

Gyphellophora vietnamensis



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Cyphellophora vietnamensis Iturrieta-González, Dania García, Guarro & Gené, *sp. nov.*

Etymology. Name refers to the geographical region where the fungus was collected.

Classification — *Cyphellophoraceae*, *Chaetothyriales*, *Eurotiomycetes*.

Mycelium consisting of branched, septate, subhyaline to pale olivaceous, smooth-walled hyphae, 1–1.5 µm diam. *Conidiophores* commonly macronematous, mononematous or in groups of 2–4, growing laterally or terminally on hyphae, erect, more or less penicillately branched, up to 250 µm long, with stipe pale brown to brown, smooth- and thick-walled; branches bearing terminally groups of 2–3 phialides, pale brown, asperulate to verruculose; micronematous conidiophores also present, consisting in phialides growing directly or on short supporting cells from vegetative hyphae. *Phialides* lageniform, 12–20 × 2–3.5 µm at the broad part, tapering to a long cylindrical neck with a conspicuous collaret slightly darker than the rest of the phialide, pale olivaceous, smooth-walled. *Conidia* in long unbranched chains (up to 90 conidia), 0(–1)-septate, ellipsoidal to somewhat fusoid, with truncate ends, obovoid when terminal, pale olivaceous, smooth-walled, 4–7 × 1–2 µm. *Chlamydospores* absent. *Sexual morph* not observed.

Culture characteristics — Colonies on potato dextrose agar (PDA) reaching 18–19 mm diam after 2 wk at 25 °C, brownish grey to grey (4D2/4B1) (Kornerup & Wanscher 1978), final edge olive (2F8), velvety, radially folded, aerial mycelium scarce, irregular margin; reverse olive (2F8). On potato carrot agar (PCA) reaching 18–20 mm after 2 wk at 25 °C, olive grey to olive (3D2/3F8), velvety, flat, aerial mycelium scarce, regular margin; reverse olive (2F8). On oatmeal agar (OA) reaching 18–19 mm diam after 2 wk, pale grey to olive (1B1/2F8), velvety at the centre, flat, aerial mycelium scarce, irregular margin; producing a metallic brightness on the border of the colony; reverse olive (2F8). Urease positive; laccase production negative.

Cardinal temperatures for growth — Minimum 15 °C, optimum 25 °C, maximum 30 °C.

Typus. VIETNAM, Northeast region, on unidentified dead leaf, Aug. 2011, J. Guarro (holotype CBS H-24475, cultures ex-type FMR 17714 = CBS 146924; ITS, LSU and *tub2* sequences GenBank LR814107, LR814108 and LR814116, MycoBank MB836045).

Notes — Based on a megablast search of NCBI's GenBank database, the LSU sequence of *C. vietnamensis* showed a similarity of 98.22 % (829/844) with the sequence of *C. oxyspora* (CBS 698.73, GenBank NG_067405) and 97.75 % (825/844) with that of *C. suttonii* (CBS 125441, GenBank MH874978); the ITS sequence was 96.71 % (558/577) similar with that of *Phialophora capiguarae* (ex-type strain CBS 132767, GenBank KF928464) and a 88.61 % (537/606) with respect to *C. oxyspora* (IFM 51368, GenBank AB190870); and the *tub2* sequence was 94.65 % (336/355) similar with that of *P. capiguarae* (strain CBS 131954, GenBank KF928593) and a 77.74 % (255/328) with respect to *C. ludoviensis* (CMRP 1317, GenBank KX583749). Phylogenetic reconstruction with ITS, LSU and *tub2* loci (Attili-Angelis et al. 2014) of the accepted species of *Cyphellophora* and *Phialophora*, including the type

Colour illustrations. Vietnam, Northeast region. Colony sporulating on OA after 2 wk at 25 °C; conidiophores, phialides and conidia after 18 d. Scale bars = 10 mm (colony), = 10 µm (microscopic structures).

species of the respective genera (i.e., *C. laciniata* CBS 190.61 and *P. verrucosa* CBS 140326), showed that the new species is allocated in a strongly supported clade with *C. oxyspora* and *P. capiguarae*, but being closely related to the latter species. Our phylogeny supports that *P. capiguarae* as well as *P. attinorum*, both described by Attili-Angelis et al. (2014), belong to the *Cyphellophora* clade. Although *P. capiguarae* was previously considered a species of *Cyphellophora* (Gomes et al. 2016), the formal taxonomic change was not proposed. Therefore, respective new combinations are proposed below.

Morphologically, *C. vietnamensis* differs from *P. capiguarae* mainly by having unbranched conidial chains, which are smaller (4–7 × 1–2 µm vs 6.5–9 × 1.9–2.5 µm in *P. capiguarae*) and commonly aseptate, absence of chlamydospores, and a moderately faster growth (PDA, 18–19 mm vs 13–14 mm in *P. capiguarae*; OA, 18–19 mm vs 14–15 mm in *P. capiguarae*) after 2 wk at 25 °C. *Cyphellophora vietnamensis* clearly differs from *C. oxyspora* (Gams & Holubová-Jechová 1976, Réblová et al. 2013) by its long penicillate conidiophores.

Cyphellophora attinorum (Attili-Angelis et al.) Iturrieta-González, Gené, Dania García, *comb. nov.* — MycoBank MB836046

Basionym. *Phialophora attinorum* Attili-Angelis et al., 'attae' Fungal Diversity 65: 68. 2014.

Typus. BRAZIL, Fazenda Santana, Botucatu, São Paulo, from the cuticle of *Atta capiguara* gynes, Nov. 2008, A.P.M. Duarte, F.L.A. Guedes & D. Attili-Angelis (holotype and cultures ex-type CBS 131958; ITS, LSU and *tub2* sequences GenBank KF928463, KF928527 and KF928591).

Notes — *Cyphellophora attinorum* is closely related to *C. livistonae* (Crous et al. 2012, Madrid et al. 2016) and *C. sessilis* (De Hoog et al. 1999, Réblová et al. 2013), both species formerly classified in *Phialophora*. Morphologically, *C. attinorum* can be differentiated from *C. livistonae* by the production of shorter (1.6–4.2 vs (4–)7–8(–10) µm) and aseptate conidia, and by the absence of chlamydospores. Chlamydospores in *C. livistonae* are intercalary, 0–1-septate, measuring 8–10 × 3–5 µm (Crous et al. 2012). *Cyphellophora sessilis* differs by its shorter (up 3 µm; up to 4.2 in *C. attinorum*) and obovoidal conidia (broadly ellipsoidal in *C. attinorum*).

Cyphellophora capiguarae (Attili-Angelis et al.) Iturrieta-González, Gené, Dania García, *comb. nov.* — MycoBank MB836047

Basionym. *Phialophora capiguarae* Attili-Angelis et al., Fungal Diversity 65: 70. 2014.

Typus. BRAZIL, Fazenda Santana, Botucatu, São Paulo, from cuticle of *Atta capiguara* gynes, Dec. 2009, F.C. Pagnocca, N.S. Nagamoto, A.P.M. Duarte & D. Attili-Angelis (holotype and cultures ex-type CBS 132767; ITS, LSU and *tub2* sequences GenBank KF928464, KF928528 and KF928592).

Supplementary material

FP1151 Maximum likelihood tree obtained from the combined analysis of ITS, LSU and *tub2* sequences of the genus *Cyphellophora* and representative species of the genus *Phialophora*. New species and new combinations proposed are indicated in **bold** face.