

Neotropical Ascomycetes 11. *Diamantinia citrina* gen. and sp. nov. from Brazil

Andrew N. Miller^{1,2*}, Thomas Læssøe³ & Sabine M. Huhndorf¹

¹ Field Museum of Natural History, Botany Department, Chicago, Illinois 60605-2496, USA

² University of Illinois at Chicago, Department of Biological Sciences, Chicago, Illinois 60607-7060, USA

³ Department of Mycology, Botanical Institute, University of Copenhagen, Øster Farimagsgade 2D, DK-1353, Copenhagen K, Denmark

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An interesting pyrenomycete with an amyloid ascal ring and apiosporous ascospores with germ slits was collected in Brazil. It possesses a unique stromal wall in which the hyphae in the endostroma disintegrate into a bright yellow powder. This species cannot be accommodated in any recognized genus in the Xylariales and is therefore described as *Diamantinia citrina* gen. et sp. nov.

Keywords: *Anthostomella*, *Brunneiapiospora*, *Hypoxyton*, Neotropics, *Rosellinia*, *Stilbohypoxyton*, *Strattonia*, systematics, *Xylaria*, Xylariales.

While examining herbarium material previously collected in Brazil, an interesting wood-inhabiting pyrenomycete was discovered which possesses uniperitheciate turbinate stromata, an amyloid ascal ring, and apiosporous ascospores with germ slits. It could not be placed into any currently recognized genus in the Xylariales based on these morphological characters and therefore a new genus, *Diamantinia*, is erected.

Materials and methods

Morphological features were initially observed in water, which was then replaced with lactophenol containing cotton blue. The amyloid reaction of the ascal ring was determined using Melzer's reagent. Images were captured in water or Melzer's reagent using bright field (BF), differential interference (DIC) and phase contrast (PH) microscopy and processed using Adobe Photoshop 3.0 or 5.5 (Adobe Systems Incorporated, Mountain View, California) following the methods of Huhndorf & Fernández (1998). The height and width of the stromata were measured while seated on the substrate. Stro-

* e-mail: amiller@fmnh.org

mata were longitudinally sectioned according to Huhndorf (1991) and the widths of the wall layers were measured at median height. All structures were measured in water and the minimum and maximum ranges are given along with the mean and standard deviation (shown in brackets) for ascospores. Since facilities were unavailable in the field and this species was not originally thought to be xylariaceous, no attempts were made to culture the specimens.

Taxonomy

Diamantinia A. N. Miller, Læssøe, & Huhndorf, **gen. nov.**

Stromata turbinata superficialia; superficie subglabrata nigra. Paraphyses filiformes, septatae. Asci cylindrici annulo apicali amyloideo praediti, 8-spori. Ascosporae late fusiformes, postremo bicellulares; cellula superior ascosporae brunnea, fissuram germinativam angustam longitudinalem praedita; cellula pedicellata hyalina.

Stromata turbinate, uniloculate, superficial; surface minutely roughened, black. – Paraphyses filiform, hyaline, septate. – Asci cylindrical, unitunicate, apical ring shallow with flaring margins, amyloid, with 8 ascospores. – Ascospores broadly fusiform, hyaline, initially one-celled, becoming two-celled by the formation of a transverse septum; upper cell consisting of a swollen, brown head with a narrow, longitudinal germ slit; lower cell consisting of a small, conical, hyaline pedicel.

Type species. – *Diamantinia citrina* A. N. Miller, Læssøe, and Huhndorf.

Etymology. – Based on the region where the specimens were collected.

Diamantinia citrina A. N. Miller, Læssøe, & Huhndorf, **sp. nov.** – Figs. 1–12.

Stromata turbinata apice plana vel depressa, 190–210 μm diam ad basim, 380–600 μm diam ad apicem, 450–820 μm alta, uniloculata, gregaria vel aggregata, superficialia; superficie subglabrata nigra; ostiola umbilicata. Paries stromatis in sectione longitudinali bistratosus; endostroma prosenchymatosum, 21–44.5 μm crassum, hyphis pallide brunneis, ad maturitatem in pulverem citrinum transformantibus; ectostroma pseudoparenchymatosum, 20.5–45.5 μm crassum. Paries ascomatis bistratosus. Paraphyses filiformes, septatae. Asci cylindrici, 100–145 longitudine tota longi, 7–9.5 μm crassi, stipitibus 18.5–51 \times 2–5 μm , unitunicati; annulo apicali in liquore iodato Melzeri cyanescenti, discoideo, 1.1 μm alto, 2.8–3.4 μm lato, 8-spori. Ascosporae late fusiformes, postremo bicellulares; cellula superior ellipsoidea, 9.5–12.5 \times 4.5–6 μm , sursum conica basi truncata, pallide brunnea deinde atrobrunnea, fissura germinativa angusta, longitudinali; cellula pedicellata conica vel triangulata, 2.5–4 \times 2–3 μm , hyalina.

