Cryptogamie, Mycologie, 2013, 34 (3): 281-288

Corynesporopsis curvularioides sp. nov. and new records of microfungi from southern China

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Abstract – *Corynesporopsis curvularioides* sp. nov. is described and illustrated from specimens collected on dead branches in Guangxi Province. The fungus is characterized by its terminal, monotretic conidiogenous cells with catenate, obclavate to ellipsoidal, pale brown to brown, 15-35 × 7-11 µm, 1-5-euseptate conidia. *Brachysporiellina pulneyensis*, *Catenularia cubensis* and *Kylindria excentrica* are newly recorded from China.

Biodiversity / conidial fungi / hyphomycetes / systematics / taxonomy

INTRODUCTION

During our ongoing survey of microfungi associated with woody debris in tropical and subtropical forests of Guangxi and Sichuan provinces, four species with morphological characteristics of genera *Brachysporiellina* Subram. & Bhat, *Catenularia* Grove, *Corynesporopsis* P.M. Kirk and *Kylindria* DiCosmo, S.M. Berch & W.B. Kendrick were collected on decaying twigs and dead stems (Subramanian & Bhat 1989; S. Hughes 1965; P.M. Kirk 1981; DiCosmo *et al.*, 1983). One of these is an undescribed species of *Corynesporopsis*, while the other three species are new records for China. The specimens are deposited in HSAUP (Herbarium of Department of Plant Pathology, Shandong Agricultural University) and HMAS (Mycological Herbarium, Institute of Microbiology, Chinese Academy of Sciences).

MATERIALS AND METHODS

Samples of partially decomposed woody debris were collected from subtropical forests of Guangxi and Sichuan provinces, China. Samples were processed and examined following the methods described in Zhang *et al.* (2009). Conidia and conidiophores were measured and photographed using an Olympus microscope (model BX 51), with 60x (oil immersion) objectives.

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doi/10.7872/crym.v34.iss3.2013.281

TAXONOMY

Corynesporopsis curvularioides J.W. Xia & X.G. Zhang, sp. nov. **Figs. 1-4**

MycoBank MB 805094

Coloniae in substrato naturali effusae, atrobrunneae, pilosae. Mycelium partim superficiale, partim immersum, ex hyphis septatis, pallide brunneis, laevibus, 1-2 µm crassis compositum. Conidiophora macronematosa, mononematosa, non ramosa, erecta, recta vel leviter flexuosa, cylindrica, laevia, crassitunicata, brunnea, 8-12-septata, 145-200 × 6.5-8 µm. Cellulae conidiogenae monotreticae, integratae, terminales, pallide brunneae vel brunneae, 11.5-16.5 × 6.5-7.5 µm. Conidiorum secessio schizolytica. Conidia acrogena, catenata, obclavata vel ellipsoidea, pallide brunnea vel brunnea, 1-5-euseptata, 15-35 µm longa, 7-11 µm crassa, leviter truncata vel rotundata.

Etymology: *curvularioides*, similar to the conidia of the genus *Curvularia*.

Colonies on natural substrate effuse, dark brown, hairy. **Mycelium** partly superficial, partly immersed in the substratum, composed of septate, pale brown, smooth hyphae, 1-2 µm wide. **Conidiophores** macronematous, mononematous, unbranched, erect, straight or slightly flexuous, cylindrical, smooth, thick-walled, brown, 8-12-septate, 145-200 × 6.5-8 µm. **Conidiogenous cells** monotretic, integrated, terminal, pale brown to brown, 11.5-16.5 × 6.5-7.5 µm. **Conidial secession** schizolytic. **Conidia** acrogenous, catenate, obclavate to ellipsoidal, pale brown to brown, 1-5-euseptate, 15-35 µm long, 7-11 µm wide in the broadest part, slightly truncate or rounded at the ends.

Holotype: China, Guangxi Province, Mount Dayao, collected on dead stems of unidentified broad-leaved tree, 26 Oct. 2012, J.W. Xia, HSAUP H6342 (holotype), HMAS 243434(isotype).

