

***Solicorynespora* species associated with dead branches of subtropical forests in southern China**

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Abstract – Four anamorphic fungal species of *Solicorynespora* are described and illustrated from specimens collected on dead branches of unidentified plants in southern China. *Solicorynespora guangdongensis* sp. nov. differs from other species by obclavate, 8-13-euseptate, usually 1-distoseptate below, 105-182 × 14.5-20 µm, smooth conidia with 1-7 mucous tunica on the rostrum. *Solicorynespora Jiangxiensis* sp. nov. is easily distinguished by obclavate, upper cells becoming cylindrical, (62-)108-220 × 11-13 µm, smooth conidia with 9-23-euseptate. *Solicorynespora biseptata* and *S. insolita* are recorded for the first time from China.

Anamorphic fungi / hyphomycetes / systematics / taxonomy

INTRODUCTION

The genus *Solicorynespora* R.F. Castañeda & W.B. Kendr. is typified by *S. zapatensis* R.F. Castañeda & W.B. Kendr., which was collected from fallen leaves of *Nectandra coriacea* Griseb. in Cuba. It is characterized by distinct, determinate or percurrently extending conidiophores with monotretic, integrated, terminal conidiogenous cells, and solitary, euseptate phragmoconidia (Castañeda-Ruíz & Kendrick, 1990; Seifert *et al.*, 2011). 22 species are currently included in *Solicorynespora* based on difference in conidial morphology including shape, size, number of eusepta, ornamentation, pigmentation, and presence or absence of an appendage, and of which eight species are derived from *Corynespora* Güssow due to their euseptate conidia (Castañeda-Ruíz & Kendrick, 1990; Castañeda-Ruíz, 1996; Delgado-Rodríguez *et al.*, 2002; Castañeda-Ruíz *et al.*, 2004; Shirouzu & Harada, 2008; McKenzie, 2010; Ma *et al.*, 2012b-d, 2014; Hernández-Restrepo *et al.*, 2014). Only *Solicorynespora insolita* M. Hern.-Rest., Genè, R.F. Castañeda

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& Guarro was reported to have a particularly close affinity with *Astrosphaeriella livistonicola* K.D. Hyde & J. Fröhl. (Hernández-Restrepo *et al.*, 2014).

Saprophytic fungi are highly diverse on plant debris in moist forest environment and watersides, and many new genera or species have recently been published (Wu & Zhuang, 2005; Zhao *et al.*, 2010; Ren *et al.*, 2012; Ma *et al.*, 2012a-d; Zhang *et al.*, 2012; Xia *et al.*, 2013). During continuing exploration for saprobic microfungi in southern China, four species with morphological characteristics of *Solicorynespora* were collected on dead branches. They are proposed herein as two new species and two new records.

MATERIALS AND METHODS

Dead branches were collected from humid environments or waterside in the subtropical forests of southern China, and taken to the laboratory in ZiplocTM plastic bags. Samples were processed and examined following the methods described in Zhang *et al.* (2009). Conidia and conidiophores were measured and photographed using a Nikon microscope, with 100×(oil immersion) objectives. Adobe Photoshop 7.0 was used for image processing to assemble photographs into compound images, with backgrounds modified for esthetic reasons. The specimens are deposited in the Herbarium of Jiangxi Agricultural University, Plant Pathology (HJAUP).

