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New species of Graphidaceae from the Neotropics and Southeast Asia

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Abstract

Descriptions and illustrations are provided for 20 new species in the family Graphidaceae (lichenized fungi) originating from El Salvador, the Guianas, Venezuela, Colombia, and Malaysia: *Acanthothecis adjuncta* Welz & Sipman, differing from all other *Acanthothecis* species by the rounded ascocarps with covered discs; *Astrochapsa albella* Sipman, differing from *A. meridensis* in the white apothecium rim, the corticolous growth habit, the more or less clear hymenium, and the protocetraric acid chemistry; *A. columnaris* Sipman, differing from other *Astrochapsa* species by the columnar marginal slips; *Chapsa francisci* Sipman, differing from other *Chapsa* species by the numerous marginal lacinae; *C. nubila* Sipman, differing from other *Chapsa* species by the combination of a guttulate hymenium and 4- to 8-spored asci; *Diorygma extensum* Sipman, differing from *D. minisporum* in producing norstictic acid instead of stictic acid; *Fissurina chapsoides* Sipman, a *Fissurina* species with large, muriform ascospores and short ascocarps opening mostly by branched slits; *F. gigas* Sipman, differing from *F. rufula* in the larger ascomata and muriform ascospores; *F. vorax* Sipman, differing from other *Fissurina* species by the aggregated ascocarps in combination with papillose paraphysis tips; *Graphis murali-elegans* Sipman, differing from *G. elegans* and *G. lumbricina* in the muriform ascospores; *G. nigroglobosa* Sipman, differing from *G. mexicana* in the absence of a complete thalline margin; *Melanotrema comosum* Sipman, a species of *Melanotrema* with extruding, clavate, brown hyphae on columella and excipulum; *Myriochapsa annulata* Sipman, differing from *M. psoromica* by the conspicuous, free excipulum; *M. chocoensis* Sipman, differing from *M. psoromica* in the smaller ascospores; *Ocellularia pitalensis* Sipman, differing from *O. maxima* by producing hypoprotocetraric acid; *O. rugosa* Sipman, similar to *O. zamorana* but with wider ostioles and 1-septate, pigmented ascospores with thick-walled juvenile stage; *Thelotrema berendsohnii* Sipman, similar to *T. alboolivaceum*, from which it differs by submuriform ascospores; *T. kinabaluense* Sipman, differing from other *Thelotrema* species by small, brown ascospores and protocetraric acid; *T. paludosum* Sipman, differing from other *Thelotrema* species by an inspersed hymenium, hypoprotocetraric acid and colorless, transversely septate ascospores of c. 30 × 7 µm; and *T. parvisporum* Sipman, differing from *T. adjectum* in the small, grey-brown ascospores.

Key words: taxonomy, Thelotremataceae, ascospore development.

Introduction

During fieldwork in Central America, northern South America, and East Asia, over the years unidentifiable specimens of Graphidaceae accumulated in the herbarium of the Botanical Garden and Botanical Museum Berlin-Dahlem (B). The recent progress in the classification of tropical Graphidaceae, and in particular the publication of new identification keys (Lücking *et al.* 2008, 2009; Rivas Plata *et al.* 2010; Sipman *et al.* 2012) allowed a new attempt to classify this material. As a result, many could be identified and it became clear that some others represent undescribed species, sometimes even difficult to accommodate in the current generic system. These new taxa are here formally introduced, along with a discussion of their key diagnostic characters and taxonomic affinities, paying particular attention to ascospore development.

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have the most similar ascocarp structure. Of these, *Crutarndina* has similar ascospores with lenticular lumina and a strong I+ dark-violet reaction, but the dense paraphyses with grey epithecium and I+ blue-staining sections in the excipulum suggest a more distant affinity. In *Schizotrema* the ascospores have thin septa and are I-negative. In *Thelotrema* the ascospores are rather variable but the periphysoids are clearly differentiated. Thus none of these fits properly. Therefore the species is provisionally placed in the genus *Thelotrema*. It differs from all described species in this genus, as well as from *Schizotrema* and *Crutarndina*, by the combination of a guttulate hymenium, hypoprotocetraric acid and colorless, transversely septate ascospores of c. 30 × 7 µm.

Thelotrema parvisporum* Sipman, *sp. nov. (Fig. 8G–H)
Mycobank #807367

Differing from *Thelotrema adjectum* in the small, grey-brown ascospores of c. 13 × 7 µm.

Type:—VENEZUELA. Bolivar: Cerro Guaiquinima, at confluence of rivers Carapo and Lima (near camp 7); c. 5°35'N, 63°32'W, 320 m; c. 15 m tall, light forest on poor soil along Carapo; 2 Feb 1990, *H. Sipman 26416* (holotype VEN!; isotype B!).

Thallus whitish, smooth to uneven, not corticate, endophloeiodic; photobiont layer and medulla without clusters of calcium oxalate crystals. Apothecia erumpent, angular-rounded, 0.3–1.0 mm diam.; disc not or slightly exposed, white-pruinose; thalline margin slightly raised to c. 0.2 mm, divided in a few low or hardly distinct, inclined to erect slips, felty white-pruinose inside; excipulum separated by a fissure, forming a separate ring inside the thalline margin, somewhat lacerate. Columella absent. Excipulum colorless; periphysoids present, 5–10 µm long, c. 1 µm thick, not swollen. Hymenium c. 60 µm high, clear; paraphyses unbranched, c. 1.2 µm thick, apically hardly swollen. Ascospores 8 per ascus, submuriform, 3(–6) × 0–1-septate, 11–14 × 6–8 µm, ovoid, with thin outer wall and moderately thickened septa, with rounded lumina, grey-brown, I–.

Secondary chemistry:—Stictic acid.

Etymology:—The epithet reflects the unusually small ascospores.

Distribution and Ecology:— Known from a single collection from the Guayana Highlands in eastern Venezuela, where it was found in light forest on poor soil at c. 230 m elevation.

Remarks:—This species has a *Thelotrema* morphology with its proper excipulum well separated from the thalline margin and visible as a second, whitish ring inside it, and shares the periphysoids. It is superficially very similar to *Thelotrema adjectum*, which differs by the much ascospores (40–80 × 12–25 µm) remaining colorless and with thick outer wall, and psoromic acid. It differs from all known species (Rivas Plata *et al.* 2010) with brown, muriform ascospores and clear hymenium by the presence of stictic acid and tiny ascospores. It is also fairly similar to the genus *Crutarndina*, which deviates by the dense paraphyses with grey epithecium and I+ blue-staining sections in the excipulum, which suggest a more distant affinity.

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