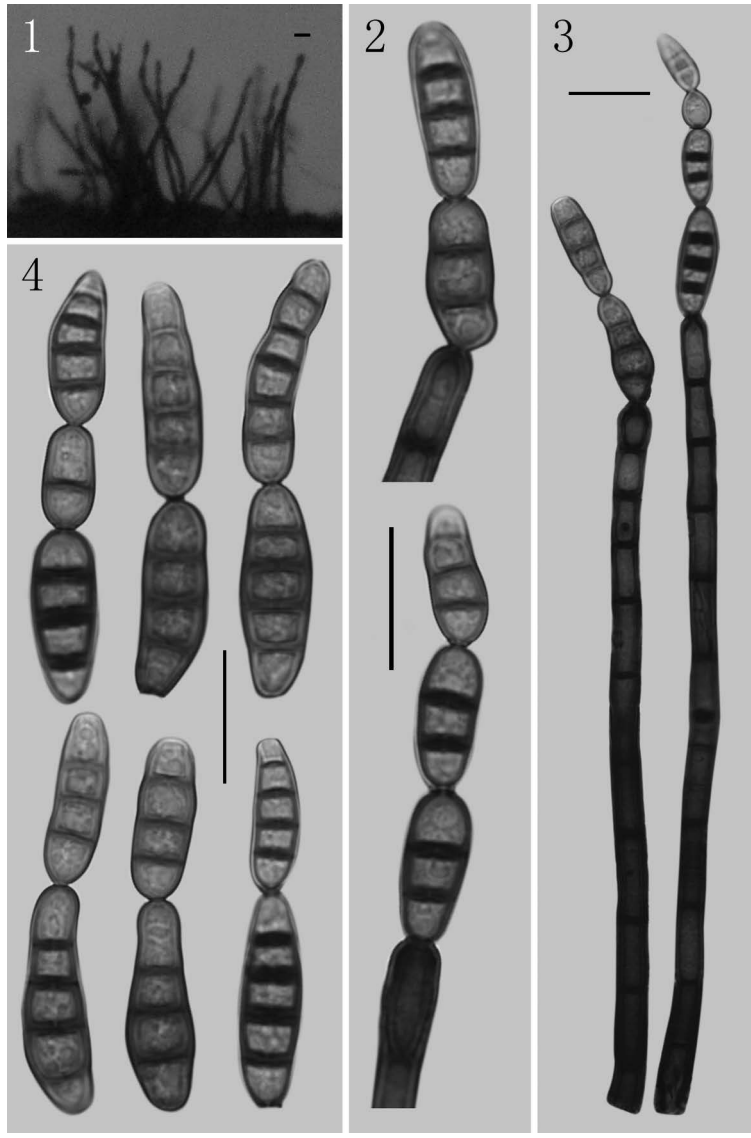
Brachysporiellina pulneyensis Subram. & Bhat, Kavaka. 15: 46. 1989 ["1987"]. **Figs 5-8**

Colonies on natural substrate effuse, brown to blackish brown, hairy. **Mycelium** mostly immersed in the substratum. **Conidiophores** macronematous, mononematous, frequently caespitose, simple, rarely branched, erect, straight or flexuous, 6-12-septate, 200-320 µm long, 9-13 µm wide at the base, up to 20 µm wide at the nodal region, 5-9 µm wide at the internodal region. **Conidiogenous cells** polyblastic, integrated, terminal and intercalary, when intercalary with conidiogenous loci immediately below the septum in a whorl, cylindrical, bearing 3-8 hyaline, prominent denticles (parts of separating cells), pale brown to brown, with conidia developing on separating cells forming a whorl. **Conidial secession** rhexolytic. **Conidia** solitary, acropleurogenous, dry, obpyriform to turbinate, simple, broadly rounded at the apex, truncate at the base, smooth, versicolour, 22-27 µm long, 14-18 µm wide at the distal broad end, 3-5 µm wide at the truncate base.

Specimen examined: China, Sichuan Province, Mount Qingchen, on dead branches of unidentified broad-leaved tree. 18 Apr. 2012, J.W. Xia HSAUP H6261 (duplicate HMAS 243435).