TAXONOMY

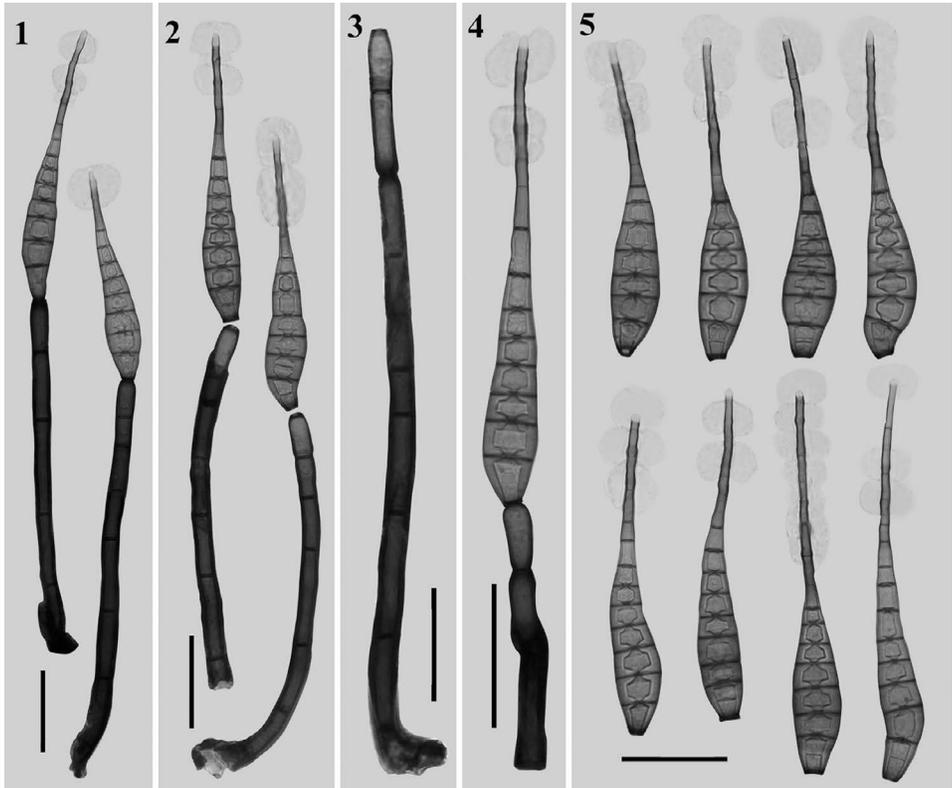
Solicorynespora guangdongensis Jian Ma & X.G. Zhang, sp. nov. **Figs 1-5**

Mycobank: MB 814838

Diagnosis: Characterized by monotretic conidiogenous cells with solitary, acrogenous, obclavate, 8-13-euseptate, usually 1-distoseptate below, smooth, 105-182×14.5-20 μm, brown to pale brown conidia with 1-7 mucous tunica on the rostrum.

Etymology: *guangdongensis*, referring to the province where the fungus was found.

Colonies on natural substrate effuse, brown to dark brown, hairy. **Mycelium** partly superficial, partly immersed in the substratum, composed of branched, septate, pale brown to brown, smooth-walled hyphae. **Conidiophores** macronematous, mononematous, solitary or in groups, erect, straight or flexuous, unbranched, smooth, septate, brown to dark brown, 160-262 μm long, 9-11 μm wide, sometimes with 1-2 percurrent extensions. **Conidiogenous cells** monotretic, integrated, terminal, cylindrical, brown or dark brown, smooth, 18.5-25.5×7.5-9.5 μm. **Conidial secession** schizolytic. **Conidia** solitary, dry, acrogenous, obclavate, 8-13-euseptate, usually 1-distoseptate below, smooth, brown to pale brown, 105-182 μm long, 14.5-20 μm wide in the widest part, 4.5-7 μm wide at the truncate base, apex extended into a brown to pale brown rostrum, 2.5-3.5 μm wide, and invested in 1-7 spherical or subspherical, hyaline or subhyaline mucous tunica ca 17-26.5 μm diam.



Figs 1-5. *Solicorynespora guangdongensis* (from holotype). 1-2. Conidiophores and conidia. 3. Conidiophore apices showing conidiogenous cells and percurrent extension. 4. Conidiogenous cells with terminal conidium. 5. Conidia. Scale bars: 1-5 = 40 μ m.

Holotype: China, Guangdong Province, Liuxihe National Forest Park, collected on dead branches of an unidentified broad-leaved tree, 10 July 2014, J. Ma, HJAUP M0097.

