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Pertusaria grassiae (*Pertusariaceae*), a new lichen species from Argentina

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Abstract: A new corticolous species belonging to the lichen family *Pertusariaceae*, *Pertusaria grassiae* Messuti & A.W. Archer, is described from Tucumán Province, Argentina. It is characterized by disciform apothecia covered by a white to greyish white pruina, single-spored asci, ellipsoid and double-walled ascospores and the presence of atranorin.

Key words: Argentina, *Pertusaria*, *Pertusariaceae*.

Introduction

Several taxa in the genus *Pertusaria* DC. from southern South America have been described (Messuti & Archer 1995, 1998, 1999; Archer & Messuti 1998) and the genus in that region was reviewed by Messuti (1999) and Messuti & Vobis (2002). New studies from north-west Argentina have led to the discovery of an additional corticolous species that is described here.

Materials and Methods

External morphology was studied using a dissecting microscope and anatomical observations of the ascomata were made using a Leitz Laborlux 11 light microscope. Sections 16–20 µm thick were cut using a freezing microtome. Preparations were mounted in water, Lugol's iodine or lactophenol cotton-blue.

The chemical constituents were identified using thin-layer chromatography (TLC) (Culberson & Ammann 1979) and gradient-elution high performance liquid chromatography (HPLC) (Lumbsch 2002).

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The Species

Pertusaria grassiae Messuti & A.W. Archer sp. nov.

Thallus corticola, crustaceus, continuus, rimoso-areolatus vel verrucoso-areolatus, ebeneus, castaneo-pallidus vel olivaceus, superficie laevis et hebetata; soredia et isidia desunt; apothecia disciformia vel hemisphaerica, numerosa, confluentia, conspicua; disci rubri, plani vel concavi, albipruinosi, 0·15–1·20 mm diam.; asci clavati; sporae 1-nae, ellipsoideae, 137–180 µm longae et 50–65 µm latae, parietibus laeves, *c.* 4 µm crassis; pycnidia ignota; atranorinum continens.

Typus: Argentina. Prov. Tucumán, Dep. Tafí, Quebrada de la Angostura, 19 September 1945, *Digilio et Grassi* 202 (H—holotypus).

(Fig. 1)

Thallus corticolous, crustose, continuous, moderately thick, rimose-areolate to verrucose-areolate, creamish to whitish brown or pale brown to pale olive green; surface smooth, opaque, rugose to folded, slightly cracked or fissured; isidia and soredia absent, seldom with a defined margin; prothallus not visible.

Apothecia disciform, sessile or slightly constricted at the base, numerous, crowded to fused, conspicuous, (0·15–) 0·60–1·50 mm diam.; discs roundish to hemispherical or deformed, pinkish to less frequently orange to orange-brown, plane to slightly concave, sometimes dividing into 2–4 smaller discs, heavily whitish to greyish white pruinose,

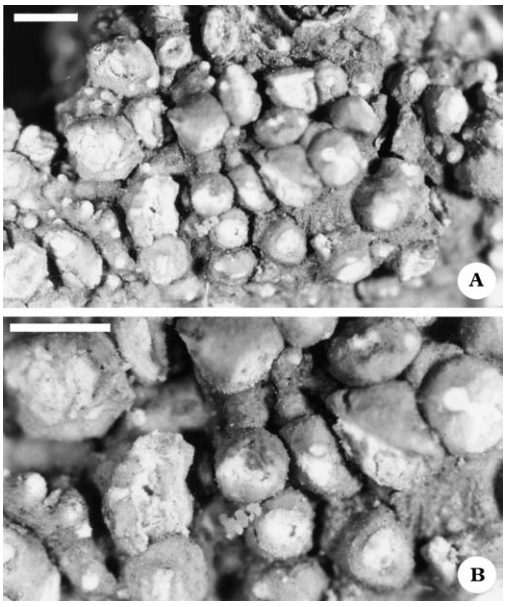

FIG. 1. *Pertusaria grassiae* (holotype). A, habitus; B, details of apothecia. Scales: A & B = 1 mm.

0·10–0·90 mm diam.; apothecial margin entire, concolorous with the thallus, smooth, prominent to rarely not, sometimes eroded. *Asci* claviform, 1-spored. *Ascospores* hyaline, ellipsoid to broadly ellipsoid, smooth, 137–180 µm long, 50–65 µm wide, double-walled, thick, sometimes with a laminated or multilayered inner wall, *c.* 4 µm thick.

Conidiomata not observed.