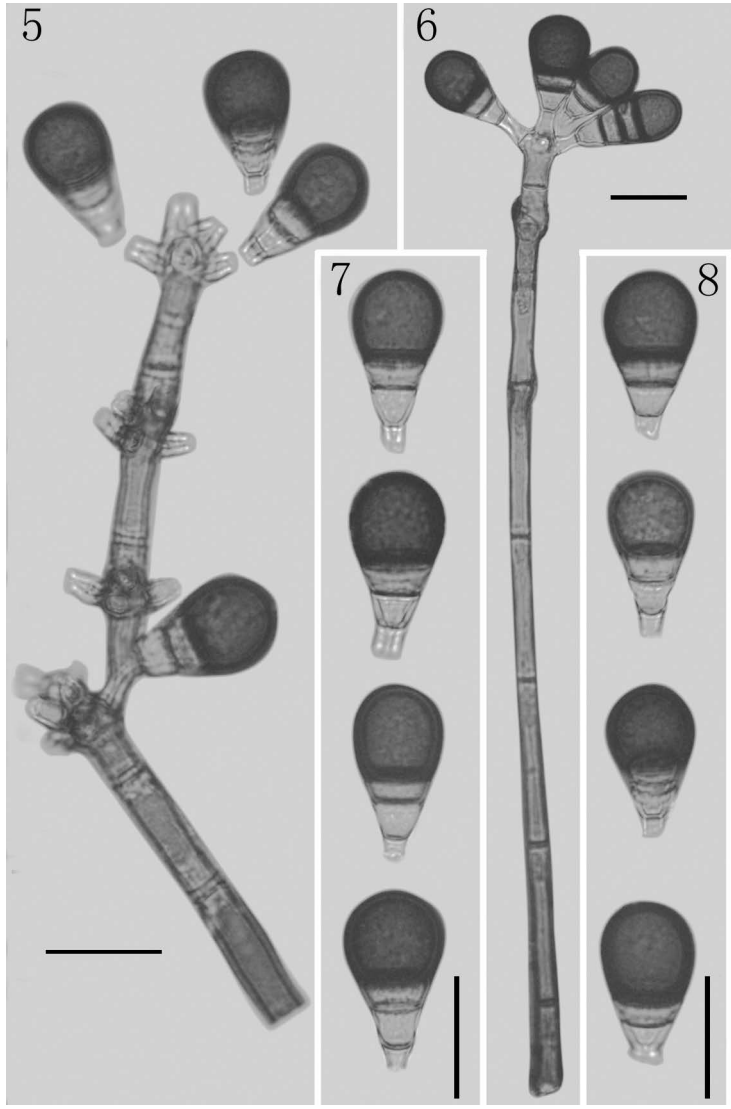
Catenularia kalakadensis Subram. & Bhat, Kavaka. 15: 49. 1989 ["1987"]. **Figs 9-12**

Colonies effuse, brown, hairy. **Mycelium** partly immersed, partly superficial, composed of subhyaline, smooth-walled, septate hyphae 3-4 µm wide. **Coni-**



Figs 1-4. *Corynesporopsis curvularioides* (from holotype). **1.** Colonies on natural substratum. **2.** Conidiogenous cells with conidia. **3.** Conidiophores with conidia. **4.** Conidia. Scale bars: 1-4 = 20 µm.

diophores macronematous, mononematous, simple, erect, straight or flexuous, smooth, 5-8-septate, 75-200 × 3.5-5 µm. **Conidiogenous cells** monophialidic, integrated, terminal, with a distinct collarette, 25-35 µm long, 4-5 µm wide. **Conidia** endogenous, in chains of up to 15, aseptate, cuneiform, truncate at the base, smooth, 6.5-8.5 µm long, 4-6.5 µm wide at the distal broad end, 1.5-2.5 µm wide at the truncate base.

