albidis et conidiis (0–)1–2-septatis, saepe subrostratis vel rostratis.

Holotype: on *Veratrum album* (Melanthiaceae), Austria, Styria [Steiermark], Koralmpe, 16 km W of Deutschlandsberg, c. 3.5 km N of the summit "Großer Speikkogel", along the path from the saddle E of the refuge Grillitschhütte down to the Bärenentalalm, MTB 9155/4, 46°48'50"N/14°59'30"E, c. 1720 m alt.; tall herbs and smaller shrubs between *Alnus alnobetula*, 15 July 2004, C. Scheuer no. 4975 (GZU).

Isotype material distributed as Dupla Graecensia Fungorum no. 44 (SCHEUER 2007: 3) to BPI, HAL, M, WSP.

Leaf spots amphigenous, elliptical, somewhat irregular to oblong, 1–15 mm diam., sometimes confluent and forming large blotches up to 50 × 10 mm, pale to medium brown, centre later paler, greenish, greyish brown, finally greyish-white, occasionally somewhat zonate, margin indefinite or darker brown, sometimes with a diffuse dark halo. Mycelium internal. Conidiomata epiphyllous, rarely hypophyllous, slightly punctiform to pustulate, at first small, sporodochial, later large, acervular, subcircular, elliptical, or somewhat irregular to oblong in outline, epidermal, occasionally slightly subepidermal, greyish white, rarely brownish, 20–500 µm diam., sometimes confluent and up to 1000 µm diam., 10–50 µm thick, composed of a basal pseudo-parenchymatous layer of swollen hyphal cells, 2–5 µm diam., isodiametric-globose, colourless to very pale ochraceous or brownish, thin-walled, giving rise to numerous densely arranged conidiophores, which are usually aseptate and reduced to conidiogenous cells, occasionally 1-septate, with an integrated, terminal conidiogenous cell, subcylindrical to slightly attenuated towards the apex, straight to slightly sinuous, 10–20(–25) × 2–5 µm, hyaline, thin-walled, smooth; conidiogenous cells holoblastic, usually unilocal, determinate, but probably also percurrent and sympodial, annellations and additional loci rather inconspicuous. Conidia solitary, fusiform to short obclavate, straight to mostly slightly to distinctly curved, falcate, sometimes with a straight lower part and curved apex, (15–)20–40 × 2–5 µm, (0–)1–2-septate, colourless, thin-walled, smooth, apex short subacute to acute or distinctly rostrate, i.e., gradually tapering into a relatively narrow beak with pointed tip, base truncate to short obconical-truncate, (1.5–)2(–2.5) µm wide.

Additional collections examined (paratype material):

On *Veratrum album*: AUSTRIA, Niederösterreich: Reisalpe, Hinteralpe, 24 June 1905, leg. F. v. Höhnelt; KABÁT & BUBÁK, Fungi imperfecti exsiccati 349 (HBG), as '*Fusarium veratri*'. — RUSSIA, Tambov, near Krasnaja Slobodka, 1 June 1910, leg. Schirajewsky; TRANZSCHEL & SEREBRIANIKOW, Mycotheca Rossica 200 (HBG), as '*Fusarium veratri*'. — SWITZERLAND, Graubünden: Saas, 22 July 1910, leg. O. Jaap (HBG), as '*Marssonina veratri*'. — GERMANY, Oberbayern: near Füssen, 24 August 1912, leg. H. Sydow, Mycotheca germanica 1142, p.p. (HBG), as '*Fusoma veratri*' (mixed with *Mycocentrospora veratri*). — [CZECH REPUBLIC], 'Hochsenke, Hochschar', 10 August 1924, leg. F. Petrak, Flora Bohemiae et Moraviae exsiccata, II. Ser., 1. Abt.: Pilze, Nr. 1925 (HBG), as '*Fusoma veratri*'.

AUSTRIA, Steiermark (Styria): Grazer Bergland, way from Teichalm to Hochlantsch, 1200–1400 m, 4 July 1974, leg. R. Stipacek (GZU, Scheuer no. 5116). — Schladminger Tauern, Kleinsölkatal S of Gröbming, Sacherseealm, Schwarzenseebach, 1050 m, 5 July 1995, leg. C. Scheuer no. 5113 (GZU). — [Ybbstaler Alpen], WSW of Mariazell, between Vorderer Zellhut and Ochsenboden, northern slope of Feldhüttl, ca. 1400 m, 16 July 1998, leg. C. Scheuer no. 5114 (GZU). — [Ybbstaler Alpen], ca. 5 km WSW of Mariazell, east slopes of Feldhüttl, ca. 1250–1280 m, 16 July 1998, leg. C. Scheuer

