Pertusaria pseudomelanospora sp. nova, a new saxicolous lichen species from the Namib desert

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Abstract
A new species of *Pertusaria* from the Namib desert is described. It is characterized by a smooth, minutely fissured brown thallus with scattered, verruciform apothecia with black ostioles, grey, K+ violet spores and the absence of lichen substances. The species is related to *P. melanospora*, which differs in having a yellowish thallus and in containing arthothelin and 2,4-dichloronorlichexanthone.

Kurzfassung
Pertusaria pseudomelanospora, eine neue saxicole Flechtenart aus der Namib-Wüste
Aus der mittleren Namib-Wüste wird eine neue *Pertusaria*-Art beschrieben. Merkmale sind ein glatter, sehr fein areolierter brauner Thallus mit zerstreuten Fruchtwarzen mit schwarzen, kraterartig eingesenkten Scheiben, bald grau werdenden, K+ violetten Sporen und das Fehlen von Flechtensubstanzen. Die Art hat Ähnlichkeit mit *P. melanospora*, die durch einen gelblichen Thallus und den Gehalt an Arthothelin und 2,4-Dichlornorlichexanthon unterschieden ist.

Introduction

During an investigation of the biodiversity of the lichen vegetation in Namibia and its dependence upon fog supply, a *Pertusaria* species was found to play an important role on rocks at relatively dry sites. In such habitats this *Pertusaria* was often the dominant crustose species present. This species is described as new to science in the present paper. An anatomical investigation confirmed that this new species exhibited some similarities with *Pertusaria melanospora* Nyl., and this is reflected in the species name.

***Pertusaria pseudomelanospora* V. WIRTH & ELIX sp. nov.**

Thallus fuscus, minutissime rimoso-areolatus, prothallo nigro cinctus, ad 6 cm in diametro. Areolae 0.1-0.3 mm latae, planae. Apothecia distincte verruciformia, verrucae dispersae, crateriformes, ad 1.1 mm latae, fissuris tenuibus circularibus a thallo separatae, singulares, interdum 2(3-5) confluentes, Discus initie punctiformis, demum ad 0.4 (0.6) mm latus, ater, concavus vel immersus, inaequalis. Epihymenium fuscum, K+ violascens. Sporae ellipsoideae, 45-58 x 22,5-33 µm, initio incoloratae, K-, postea pariete parte interiore crasso griseo K+ violascenti, pariete parte exteriore tenui incolorato, K-, deinde pariete griseo K+ violascenti. Ab *Pertusaria melanospora* differt thallo constanter fusco et acido lichenico deficiente.

Thallus brown, minutely rimose-areolate, appearing smooth and undifferentiated to the naked eye, up to several cm wide, several thalli often coalescing, surrounded by a black hypothallus. Areoles 0.1-0.3 mm wide. *Apothecia* scattered, verruciform, up to 0.8 mm wide when young and up to 1.1 mm wide when mature, separated from thallus by a circular fissure, separate or rarely becoming confluent, the margin concolorous with the thallus. Disc punctiform at first, later 0.4-0.6 mm wide, separated from the rim of the verruca by a fissure, uneven due to elevated sterile tissue between different parts of the hymenium, concave or surrounded by the rim of the verruca, the older verrucae appearing volcano-like. Epihymenium partly brownish in a narrow, uppermost section, then becoming olive, olive strands reaching deep into the hymenium, K+ violet. Hymenium 225-280 (350) µm high, colourless. Paraphyses thin, rimose-anastomosing. Parathecium thin, brownish, K+ violet. Spores in young asci six to eight, more or less biseriately or irregular arranged, in old asci often four, uniseriately arranged, (45-) 50-58 x 22.5-33 µm, smaller when young and with a colourless wall and contents, later with rather thin, colourless K- outer sheath with a very thick grey, often striated, K+ violet wall, old spores with a thin, colourless K- sheath and dark grey areolated, K+ violet wall. Apothecial margin with algae and numerous colourless crystals. Thallus K-, C-, P-.