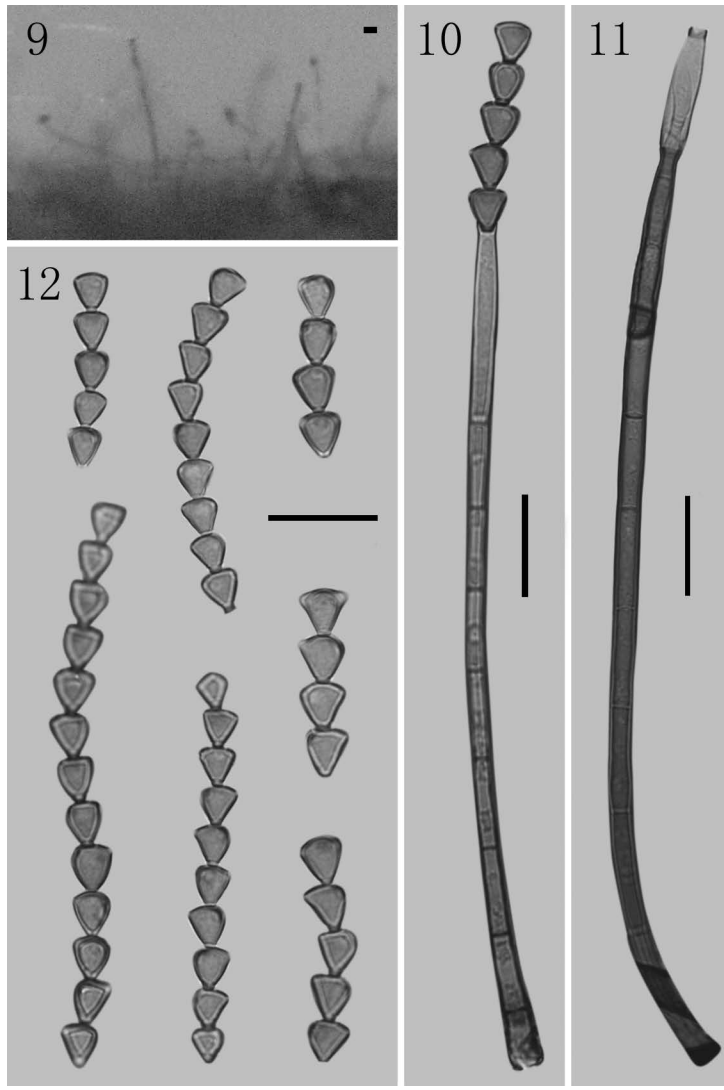


Figs 5-8. *Brachysporiellina pulneyensis* (HSAUP H6261). **5.** Conidiophore with conidiogenous cells and conidia. **6.** Conidiopohore with conidia. **7-8.** Conidia. Scale bars: 5-8 = 20 μm.

Specimen examined: China, Sichuan Province, Longxi-hongkou Nation Nature Reserve, on decaying twigs of unidentified broad-leaved tree. 16 Apr. 2012, J.W. Xia HSAUP H6249 (duplicate HMAS 243436).

Kylindria excentrica Bhat & B. Sutton, Trans. Br. Mycol. Soc. 84: 728. 1985 **Figs 13-16**

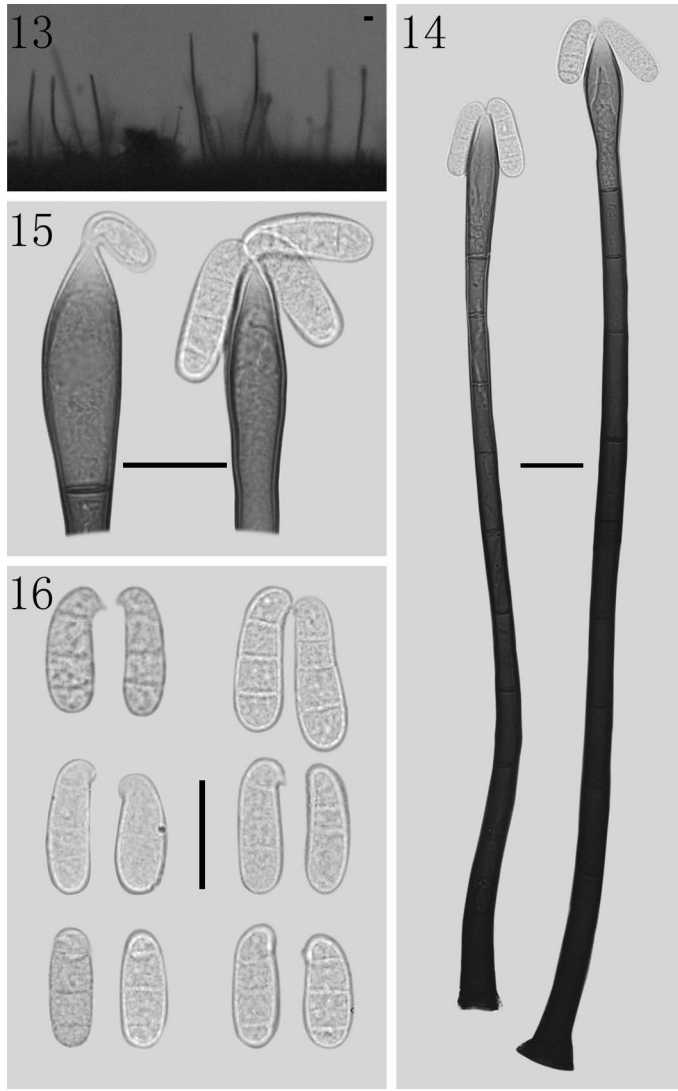
Colonies effuse, brown to black. **Conidiophores** mononematous, erect, simple, straight or flexuous, thick-walled, dark brown, paler towards the apex,



Figs 9-12. *Catenularia kalakadensis* (HSAUP H6249). **9.** Colonies on natural substratum. **10.** Conidiopohore with conidia. **11.** Conidiophore **12.** Conidia. Scale bars: 9-12 = 20 μm.