Chemistry. Thallus cortex and medulla K −, C −, KC −, Pd ± faint yellowish, UV_{350}+orange; apothecial disc and margin K −, C −, KC −, Pd −. Atranorin (major), chloroatranorin (minor), thiophaninic acid (minor), 2-chloro-6-*O*-methylnorlichexanthone (minor), 2-*O*-methylperlatolic acid (minor) were found by TLC and HPLC.

Etymology. The species is named after Marta M. Grassi, one time scientific investigator of the Miguel Lillo Institute, Tucumán Province, Argentina, who collected the first specimen of this new species together with Digilio, in Tafi, Quebrada la Angostura in 1945.

Notes. *Pertusaria grassiae* is characterized by disciform apothecia, single-spored asci, double-walled ascospores, 137–175 × 50–65 µm, and the chemistry. The number of spores per ascus, the presence of double-walls in the ascospores and the presence of atranorin as a major compound distinguish the new species from other *Pertusaria* species. The structure of the ascospore wall is considered to be of major importance in *Pertusaria* taxonomy. The double walls in the ascospores of *P. grassiae* are unique and distinct from those found in the five similar species cited below. It is distinguished from the chemically similar saxicolous *Pertusaria sordida* A. W. Archer and the corticolous *Pertusaria patellifera* A. W. Archer (Archer 1991), both of which contain atranorin as a major compound, by the presence in the compared species of fumarprotocetraric acid and picrolichenic acid respectively. The new species is also distinguished from the morphologically similar *Pertusaria commutata* Müll. Arg. and *Pertusaria clarkeana* A. W. Archer by the chemistry (Archer 1997). It also somewhat resembles *Pertusaria velata* (Turner) Nyl. (Archer 1997; Archer & Messuti 1997) but is distinguished from that species by the apothecial morphology and by the different chemistry; *P. velata* contains lecanoric acid and lichexanthone, in contrast to the presence of atranorin in the new species. The main diagnostic features of *P. grassiae*, compared with similar species, are shown in Table 1.

Habitat and distribution. *Pertusaria grassiae* is a corticolous species, growing on the bark of twigs of an undetermined phorophyte. The phytogeographical area where the new species occurs belongs to the Yungas Province according to Cabrera (1976). This area is characterized by summer precipitation of *c.* 2500 mm per year, and the type of vegetation corresponds to cloud forest in north-west Argentina. The new species is known only from Tafí del Valle, Tucumán Province, north-west of Argentina.

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TABLE 1. *Comparison of* Pertusaria grassiae *with similar species*

Species	*P. grassiae*	*P. sordida*	*P. patellifera*	*P. commutata*	*P. clarkeana*	*P. velata*
Thallus	Corticolous	Saxicolous	Corticolous	Corticolous	Corticolous	Corticolous
Morphology	Rimose-areolate to verrucose-areolate	Granulose, discontinuous	Wrinkled and cracked	Folded and cracked	Wrinkled and cracked	Smooth to wrinkled
Soralia	Absent	Present	Absent	Absent	Absent	Absent
Apothecia	Plane to slightly concave, sometimes dividing into 2–4 smaller discs	Unknown	Conspicuously concave, sometimes dividing into 2–3 smaller discs	Disciform	Disciform, flat or somewhat sunken	Disciform, flattened
Diam. (mm)	(0·15–)0·60–1·50	—	1–3	0·4–0·8	0·5–1·5	0·5–0·8
Pruina	Heavily white to greyish white pruinose	—	White pruinose	Coarsely pruinose	White pruinose	Slightly or densely white pruinose
Ascospores (µm)	137–180 × 50–65	—	150–170 × 45–55	100–135(–150) × 35–50	(100–)135–150 (–175) × 30–55	110–325 × 24–100
	1 per ascus	—	1 per ascus	1 per ascus	1 per ascus	1 per ascus
	Double-walled	—	Single-walled	Single-walled	Single-walled	Single-walled
Chemistry (major substances)	Atranorin	Atranorin Fumarprotocetraric acid	Atranorin Picrolichenic acid	Lichexanthone (variable) Haemothamnolic acid	Lichexanthone (variable) Picrolichenic acid	Lichexanthone (variable) Lecanoric acid
Distribution	Known only from north-west Argentina	Australian endemic	Australian endemic	S America, southern US and Australia	Australian endemic	Cosmopolitan

chromatography results. The first author (MIM) thanks Universidad Nacional del Comahue, Secretaría de Investigación (Grant B090) for financial support.

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