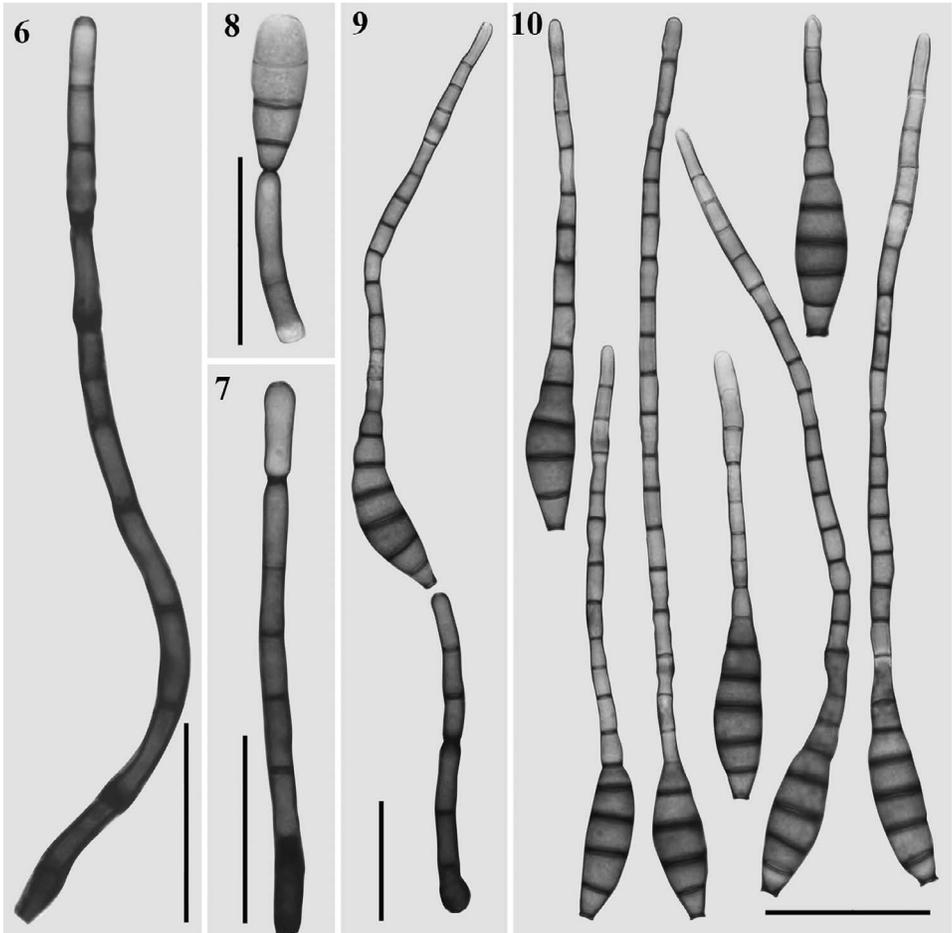
Commentary: *Solicorynespora guangdongensis* has obclavate conidia similar to *S. aterrima* (Berk. & M.A. Curtis ex Cooke) R.F. Castañeda & W.B. Kendr. (Castañeda-Ruíz & Kendrick, 1990), *S. foveolata* (Pat.) Shirouzu & Y. Harada (Shirouzu & Harada, 2008) and *S. linderæ* Jian Ma & X.G. Zhang (Ma *et al.*, 2012c), but differs from *S. aterrima* (conidia 33-74 \times 8-10 μ m, 3-5-euseptate), *S. foveolata* (conidia 28-100 \times 7-9 μ m, 4-11-euseptate) and *S. linderæ* (conidia 100-130 \times 12.5-15.5 μ m, 7-9-euseptate) by its larger conidia with 8-13-euseptate and usually 1-distoseptate below. In addition, conidia of *S. guangdongensis* are smooth, and have 1-7 mucous tunica on the rostrum, while those of *S. aterrima*, *S. foveolata* and *S. linderæ* are smooth or verrucose, and lack an apical mucilaginous appendage.

Solicorynespora Jiangxiensis Jian Ma & X.G. Zhang, sp. nov.

Figs 6-10

Mycobank: MB 814839

Diagnosis: Characterized by monotretic conidiogenous cells producing solitary, acrogenous, obclavate, upper cells becoming cylindrical, smooth, (62-)108-220 \times 11-13 μ m, brown to pale brown conidia with 9-23-euseptate.



Figs 6-10. *Solicorynespora Jiangxiensis* (from holotype). 6-7. Conidiophore apices showing conidiogenous cells and percurrent extensions. 8. Conidiogenous cells with terminal conidium. 9. Conidiophore and conidium. 10. Conidia. Scale bars: 6-10 = 40 μm .