7-12-septate, 200-350 × 7-10 μm. **Conidiogenous cells** 48.5-60 μm long, 9-12 μm wide, with a narrow cytoplasmic channel and marked periclinal thickening in the upper quarter, lacking a collarette, proliferating enteroblastically to produce successive conidia at the same level. **Conidia** holoblastic, solitary, accumulating in translucent slimy masses at the apices of conidiogenous, cylindrical, obtuse at the apex, slightly tapered towards the truncate base, hyaline, 3-euseptate, smooth, eguttulate, 21.5-40 × 7.5-10 μm, with an excentric lateral flat unthickened basal scar.

Holotype: China, Sichuan Province, Longchi National Forest Park, collected on decaying twigs of unidentified broad-leaved tree, 17 Apr. 2012, J.W. Xia, HSAUP H6239 (holotype), HMAS 243437 (isotype).



Figs 13-16. *Kylindria excentrica* (HSAUP H6239). **13.** Colonies on natural substratum. **14.** Conidiopohores with conidia. **15.** Conidiogenous cells with conidia. **16.** Conidia Scale bars: 13-16 = 20 μm.

DISCUSSION

Kirk (1981) erected the genus *Corynesporopsis* for a single species previously described as *Corynespora quercicola* Borowska (Borowska 1975). Up to now, the genus contains eleven valid species, of which six have been reported from China (Lu *et al.*, 2000, Ma *et al.*, 2010, 2012a,b). The new taxon is clearly a species of *Corynesporopsis* due to its conidiophore and conidial morphology.

Corynesporopsis curvularioides slightly resembles *C. antillana* R.F. Castañeda & W.B. Kendrick and *C. rionensis* Hol.-Jeck, but *C. antillana* and *C. rionensis* differ from *C. curvularioides* in shape and pigmentation (R.F. Castañeda & W.B. Kendrick 1990; Hol.-Jeck & S.A. Mercado 1986). The conidia of *C. antillana* are ellipsoidal with an almost colourless or pale brown cell at each end, whereas those of *C. rionensis* are fusiform to ellipsoidal having only the apical cell being subhyaline.

Up to now, there are only two accepted taxa of *Brachysporiellina* worldwide, *B. pulneyensis* Subram. & Bhat and *B. fecunda* S.M. Leão, Gusmão, R.F. Castañeda & A.C. Cruz (Subram. & Bhat 1989; S.M. Leão *et al.*, 2008). *B. pulneyensis* is reported for the first time from China. Compared with the type material described by Subram. & Bhat, the conidiophores of the Chinese specimen are shorter (200-320 µm *vs* 300-415 µm) and the conidia are smaller (22-27 × 14-18 µm *vs* 32-37 × 18-22 µm), but we believe they are basically the same species.

Catenularia kalakadensis has not been previously recorded in China. Our specimen is similar to the type species described by Subram. & Bhat (Subram. & Bhat 1989). *C. kalakadensis* resembles *C. cuneiformis* (Richon) Mason in conidial shape, but the latter has larger conidia, 10-14.5 µm long, 6.6-10.6 µm wide at the apex and 3.5-4.5 µm wide at the flattened base (Mason 1941).

This is the first report of *Kylindria excentrica* in China. The conidia of *K. excentrica* are similar to those of *K. triseptata* (Matsushima) DiCosmo, S.M. Berch & W.B. Kendrick but differs markedly in size (DiCosmo *et al.*, 1983). Conidia of *K. excentrica* are 21.5-40 × 7.5-10 µm, whereas those of *K. triseptata* are 18-24 × 6-7.5 µm. In addition, the conidia of our specimen are somewhat larger than those of the type species, measuring 21.5-40 × 7.5-10 µm *versus* 27.5-35 × 7.5-8.5 µm for the type (Bhat & B. Sutton 1985).

Acknowledgments. This project was supported by the National Natural Science Foundation of China (Nos. 31093440, 31230001) and the Ministry of Science and Technology of the People's Republic of China (No 2006FY120100).

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Mise en page et impression
bialec, nancy (France)
Dépôt légal n° 81278 - 25 septembre 2013