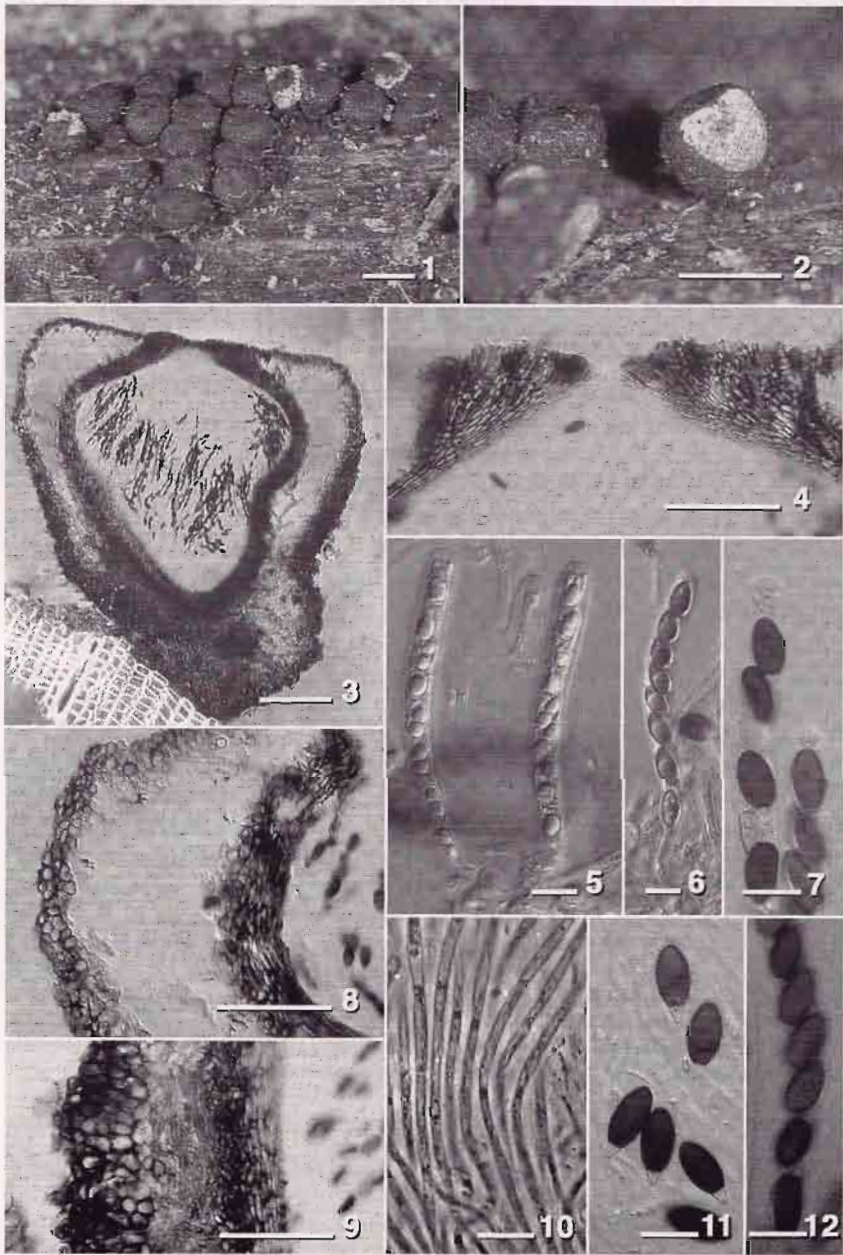
Holotype. – BRAZIL: Bahia, Chapada Diamantina, Meco. Rio de Contas, lower slopes of Pico das Almas, ca. 15 km NW of Rio de Contas on road to Brumadinho, dry rocky vegetation, 13°28'S, 41°52'W, elev 1250–1510 m, on decayed decorticated wood, 27 Oct 1994, S. M. Huhndorf, W. R. Buck & R. C. Harris, Buck 26886 (Holotype SP; Isotypes C, F, NY). Paratype. – *ibid.*, on decayed corticated branches, 27 Oct 1994, S. M. Huhndorf, W. R. Buck & R. C. Harris, Buck 26890 (Paratype C, F, NY, SP).