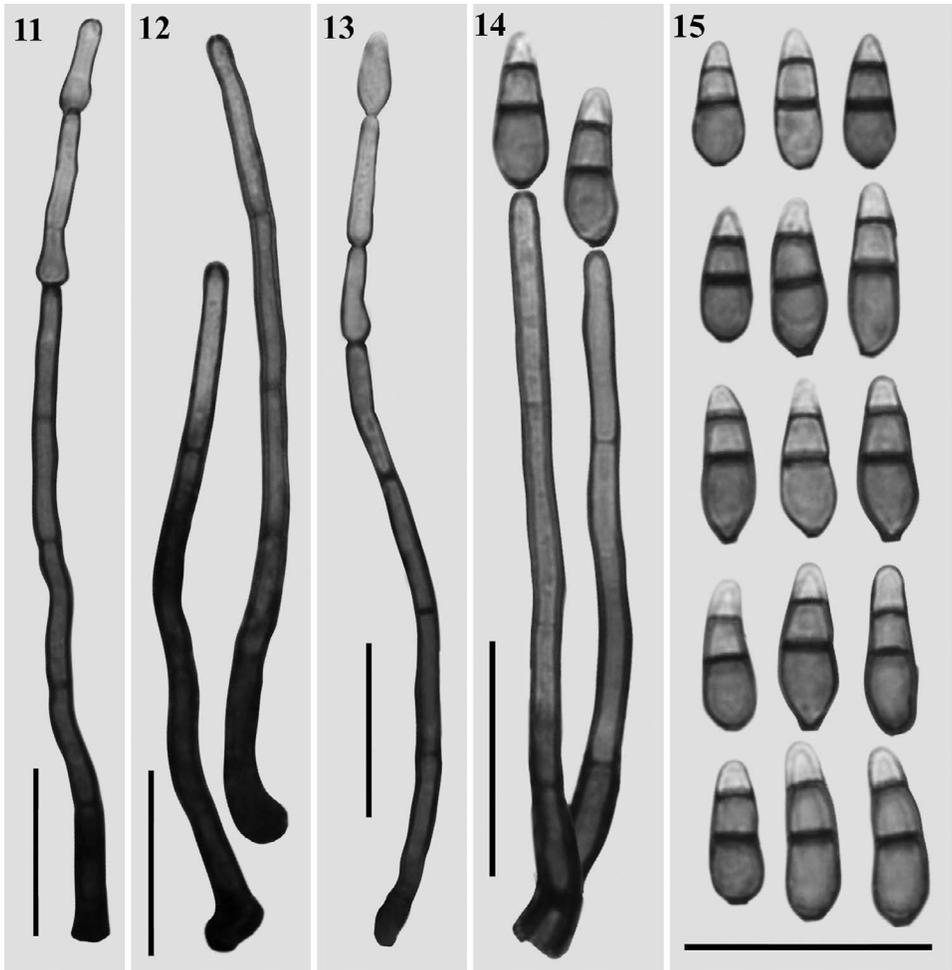
Etymology: *Jiangxiensis*, referring to the province where the fungus was found.

Colonies on natural substrate effuse, brown, hairy. **Mycelium** partly superficial, partly immersed in the substratum, composed of branched, septate, pale brown to brown, smooth-walled hyphae. **Conidiophores** macronematous, mononematous, solitary or in groups, erect, straight or flexuous, unbranched, smooth, brown to dark brown, 87-195 μm long, 5.5-6.5 μm wide, sometimes with 1-2 percurrent extensions. **Conidiogenous cells** monotretic, integrated, terminal, cylindrical, brown to pale brown, smooth, 15-20.5 \times 5-6 μm . **Conidial secession** schizolytic. **Conidia** solitary, dry, acrogenous, obclavate, upper cells becoming cylindrical, smooth, brown to pale brown, 9-23-euseptate, (62-)108-220 μm long, 11-13 μm wide in the widest part, apical cell rounded, 3-4.5 μm wide, basal cell conical-truncate, 3-5.5 μm wide at the base.

