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Punctelia osorioi, a new species of *Parmeliaceae* from South Brazil

Luciana da Silva Canêz & Marcelo Pinto Marcelli

lucanez@yahoo.com.br
Instituto de Botânica, Seção de Micologia e Liquenologia
Caixa Postal 4005, São Paulo/SP, CEP 01061-970, Brazil

Abstract—During a survey in Southern Brazil, *Punctelia osorioi* was recognized as a new species similar to *Punctelia bolliana* differentiated by a pale lower surface, unciform conidia, and no medullary reactions.

Key words—*Punctelia purpurascens, Punctelia tomentosula,* taxonomy, lichenized fungi

Introduction

The genus *Punctelia* is characterized by punctiform pseudocyphellae on the upper surface, the presence of atranorin in the upper cortex, associated either with medullary depsides (lecanoric and/or gyrophoric acids) or fatty acids, and unciform or filiform conidia (Krog 1982). *Punctelia* is considered to occur worldwide (Kirk et al. 2008), and contains about forty-two species. Several new species have been discovered in this decade, especially in the Americas (Canêz & Marcelli 2007, Marcelli et al. 2009).

With 28 species recorded, South America exhibits the highest diversity for *Punctelia* (Krog 1982, Canêz & Marcelli 2006a). Brazil alone has 24 species, representing 49% of the world's species. Six of these have a pale lower surface: *P. canaliculata* (Lynge) Krog (Lynge 1914), *P. crispa* Marcelli et al., *P. digitata* Jungbluth et al., *P. roseola* Jungbluth et al. (Marcelli et al. 2009), *P. punctilla* (Hale) Krog (Jungbluth 2006), and *P. purpurascens* Marcelli & Canêz (Canêz & Marcelli 2007). Of those, only *P. purpurascens* produces only fatty acids in the medulla (C–).

During a survey in Vacaria Municipality, Rio Grande do Sul State (Canêz 2005, 2009), a new species with pale lower surface and producing fatty acids in the medulla was recognized and is presented below.

Material and methods

Morphological characters were examined under a stereomicroscope and Canêz & Marcelli (2006b) were followed for the standard description. Anatomical sections of apothecia and pycnidia were made with razor blades and studied under a compound microscope. The chemical constituents were analyzed by color reaction (spot tests), including potassium hydroxide (K), sodium hypochlorite (C) and para-phenylenediamine (P), by UV light, and by thin-layer chromatography (TLC) using solvent C, following Culberson & Kristinsson (1970), Huneck & Yoshimura (1996), and Bungartz (2001).

Type specimens of the similar species were studied for comparisons.

New species

Punctelia osorioi Canêz & Marcelli, **sp. nov.** Fig. 1

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Diagnosis: *Similis* Puncteliae bollianae *medulla C– et conidiis unciformibus sed pseudocyphellis abundantibus et rhizinis multis densisque differt*.

Holotype– Brazil, Rio Grande do Sul State, municipality of Vacaria, locality of Fazenda da Estrela, open field, 28º02'44.6"S, 51º02'01.7"W, 860 m alt. on shrub branch in the right margin of the Frade River, with mosses and pteridophyte, leg. L.S. Canêz & A.A. Spielmann 665, 11-I-2004 (SP).

Thallus gray to greenish gray, lobate, to 13 cm in diameter; lobes irregularly branched, 0.9–4.0(–4.5) mm wide, adnate to loosely adnate, contiguous to slightly overlapping laterally, apices round, margins entire to crenate, upper surface continuous, rugose to slightly scrobiculate; lacinulae sometimes present, few, simple, marginal on the central thallus area, pseudocyphellae mainly on the margins, pycnidiate on the subapices, 0.6–1.0 × 0.4–0.7 mm size. Maculae absent; pseudocyphellae white, subtle to inconspicuous, more frequently plane, punctiform to ellipsoid, 0.05–0.15(–0.30) mm in diameter, sometimes originating from cracks in the center, abundant on lamina and amphithecium; soralia and isidia absent. Medulla white, pigment absent. Lower surface pale brown or white in some areas, slightly shiny, smooth to rugose; marginal zone concolorous with the central surface, shiny, smooth, rarely rugose or papillate, rhizinate or sometimes naked, <0.10–0.60(–1.00) mm; rhizinae concolorous with the lower surface or white, rarely darkened towards the tips, simple to irregularly branched, shorter ones (0.15–)0.25–0.95 × 0.05 mm and longer ones 1.00–1.65 × 0.06–0.09 mm, dense like a tomentum, evenly distributed. Apothecia concave to cupuliform, 2.0–8.0 mm in diameter, adnate, short pedicellate, laminal to submarginal, margin smooth, amphithecium pseudocyphellate and slightly wrinkled; disc ochre, imperforate; ascospores ellipsoid, (10–)12–15(–17.5) ×7–10(–12) µm, epispore 1.2(–2.0) µm. Pycnidia submarginal to marginal, ostiole black; conidia unciform, (3.8–)5.0–6.0 µm.

