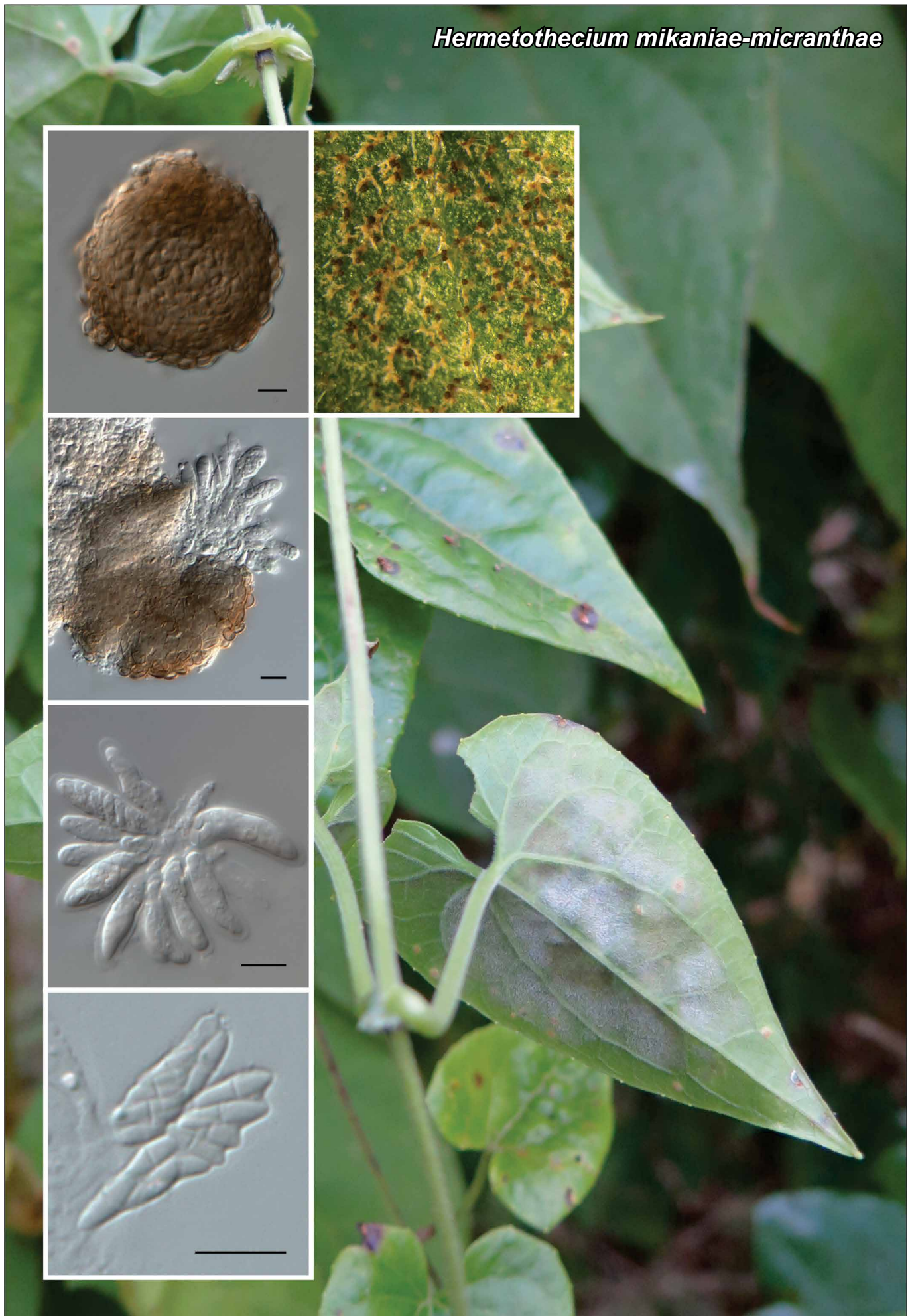


Hermetothecium mikaniae-micranthae



Fungal Planet 1017 – 18 December 2019

Hermetothecium T.F. Nóbrega, B.W. Ferreira, H.C. Evans & R.W. Barreto, *gen. nov.*

Etymology. Having a sealed sporocarp.

Classification — *Chaetothyriaceae*, *Chaetothyriales*, *Eurotiomycetes*.

Ascomata chasmothecium (similar to sporocarps of the *Erysiphales*), without an ostiole, epiphytic, formed on a subiculum on living leaves, globose, brown. *Hymenium* containing asci but

no sterile filaments. *Asci* bitunicate, subglobose, fasciculate. *Ascospores* ellipsoid, 0–2-septate, hyaline. *Asexual morph* unknown.