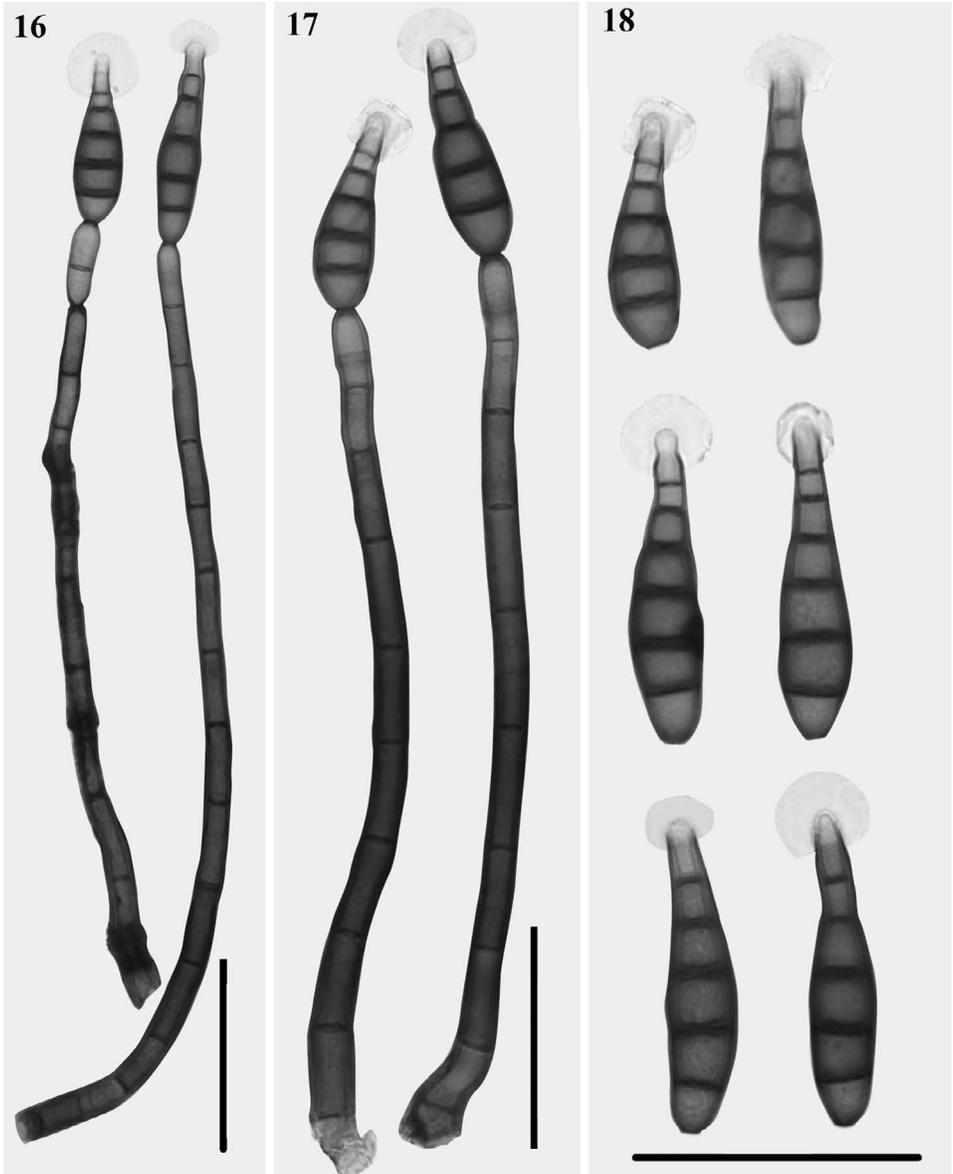
Holotype: China, Jiangxi Province, Lushan Mountain, collected on dead branches of an unidentified broad-leaved tree, 8 Nov. 2014, J. Ma, HJAUP M0185.

Commentary: *Solicorynespora Jiangxiensis* bears some resemblance to *S. foveolata* and *S. linderiae* in conidial shape, but differs from *S. foveolata* (conidia $28-100 \times 7-9 \mu\text{m}$, 4-11-euseptate) by its larger conidia with more septa, and from *S. linderiae* (conidia $100-130 \times 12.5-15.5 \mu\text{m}$, 7-9-euseptate) by its longer and narrower conidia with more septa, and further from *S. foveolata* and *S. linderiae* by its smooth conidia with a non-rostrate apex. In addition, the conidia of *S. Jiangxiensis* are obclavate, upper cells becoming cylindrical, which is easily distinguished from *S. foveolata* and *S. linderiae*.

Solicorynespora biseptata Silvera, Gené, Hern.-Rest. & R.F. Castañeda, Mycol. Progress 13: 162. 2014 **Figs 11-15**



Figs 11-15. *Solicorynespora biseptata* (HJAUP M0283). 11-12. Conidiophore apices showing conidiogenous cells and percurrent extensions. 13. Conidiophore with developing conidium. 14. Conidiophores and conidia. 15. Conidia. Scale bars: 11-15 = 20 μm .