no. 5115 (GZU). — Schladminger Tauern, Kleinsölk-Obertal, N of Schwarzensee, Harmeralm, ca. 1170 m, 15 June 2001, leg. C. Scheuer no. 4201 (GZU). — Hochschwabgebiet, Aflenzer Staritzen, NW above Seebergsattel, 1650 m, 14 July 2001, leg. G. Heber (GZU, Scheuer no. 5110). — Hochschwabgebiet, Aflenzer Staritzen, N of Seebergsattel, 14 July 2001, leg. G. Heber (GZU, Scheuer no. 5111). — Hochschwabgebiet, Trenchtling, ca. 2.7 km ESE of Hochturm, near to Kegglanger shed, S of Roßboden, 23 July 2001, leg. G. Heber (GZU, Scheuer no. 5112). — Schneetalpe, Grünkogel S of Windberg, ca. 1800 m, 2 August 2001, leg. G. Heber (GZU, Scheuer no. 5109).

On *Veratrum lobelianum* (= *V. album* subsp. *lobelianum*): [CZECH REPUBLIC], 'Fungi Bohemici', Riesengebirge, July 1910, leg. F. Bubák (HBG), as '*Fusarium veratri*'.

4. Discussion

Veratrum album is a European species distributed in the Alps, Pyrenees and Apennines (MEUSEL et al. 1965), whereas *V. lobelianum* (*V. album* subsp. *lobelianum*) is a submeridional-temperate, mainly subalpine Eurasian species. The two species are closely allied and belong, together with the North American *V. californicum*, in *Veratrum* subgen. *Veratrum* sect. *Veratrum* (ZOMLEFER et al. 2003). *V. californicum* is morphologically close to *V. album* and clustered in molecular sequence analyses together with the *V. album* complex (ZOMLEFER et al. 2003). The close affinity of the hosts is also reflected in the two morphologically very similar *Colletogloeum* taxa found on *V. album*/*V. lobelianum* and *V. californicum*. However, although closely allied, the two species are easily distinguishable by several morphological characters. *C. veratri-albi* differs from *C. veratri* in having greyish white conidiomata and (0–)1–2-septate, usually short rostrate conidia (*versus* conidiomata usually brown and conidia 0–1-septate, non-rostrate in *C. veratri*, see MORGAN-JONES & PHELPS 1995b). These differences, connected with distinct hosts and a geographical isolation, warrant the introduction of a new species for the fungus on *Veratrum album* and *V. lobelianum*. Most conidia of *C. veratri-albi* are 1-septate, but 2-septate conidia are not rare and have been found in all samples examined.

Although type material of *Marssonina veratri* f. *veratri-albi* is not preserved in Bäumler's herbarium at BP (Herbarium, Hungarian Natural History Museum, Budapest, *in litt.*), this taxon can undoubtedly be considered a synonym of *C. veratri-albi*. A description of this fungus was also published by WORONICHIN ('Mat. po mikol. i fitopatol. 3: 14, 1915', according to VASIL'EVSKIJ & KARAKULIN 1950). The host of this forma was given as *Veratrum album*, but certainly pertains to *V. lobelianum*. *V. album* s.str. is not distributed in the Caucasus region, whereas *V. lobelianum* (= *V. album* subsp. *lobelianum*) is a common species in this area (CZEREPA NOV 1995). A collection from Russia and a sample on *V. lobelianum* from the Czech Republic agreed perfectly in all morphological details with the other specimens examined.

