Cryptosporiopsis lomati sp. nov. on Lomatia hirsuta from southern Argentina

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Cryptosporiopsis lomati sp. nov. (coelomycetes) is described on Lomatia hirsuta from southern Argentina. It is characterized by large, ellipsoid, fusiform to irregular conidia, pulvinate, acervular conidiomata, with branched, dense conidiophores that give rise to apical or lateral conidiogenous cells with periclinal thickenings. It is associated with spots and blackened areas on attached and/or fallen leaves.

Keywords: Cryptosporiopsis, Proteaceae, Patagonia, foliicolous pathogen, systematics.

During a survey of foliar pathogens associated with native plants from the Patagonian Andes forests of Argentina (Cabrera & Willink, 1980), infected leaves of Lomatia hirsuta (Lam.) Diels. ex Macbr. (Proteaceae) were collected by one of us. Although the interest in pathogens associated with cultivated members of the Proteaceae has recently increased (Swart & al., 1998; Taylor & Crous, 1998; Crous & Palm, 1999; Crous & al., 2000; Taylor & Crous, 2000), the knowledge of fungi associated with Proteaceae in southern South America is still extremely poor. Four genera in the family are represented in Patagonia, namely Embothrium J. R. Forst. & G. Forst., Gevuina Molina, Lomatia R. Br. and Orites R. Br. (Xifreda & Sanso, 1999). References of foliar fungi on these hosts are scant (Viégas, 1961; Mujica & Vergara, 1980; http://nt.arc-grin.gov/fungaldatabases). Phyllactinia antarctica Speg. (Erysiphales) (Spegazzini, 1887) is a well-known parasite on Embothrium coccineum J. R. Forst. &

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G. Forst. ( Havrylenko, 1998) and Spezzazini (1910; 1923) described a few coelomycetes from Proteaceae in South America, namely Gloeosporium guevinae, Macrophoma guevinae and Phoma guevinae on Gevuina avellana Mol., as well as Phoma leptospora and Phoma lomatiae on Lomatia hirsuta.

Lomatia hirsuta is a shrubby to small tree species that rarely develops into a large dominant tree; it may form pure stands in open areas or grow under pure or mixed Austrocedrus chilensis (D. Don.) Flor. & Boul. and Nothofagus dombeyi (Mirb.) Oerst. forests.

The symptomatic leaves of L. hirsuta collected in the present study were consistently associated with a fungus that formed acervuli on the necrotic tissue. The latter turned out to represent an undescribed coelomycete, which is here proposed as a new species of Cryptosporiopsis Bubak & Kabat.

Material and methods

For microscopic examinations the fungus was mounted in water or 5% KOH and measurements were made at 1000 × magnification. 95% confidence intervals (CI) of the conidial measurements were derived from at least 25 observations and are reported in the descriptions expressed as ranges, with the extremes given in parentheses. Attempts to culture the fungus on a variety of media proved unsuccessful.

Taxonomy

**Cryptosporiopsis lomatiae** Blanchin. & Crous, sp. nov. – Figs. 1–2.


Leaf spots circular, irregular or angular, 4.5–15 mm diam., amphigenous, corky, separate, becoming confluent, pale brown, surrounded by a dark reddish brown to blackish margin of variable width that may be diffuse or delimited by a light brown border. – Conidiomata amphigenous, eustromatic, separate, subcuticular,
Cryptosporiopsis lomati. – A. Vertical section through a conidioma. – B. Detail of conidiomatal wall and conidiogenous cells. – Bars: A = 100 μm, B = 20 μm.

pulvinate, elliptical to irregular in outline, unilocular, pale grey to cream or pale brown, 100–400 diam., 250–500 μm long, 150–400 μm high; ostiole absent, dehiscence by one to several irregular (sometimes stellate) rupture(s) of the discolored cuticula. – Peridium thick, complex, comprising two strata; outer stratum composed of thick-walled light grey to concolorous textura epidermoidea, 15–30 μm wide, inner stratum composed of thin-walled, hyaline textura por-
recta, 30–60 μm in length, hyaline, deli-
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recta, 30–60 µm wide. - Conidiophores basal in conidioma, hyaline, dense, simple or branched at the base and frequently along their length, septate, arising from the upper cells of the inner stratum, smooth, straight or flexuoso, (15–)22.5–30.5–(45) × (3–)4–4.5–(5) µm. - Conidiogenous cells hyaline, smooth, cylindrical to dolliform, straight or curved, slightly attenuated at the apex, discrete at the edge of the fructification, becoming predominantly integrated on septate conidiophores towards the centre, conidiogenous loci stationary, occurring apical or lateral just below septa, collarette and channel minute, periclinal wall thickened, secession schizolytic, (11–)18–20(–30) × (3–)4–4.5–5(–7) µm. - Conidia blastic, enterogenous, hyaline, smooth, aseptate, guttulate, almost clavate with rounded apices when immature, becoming more elongated, ellipsoid to fusiform, straight or curved to irregular at maturity, with an obtuse apex, and a base that tapers to a small scar, (21–)35–38.5–(44) × (5–)6.5–7(–10) µm. - Microconidial state not observed. - Teleomorph not known.