Holotype: Namibia, Namib desert, distr. Omaruru: „Mile 72", Laguneberg, ca. 60 m above sea level, 14.5.2002, leg. V. WIRTH & M. HEKLAU, WIRTH # 40170 (KR).

Further samples: Myl 72, Laguneberg, 60 m, basic rock, 21°49' S 14°04' E, 23.2.1989, V. WIRTH & D. WESSELS, WIRTH # 40171, # 40172 (KR); Laguneberg, SW vom Gipfel, 130 m ü.M., 21°49'43" S, 14°04'59" E, 15.5.2002, V. WIRTH

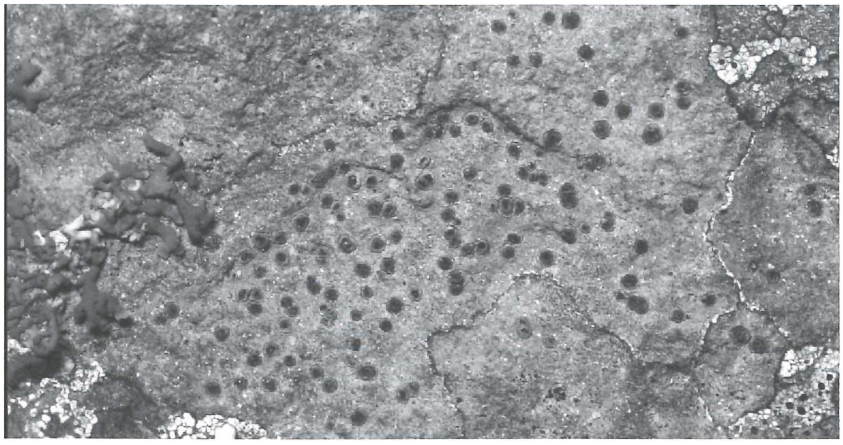

Figure 1: *Pertusaria pseudomelanospora*, with *Xanthoria turbinata* (left). Photo taken in natural habitat, 3 x. – Foto: V. WIRTH.

& M. HEKLAU, WIRTH # 40003, Laguneberg, approx. 5,5-7 km northeast of mile 72, alt. 50-120 m, basic rock, degree ref. 21 14 CC (ca. 21°49' S, 14°04' E) 26./27.2.1989, V. WIRTH & D. WESSELS (STU); Laguneberg, ca. 1-1,5 km SW bis WSW vom Gipfel, 40-60 m, 21°49' S, 14°04' E 19.11.-8.12.1991 V. WIRTH & M. HEKLAU (STU).

Discussion

ERICHSEN (1936) segregated those species of *Pertusaria* with dark ascospores in the genus *Melanaria*, but DIBBEN (1980) subsequently retained this group within *Pertusaria*. A well known member of this group common in Australia and New Zealand and occurring also in Chile, is *Pertusaria melanospora* (ARCHER 1997, GALLOWAY 1985). This species has also been recorded from South Africa by STIZENBERGER (1890). It remains to determine whether this South African material is actually *P. melanospora* or *P. pseudomelanospora*. *Pertusaria melanospora* can be distinguished from *P. pseudomelanospora* by the yellowish thallus and the presence of arthothelin and 2,4-dichloronorlichexanthone. Furthermore, the ascospores of *P. melanospora* often remain colourless whereas they are consistently dark in *P. pseudomelanospora*.

P. melanospora seems to cover a wide climatic range. In contrast to *P. pseudomelanospora P. melanospora* occurs in humid regions with relatively high rainfall, often close to the coast, but apparently also in desert habitats similar to *P. pseudomelanospora*, with rainfall below 20 mm/year, where the lichen depends completely on fog and occasional dew fall for moisture. Several samples were collected in the Atacama desert (MESSUTI & ARCHER 2003).

Pertusaria pseudomelanospora grows mainly on volcanic rocks containing less than 50% SiO_2, especially on basaltic rocks which are widespread in Namibia where it is often associated with *Diploschistes diploschistoides* (Vain.) Salisbury. It was never found on quartz pebbles, another common substrate in the Namib desert. It colonizes relatively dry sites sheltered from the wind.

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