

## A new *Canoparmelia* species (lichenized *Ascomycota*, *Parmeliaceae*) from the Azores

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**Key words:** Lichens, taxonomy. – Mycobiota of Macaronesia. – 1 new species.

**Abstract:** *Canoparmelia azorica* from the Azorean island São Miguel is described as new. It is pustulate and contains norstictic acid.

**Zusammenfassung:** *Canoparmelia azorica* von der Azoren-Insel São Miguel wird neu beschrieben. Die Art ist pustulös und enthält Norstictinsäure.

*Canoparmelia* ELIX & HALE, segregated from *Pseudoparmelia* LYNGE in ELIX & al. (1986), is a primarily tropical to subtropical genus with few species in temperate regions of the Americas, Eurasia and Africa. It is characterized by grey, eciliate thalli with black lower surfaces and simple rhizines; the upper cortex contains atranorin and is often maculate; pseudocyphellae are lacking (NASH & ELIX 2002). The ascospores measure  $10\text{--}14 \times 6\text{--}8 \mu\text{m}$ . After the transfer of several species to the genera *Crespoa* and *Parmelinella* (BENATTI 2012, LENDEMER & HODKINSON 2012, RODRIGUES & al. 2021) there are currently 51 species recognized within *Canoparmelia* (MYCOBANK 2022).

During a trip to the Azorean island of São Miguel the author came across a new species. It was shortly treated as *Canoparmelia* spec. in BREUSS (2018) and subsequently examined in more detail. Its most obvious feature is the rich development of pustules. The term *pustule* has different meanings in lichenology. In parmelioid lichens pustules are defined as thickened, fragile, hollow isidioid structures that tend to break open apically, sometimes producing soralia (HALE 1976); their cortical layer is less compact than that of the thallus and dull. On account of the distinctive combination of a pustulate thallus with a special medullary chemistry the species is described as new below.

### Material and methods

The specimen was collected in a conservation area around the crater lake Lagoa das Furnas within a picnic area – a grassy area with scattered trees – at the walking trail going round the lake near the heavily frequented cooking place Caldeiras da Lagoa. The morphological characters were examined under a WILD-M7A stereo microscope. The chemical constituents were analysed by colour reaction spot tests

including sodium hypochlorite (C), potassium hydroxide (K) and para-phenylenediamine (P); these chemicals were also applied to microscopical sections, and sections were also checked under polarized light. The close-up photograph was made with a NIKON Coolpix-S5200-camera on a ZEISS Stemi-2000-C-dissecting microscope.

## The new species

***Canoparmelia azorica* BREUSS, spec. nov.** – Figs. 1, 2

MycoBank no.: MB 844807

**Diagnosis:** Similar to *Canoparmelia pustulifera* BENATTI, S. M. MARTINS, C. VOS & E. HOLT from which it differs chemically in containing norstictic acid as major medullary substance and morphologically in having non-sorediate pustules and loosely attached thalli with crowded lobes rather than adnate, flat thalli.

**Type:** Portugal: Azoren, Insel São Miguel, Lagoa das Furnas, NW-Ufer, ca. 300 m s. m., an einem Baumstamm, 26. April 2017, leg. O. BREUSS Nr. 33.824 (LI – holotype, WU-Myc 46547 – isotype).

## Description:

**Thallus:** corticolous, foliose, loosely attached, pustulate. Lobes 0.3–0.5 cm wide at apices, overlapping, eciliate. Upper surface grey, dull, maculate. Maculae  $\pm$  linear to reticulate, especially distinct near lobe ends. Underside black, brown in a narrow marginal zone, moderately rhizinate. Rhizines simple, black.

**Pustules:** dense, laminal or submarginal, irregularly inflated, filled by loose arachnoid medullary tissue or hollow, partly bursting apically without producing soredia.

**Apothecia:** lacking.

**Pyrenidia:** frequent, appearing as tiny black dots on thallus surface and pustules, c. 100  $\mu\text{m}$  in diam.; conidia bacilliform,  $6\text{--}7 \times 0.8 \mu\text{m}$ .

**Chemistry:** Cortex K<sup>+</sup> yellow, containing tiny crystals visible under polarized light (atranorin); medulla K<sup>+</sup> yellow then blood red, forming clusters of straight red crystal needles, P<sup>+</sup> deep yellow (norstictic acid).

**Note:** The reddish coloration of lobe tips and pustules was not observed in the field and was apparently caused by inadequately drying of the specimen (soaking wet when collected) with decomposing processes – a phenomenon that was also observed in *Heterodermia* species (LÜCKING & al. 2008).

**Habitat:** a lichen-covered stem of a single deciduous tree in a meadow close to a lake shore.

**Distribution:** known only from the type locality.

## Remarks:

*Canoparmelia azorica* is unique in having a pustulate thallus and norstictic acid as (major) medullary substance.

There are several *Canoparmelia* species with pustules of different kinds (sorediate-pustulate, isidiate-pustulate or with pustules that burst open): *C. albomaculata* C. H. RIBEIRO & MARCELLI, *C. eruptens* (KUOK.) ELIX & HALE, *C. herveyensis* ELIX, *C. owariensis* (ASAHINA) ELIX, *C. pustulifera* BENATTI & al., *C. pustulescens* (KUOK.) ELIX, *C. raunkiaeri* (VAIN.) ELIX & HALE, *C. whinrayi* ELIX, and *C. zimbabwensis*



Fig. 1. *Canoparmelia azorica*, holotype, habitus, width of photograph 8 cm. – Phot. O. BREUSS.



Fig. 2. *Canoparmelia azorica*, holotype, pustules, width of photograph 6 mm. Phot. O. BREUSS.

(HALE) ELIX & HALE, but they all are K-negative in the medulla (BENATTI & al. 2017, ELIX 1994, HALE 1976 sub *Pseudoparmelia*, MARCELLI & RIBEIRO 2002).

Norstictic acid is rarely found in the genus. The Australian *Canoparmelia norsticticata* (G. N. STEVENS) ELIX & HALE is non-pustulate soresiate and has a strongly ridged-rugose thallus surface (ELIX 1994).

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