Figs 16-18. *Solicorynespora insolita* (HJAUP M0068). **16-17.** Conidiophores with terminal conidia, and conidiophore apices showing conidiogenous cells and percurrent extension. **18.** Conidia. Scale bars: 16-18 = 40 μm .

Conidiophores macronematous, unbranched, 42-110 \times 3-4 μm , determinate or indeterminate with 1-3 doliiform percurrent extensions. **Conidiogenous cells** monotretic, integrated, terminal, cylindrical, 9.5-20 \times 2.5-3 μm . **Conidial secession** schizolytic. **Conidia** solitary, acrogenous, obclavate, smooth, 2-euseptate, 8-16 \times 4-5.5 μm , dark brown at the basal and central cells, pale brown at the apex, 1-1.5 μm wide at the truncate base.

Specimen examined: China, Jiangxi Province, Lushan Mountain, collected on dead branches of an unidentified broad-leaved tree, 6 Nov. 2014, J. Ma, HJAUP M0283.

Commentary: *Solicorynespora biseptata* has been recorded from Spain (Hernández-Restrepo *et al.*, 2014), and has not been previously described from China. It is closely related to *S. ligustri* Jian Ma & X.G. Zhang (Ma *et al.*, 2012b) and *S. pseudolmediae* (R.F. Castañeda) R.F. Castañeda & W.B. Kendr. (Castañeda-Ruíz & Kendrick, 1990) in conidial shape, but *S. ligustri* has slightly longer conidia (13-22 µm) with predominately 3-euseptate, and *S. pseudolmediae* has larger conidia (16-29 × 8.5-12 µm) with 2-5-euseptate. Our collection corresponds well with the original description of *S. biseptata* (Hernández-Restrepo *et al.*, 2014) except for the narrower conidia (4-5.5 µm vs. 5-10 µm) and narrower conidiophores (3-4 µm vs. 4-5 µm).

Solicorynespora insolita M. Hern.-Rest., Genè, R.F. Castañeda & Guarro, Mycol. Progress 13: 161. 2014 **Figs 16-18**

Conidiophores macronematous, unbranched, 155-362 × 6.5-8.5 µm, sometimes with 1 cylindrical or dolliform percurrent extension. **Conidiogenous cells** monotretic, integrated, terminal, cylindrical, 11.5-17 × 5-6.5 µm. **Conidial secession** schizolytic. **Conidia** solitary, acrogenous, obclavate to subfusiform, smooth, brown, 5-6-euseptate, 36-51.5 × 9-12.5 µm, 2.5-3.5 µm wide at the truncate base, apex rounded, 3-4.5 µm wide, and invested in a spherical or subspherical, hyaline or subhyaline mucous tunica ca 9-16 µm diam.

Specimen examined: China, Guizhou Province, Leigongshan National Nature Reserve, on dead branches of unidentified broad-leaved trees. 6 Sep. 2013, J. Ma HJAUP M0068, M0035-1; China, Jiangxi Province, Lushan Mountain, collected on dead branches of an unidentified broad-leaved tree, 8 Nov. 2014, J. Ma, HJAUP M0248; China, Guangdong Province, Nanling National Forest Park, collected on dead branches of an unidentified broad-leaved tree, 6 July 2014, J. Ma, HJAUP M0136.

Commentary: *Solicorynespora insolita* is reported for the first time from China. It bears some resemblance to *S. mulanjeensis* (B. Sutton) R.F. Castañeda, M. Stadler & Guarro (Castañeda-Ruíz *et al.*, 2004) in conidial shape, but differs from *S. mulanjeensis* (conidia 56-71 µm long) by its concolored, shorter conidia with a mucous tunica at the apex. In addition, the conidial wall of *S. mulanjeensis* is undulating rather than constricted at the septa, which is distinctly different from that of *S. insolita*. Compared with the morphology of the type specimen described by Hernández-Restrepo *et al.* (2014), the conidia of our specimen are somewhat wider (9-12.5 µm vs. 7.5-10.5 µm), and lack the phialidic synanamorph at the apex, but we believe they are basically the same species.

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