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6. Literature

- BRAUN U. 1991: Studies on *Ramularia* and allied genera (IV). - *Nova Hedwigia* 53: 291–305.
- CZEREPAŃOV S.K. 1995: *Plantae vasculares Rossicae et civitatum collimitanearum* (in limicis URSS olim). - St. Petersburg: Mir i Semja.
- ELLIS J.B. & EVERHART B.M. 1895: New species of fungi from various localities. - *Proceedings of the Academy of Natural Sciences Philadelphia* 1894: 322–386.
- HOLLÓS L. 1902: Beiträge zur Kenntnis der Pilze des Kaukasus. - *Növénytani Közlemények* 1: 147–155.
- MAGNUS P. 1906: Notwendige Umänderung des Namens der Pilzgattung *Marssonia* Fisch. - *Hedwigia* 45: 88–91.
- MEUSEL H., JÄGER E. & WEINERT E. 1965: *Vergleichende Chorologie der zentraleuropäischen Flora*. - Jena: G. Fischer Verlag.
- MORGAN-JONES G. & PHELPS R.A. 1995a: Notes on hyphomycetes. LXVIII. Concerning *Mycocentrospora veratri*, the causal organism of necrotic leaf-spot of *Veratrum* species (Liliaceae). - *Mycotaxon* 54: 67–74.
- MORGAN-JONES G. & PHELPS R.A. 1995b: Notes on coelomycetes. V. Concerning *Marssonina veratri*, a leaf-spot causing fungus of *Veratrum californicum*, reclassified in *Colletogloeum*. - *Mycotaxon* 55: 215–221.
- ONDŘEJ M. 1974: Mykofloristické poznámky I. *Centrospora* Neerg. - *Česká Mykologie* 28(3): 185–188.
- PETRAK F. 1937: Verzeichnis der neuen Arten, Varietäten, Formen, Namen und wichtigsten Synonyme der Pilze 1922–1928. - *Just's Botanischer Jahresbericht* 61: 291–297.
- SCHEUER C. 2007: *Dupla Graecensia Fungorum* (2007, Nos 41–100). - *Fritschiana* (Graz) 58: 1–25.
- VASIL'EVSKIJ N.I. & KARAKULIN B.P. 1950: Parazitnye nesovershennyye griby. 1. Gifomicety. - Moskva, Leningrad: Izdatel'stvo Akademii Nauk SSSR.
- ZOMLEFER W.B., WHITTEN W.M., WILLIAMS N.H. & JUDD W.S. 2003: An overview of *Veratrum* s. l. (Liliales: Melanthiaceae) and an infrageneric phylogeny based on ITS sequence data. - *Systematic Botany* 28(2): 250–269.



Fig. 1. Leaf of *Veratrum album* with lesions caused by *Colletogloeum veratri-albi* (phot. U. Braun).

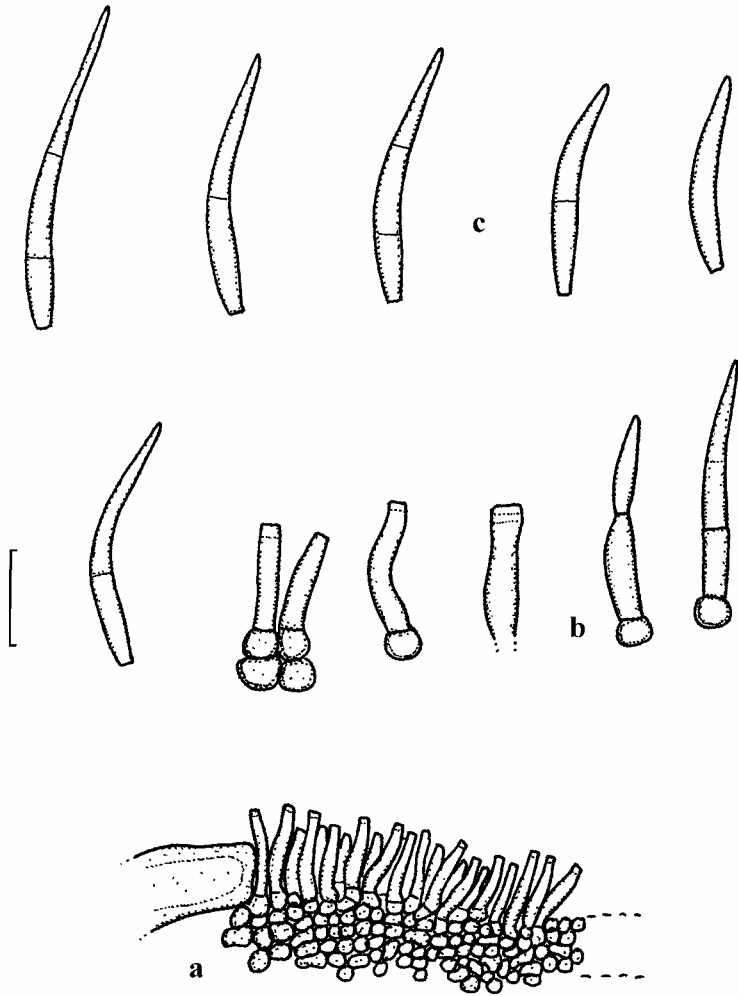


Fig. 2. *Colletogloeum veratri-albi* on *Veratrum album*: (a) part of an acervulus in section, with peridium and conidiophore layer, (b) conidiophores, (c) conidia (bar = 10 μm , U. Braun del.).