Type species. *Hermetothecium mikaniae-micranthae* T.F. Nóbrega, B.W. Ferreira, H.C. Evans & R.W. Barreto
MycoBank MB832759.

Hermetothecium mikaniae-micranthae T.F. Nóbrega, B.W. Ferreira, H.C. Evans & R.W. Barreto, *sp. nov.*

Etymology. Name reflects the host, *Mikania micrantha*.

Colonies hypophyllous, forming irregular white patches on the host surfaces, powdery mildew-like. *Mycelium* superficial, composed of very narrow (1–4 µm diam), branched, almost indistinguishably septate, thin-walled, hyaline, hyphae, forming a dense colourless subiculum. *Ascomata* chasmothecium (similar to fruit bodies of the *Erysiphales*), scattered to gregarious, globose, 51–74 × 55–76 µm diam, without an ostiole, walls thickened composed of 3–4 layers of brown *textura globulosa*, 7–17 µm, smooth. *Asci* fasciculate, subglobose, 19–27 × 7–12 µm, bitunicate, 8-spored. *Sterile filaments* absent. *Ascospores* ellipsoid, 7–13 × 2–5 µm, 0–2-septate, hyaline, smooth. *Asexual morph* absent.

Typus. BRAZIL, Minas Gerais, Viçosa, campus of the Universidade Federal de Viçosa, coffee experimental area (Viveiro de Café), on living leaves of *Mikania micrantha* (*Asteraceae*), 4 Dec. 2018, R.W. Barreto (holotype VIC 47212, ITS and LSU sequences GenBank MN537723 and MN537725, MycoBank MB832760).

Notes — Numerous attempts to isolate this fungus on a range of general-purpose culture media failed to produce any culture, leading to the conclusion that this is a biotrophic taxon. Furthermore, detailed observations under the compound microscope and via scanning electron microscopy failed to produce any evidence of appressoria, or other penetration structures of leaf tissue, or any internal growth of mycelium. It appears that *H. mikaniae-micranthae* is an epiphyte relying strictly on plant exudates for its growth and is a specialised colonist of this plant host. *Mikania micrantha* is a relatively uncommon but widespread ruderal climber in Brazil, frequently associated with marshy areas. However, in its exotic range in the Palaeotropics, especially in Asia, it is highly invasive and damaging (mile-a-minute weed) in both natural and agricultural ecosystems (Ellison & Sankaran 2017).

Colour illustrations. *Hermetothecium mikaniae-micranthae* forming whitish, powdery-mildew-like colonies on the underside of *Mikania micrantha* leaves. Brown, thick-walled ascoma; colony formed abaxially (note brown sphaeroid ascomata associated with whitish subiculum); squash-mounted ascoma releasing asci-only hymenium; fascicle of immature asci; 8-spored mature asci. Scale bars = 10 µm.

Phylogenetic trees constructed from the analysis of Maximum Parsimony and Bayesian Inference demonstrated that the fungus belongs to the *Chaetothyriaceae*. Many species included in this family are epiphytes, colonising the surface of living leaves with mycelium limited to the host cuticle (Chomnunti et al. 2012). Sequences of the fungus, obtained directly from colonies on living leaves of *M. micrantha*, formed a clade isolated from other genera of *Chaetothyriaceae*, with high support (bootstrap = 100 / posterior probability = 1) justifying the recognition of a new monotypic genus for this species.

The closest genera to *Hermetothecium* in the phylogenetic study are *Phaeosaccardinula* and *Vonarxia*. Fungi in *Phaeosaccardinula* have ascomata, with a dark, non-setose pellicle, saccate, bitunicate asci and muriform, hyaline to brownish ascospores (Yang et al. 2014). *Vonarxia* is based on an asexual morph which is sporodochial, with septate setae (Batista et al. 1960).

Supplementary material

FP1017 Maximum Parsimony Tree inferred from the combined datasets of ITS and LSU sequences from species belonging to the families *Chaetothyriaceae* and *Cyphellophoraceae*, including two specimens of *Hermetothecium mikaniae-micranthae* obtained in this study (indicated in **bold**). Bootstrap support values (≥ 70 %) and later Bayesian probabilities (≥ 0.90) are given at each node. The tree is rooted to *Cladophialophora australiensis* CBS 112793 and *C. potulentorum* CBS 112222.