Stromata turbinate, apex flat to slightly depressed at ostiole, 190–210 µm diam at base, 380–600 µm diam at apex, 450–820 µm high, uniloculate, gregarious to tightly clustered, superficial; surface minutely roughened, black; ostiole umbilicate. – Stromatal wall of *textura globulosa* in surface view; in longitudinal section 2-layered; endostroma prosenchymatous, 21–44.5 µm thick, hyphae 1.5–4.5 µm wide, pale brown, septate, thin-walled, disintegrating to form a bright yellow powdery substance except at base; ectostroma pseudoparenchymatous, 20.5–45.5 µm thick, thinner at the apex, composed of 3–6 layers of globose to polygonal, brown, slightly thick-walled cells, cells becoming elongate and forming a palisade towards base. – Ascomatal wall 2-layered, inner layer pseudoparenchymatous, 10–17.5 µm thick, composed of 5–6 layers of elongate, flattened, pale brown, thin-walled cells, outer layer pseudoparenchymatous, 12.5–18.5 µm thick, composed of 4–6 layers of globose to polygonal, brown, slightly thick-walled cells. – Ascomatal apices with periphyses. – Paraphyses filiform, not tapering, 1.5–2 µm wide, hyaline, numerous, remotely septate, unbranched, persistent. – Asci cylindrical, 100–145 × 7–9.5 µm, stipitate, stipe 18.5–51 × 2–5 µm, thin-walled, apex rounded; ascus ring 2.8–3.4 × 1.1 µm, amyloid, fairly dark blue in Melzer's reagent, shallow with a thin flaring apical part; with 8 uniseriate, overlapping to partly biseriate ascospores, basal 1–4 ascospores commonly reversed in ascus. – Ascospores broadly fusiform, hyaline, initially one-celled, becoming two-celled by the formation of a transverse septum while inside the ascus, 12.5–15.5 × 4.5–6 µm [$14 \pm 1.0 \times 5.5 \pm 0.5$]; upper cell swollen, ellipsoid, 9.5–12.5 × 4.5–6 µm, conical at apex, truncate at base, becoming pale brown then finally dark reddish brown, with a narrow, longitudinal germ slit running the entire length of the cell; lower cell conical to triangular, 2.5–4 × 2–3 µm, hyaline, persistent.

Habitat. – Found on decaying decorticated wood and corticated branches on the ground in dry deciduous shrubby vegetation.

Etymology of species epithet. – Refers to the bright yellowish powder formed after the disintegration of hyphae in the endostroma.

Known distribution. – Brazil (Bahia), type locality.



Discussion

Preliminary morphological examination suggested that *Diamantinia citrina* belonged in the Lasiosphaeriaceae due to its fili-form paraphyses and apiosporous ascospores which closely resemble those of *Strattonia* Cif. emend. Lundq. [i.e. *Strattonia carbonaria* (Phill. & Plowr.) Lundq.]. However, phylogenetic analyses of partial 28S nuclear ribosomal large subunit DNA placed this taxon in the Xylariales (data not shown) and further morphological work revealed an amyloid ring and ascospores with germ slits, both characteristic of members of the Xylariaceae.

Other genera with uniperitheciate stromata such as *Anthostomella* Sacc. and *Rosellinia* De Not. contain members that also may possess apiosporous ascospores with brown heads and hyaline pedicels. However, members of these genera differ from *D. citrina* in a number of characters including the clypeoid nature of the stroma in *Anthostomella* and the massive apical apparatus in *Rosellinia*. Species of *Brunneiapiospora* K. D. Hyde, J. Fröhlich & J. E. Taylor, currently placed in the Clypeosphaeriaceae, possess ascospores very similar to those of *Diamantinia*, but can be distinguished by the former being immersed under a clypeus and having ascospores without germ slits (Hyde & al., 1998). There are some members of the Xylariaceae that share the presence of yellow stromatal tissue elements, e.g. "*Hypoxyylon*" *citrinum* Shear, "*H.*" *discolor* Berk. & Broome, "*H.*" *chrysoconium* Berk. & Broome, and some members of *Stilbohypoxyylon* Henn. The unplaced *Hypoxyylon* taxa (listed as excluded taxa in Ju & Rogers 1996) have flattened ascus rings, while the *Stilbohypoxyylon* taxa have massive ascus rings. These taxa have unicellular ascospores at maturity and most would appear to be related to *Xylaria* Schrank.

It is, in fact, not easy to place *Diamantinia* in one of the accepted families in the Xylariales. Using the keys in Hawksworth & al. (1995) and in Barr (1990), it keys out in the Xylariaceae, but the shapes of the paraphyses (cylindrical versus tapering), apical ascus ring, ascospores, and peridial anatomy (Jensen, 1985) differ at least

Figs. 1-12. *Diamantinia citrina* (from holotype). – 1. Stromata on substrate. – 2. Stromata on substrate with bright yellow endostroma exposed. – 3. Longitudinal section through stroma showing stromal wall, endostroma (mostly disintegrated in upper part), and ascomal wall. – 4. Ascomal apex. – 5. Immature asci. – 6. Mature ascus. – 7. Ascus apices showing amyloid rings in Melzer's reagent. – 8. Longitudinal section through upper part of stromal wall showing the disintegrated endostroma between stromal wall and ascomal wall. – 9. Longitudinal section through lower part of stromal wall showing endostroma composed of loosely interwoven hyphae. – 10. Paraphyses. – 11. Ascospores. – 12. Ascospores, second from bottom shows a germ slit. – Figs. 1-2 = macroscopic view; 3-9, 11-12 = DIC; 10 = PH. – Scale bars: 1,2 = 500 μ m; 3 = 100 μ m; 4, 8-9 = 50 μ m; 5-7, 10-12 = 10 μ m.

to some extent from the other members of this family, and *Diamantina* did not cluster with other Xylariaceae having bicellular spores (data not shown). We suggest a placement as Xylariales *incertae sedis* for the time being.

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