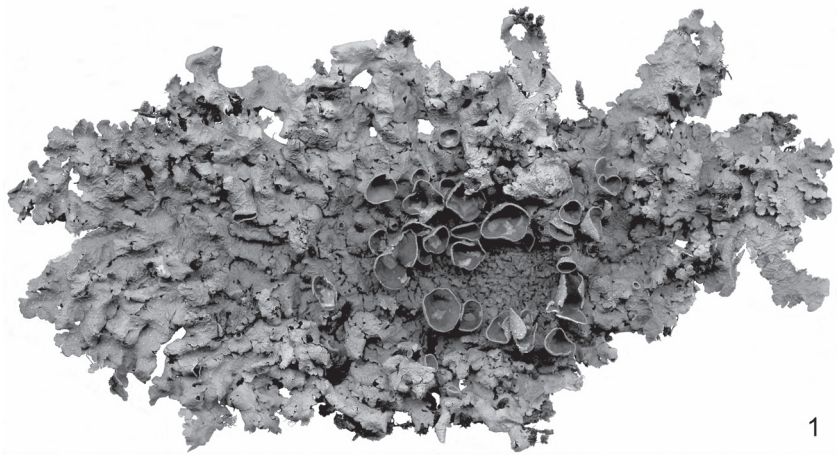

Figure 1. Holotype of *Punctelia osorioi* in SP. Scale in millimetres.

Spot tests: cortex K+ yellow, UV–; medulla K–, C–, KC–, P–, UV–.

TLC: traces of atranorin (cortex) and caperatic acid-like fatty acid (medulla).

Paratypes—Brazil, Rio Grande do Sul State, municipality of Vacaria, locality of Fazenda da Estrela, field with spread trees, 28°01'58"S, 50°58'17.5"W, 900 m alt., on branch of roadside tree, leg. L.S. Canêz & A.A. Spielmann 424 (SP), 19-VII-2003; idem, on cortex of roadside tree, leg. L.S. Canêz & A.A. Spielmann 393 (SP, B), 19-VII-2003; idem, open forest, 28°04'16.6"S, 50°55'39.7"W, 930 m alt., corticolous on forest border, leg. L.S. Canêz & A.A. Spielmann 737 (SP), 12-I-2004.

Comments– *Punctelia osorioi* is characterized by the abundant and subtle or inconspicuous pseudocyphellae, the pale brown lower surface, unciform conidia, dense rhizinae (like a tomentum), and a medulla producing caperatic acid (C–).

Lacinules were seen only on the holotype. They occur at the center of the thallus near apothecia and are simple, originating from the lobe margins.

In this species it is possible to find rhizinae projecting beyond the margins of some lobes, resembling short cilia. They are sparse, black, more frequently in the lobe axils, simple, and up to 0.3 mm long.

Punctelia bolliana (Müll. Arg.) Krog (lectotype in G! with duplicates in BM!, US!, and W!) also has a brown lower surface, fatty acid in the medulla (C–), unciform conidia, and ascospores less than 20 µm. However, it is easily differentiated by its lacinules rising from the margins of the lobes and the subtle pseudocyphellae, which are almost restricted to the amphithecium and apices of the lobules that are rare on the lamina. Additionally, *P. bolliana* has lobe margins that are frequently short-lacinulate and sparse rhizinae on the lower

surface, while *P. osorioi* has a smooth or crenate (never lacinulate) margin, and denser rhizinae that can project beyond the margins.

The tomentum-like rhizinae covering of *P. osorioi* is dense, composed of short rhizinae up to 0.95 mm, mixed with longer ones that grow up to 1.65 mm. *Punctelia tomentosula* Kurok. (holotype in TNS!), described by Kurokawa (1999), also has such dense rhizinae, but differs in presenting soralia, short-filiform conidia (7–9 µm) and lecanoric acid in the medulla (C+ rose).

Morphologically, the new species is similar to *Punctelia purpurascens* (holotype in SP!), which has a yellowish K+ purple or pale purple pigment in the medulla in the apical areas, produces large apothecia with dark brown fissured discs and has a strongly foveolate surface, with the pseudocyphellae commonly developed on the inter-foveolar ridges, many of which are elliptic, conspicuous to the naked eye.

Elix & Johnston (1988) described *Punctelia nebulata* with pale lower surface and ascospores smaller than 20 µm. This species is distinguished from *P. osorioi* by the filiform conidia (9–11 µm), rare and inconspicuous pseudocyphellae on the lamina and absence of lacinules. In addition, the holotype of this species (CANB!) presents a rugose to strongly plicate-rugose upper surface.

This new species is named in honor of Dr. Hector Osorio, distinguished Uruguayan lichenologist who contributed much to the development of our knowledge of lichenology in the Brazilian State of Rio Grande do Sul.

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