Distribution. - Southern Argentina, following the distribution of its host, L. hirsuta. Possibly also present in southern Chile on the same host.

Types. - Argentina, Chubut, Parque Nacional Los Alerces, Lago Futaleufu, ca. Pucon-Pai hostel, on leaves of two adjacent L. hirsuta trees in a mixed forest of Austrocedrus chilensis and Nothofagus dombyei, leg. M. Rajchenberg 12069, 23 Oct. 2000, BBB (isotype), isotypes deposited in BAPC, BPI (747881), DAOM (229356), LPS and PREM.


Discussion

When describing a fungus in the suborder Phialostromatinae Sutton (Cryptocline-Cryptosporiopsis complex), one is faced with considerable difficulties in trying to delimit the various genera. While most of the old literature placed emphasis on conidiomatal
morphology, little attention was paid to the structure of the conidigenous cells and conidium ontogeny (Morgan-Jones, 1971), two features that were stressed as important by Sutton (1980).

Several genera were considered for the new species occurring on *Lomatia*. *Cryptocline* Petrak has a similar habit to the *Lomatia* fungus but it lacks a basal stroma, and has hyaline to pale brown conidia that are cylindrical to doliform or ellipsoidal, with a broad, flat base. It was considered to be heterogeneous by Sutton (1980). Our fungus has some characters similar to *Discula* Sacc., especially the conidomata. However it differs because of the elongate, septate conidiophores and the conidigenous loci near the septa, as well as at the apex. In *Discula* conidiophores are septate and branched basally, conidigenous cells are determinate, and conidia are ellipsoidal or clavate with an oblong to more or less truncate base. The *Lomatia* fungus was also compared with *Gloeosporidiella* Petrak, which also contains several foliar pathogens. This genus, however, is known to have determinate conidigenous cells with wide apices and falcate conidia with oblong apices and truncate bases.

*Cryptosporiopsis* Bubák & Kabát represents a genus closely related to *Cryptocline*, but with well-developed fructifications (Arx, 1957). Known species occur mainly on aerial plant parts, namely branches, trunks, and leaves (Sankaran & al., 1995). Conidiophores have been reported to be reduced to conidigenous cells, or to be branched when present (Groves, 1935; Arx, 1957; Verkley, 1999). Conidigenous cells can be determinate or indeterminate, and conidia are ellipsoidal to fusiform, straight or curved with an oblong apex and the base tapered to a scar. The close resemblance in conidigenous and conidium morphology led us to consider our species better placed in this genus.

Species delimitation in *Cryptosporiopsis* is by a combination of differences in conidomatal structure, conidial morphology and size, and host genus or family (Sankaran & al., 1995). Twenty species of *Cryptosporiopsis* are recognized as the anamorphs of *Pezicula* Tul. & C. Tul. and *Neofabraea* H. S. Jacks. and seven additional species with no known teleomorph are accepted (Verkley, 1999). *Cryptosporiopsis lomati* can be easily distinguished from the other two species in the genus that form conidomata in necrotic spots of living leaves. *Cryptosporiopsis citri* P. R. Johnston & R. A. Fullerton forms eustromatic conidomata with discrete conidigenous cells and relatively small ellipsoidal conidia (9–13.5 × 4–5.5 μm) and *C. eucalypti* Sankaran & B. Sutton has stromatous, pycnidial to acervular conidomata, discrete conidigenous cells and smaller, thick-walled conidia (11–20 × 4.5–8 μm) (Sankaran & al., 1995; Verkley, 1999). *Cryptosporiopsis lomati* can further be distin-
guished from other species in the genus based on its habit, conidial dimensions, and determinate conidiogenous cells (Dugan & al., 1993; Verkley, 1999).

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