

Parablastocatena tetracerae gen. et sp. nov. and *Corynesporella licualae* sp. nov. from Hainan, China

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Abstract *Parablastocatena tetracerae* gen. et sp. nov. and *Corynesporella licualae* sp. nov., collected on dead branches of *Tetracera asiatica* and *Licuala fordiana*, respectively, in tropical forests of China, are described and illustrated. *Parablastocatena tetracerae* is the type species for a new monotypic genus in possessing macronematous conidiophores forming distinct synnemata with holoblastic conidiogenesis and euseptate, short-chained conidia ending in a paler brown rostrum, whereas *C. licualae* is distinguished from described species by the smaller conidia with long appendages. A key to currently accepted species of *Corynesporella* is provided.

Keywords Anamorphic fungi · Systematics · Taxonomy

Introduction

During continuing exploration (2007–2010) for saprobic microfungi in Hainan Island, China, numerous wood-inhabiting fungi have been collected, of which several have been the subject of recent publications (Yuan and Dai 2008; Dai et al. 2009; Zhang et al. 2009). Despite this, knowledge of the conidial Ascomycetes of Hainan Island is relatively scanty. Collecting in the Bawangling Nature

Reserve in Hainan Island revealed two new hyphomycetes that clearly belong to the genera *Parablastocatena* and *Corynesporella*. One is proposed herein as a new monotypic genus and the other as a new species.

Decaying culms, twigs, dead wood, and bark were collected into plastic bags and taken to the laboratory. The specimens were incubated at 27°C in Petri dishes, which were placed within an RXZ-260A Artificial Climate Box with 200 ml sterile water plus 2 ml glycerol. The plant material was periodically observed with an Olympus SZ61 dissection microscope. Fungi were removed, mounted in lactophenol on glass slides, and examined, measured, and photographed with an Olympus BX51 microscope at magnifications to 100×. Conidial measurements included minimum and maximum ranges, with arithmetic mean for 50 mature conidia and 30 conidiophores. The studied specimens are deposited in Herbarium of the Department of Plant Pathology, Shandong Agricultural University (HSAUP), with isotypes in Mycological Herbarium, Institute of Microbiology, Chinese Academy of Sciences (HMAS) (<http://hmas.im.ac.cn>).

Taxonomy

Parablastocatena Y.D. Zhang & X.G. Zhang, gen. nov.

Mycobank no.: MB 563477

Coloniae in substrato naturali effusae, brunneae vel nigrae, pilosae. Mycelium partim superficiale et partim immersum in substrato. Conidiomata synnemata, determinatae, atrobrunnea vel nigra, cylindrica, sporifera supra. Conidiophora macronematosa, non ramosa, septata, laevia, brunnea vel atrobrunnea, divergentia ad apicem et latera. Cellulae conidiogenae holoblasticae, integratae, terminales,

The type specimens studied are deposited in Herbarium of the Department of Plant Pathology, Shandong Agricultural University (HSAUP) with isotypes in Mycological Herbarium, Institute of Microbiology, Chinese Academy of Sciences (HMAS) (<http://hmas.im.ac.cn>).

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cuniformes, curvata. Seccessio conidica schizolytica. Conidia catenata vel solitaria, acropetaliter evoluta, holoblastica, sicca, euseptata, acrogena.

Type species: *Parablastocatena tetracerae* Y.D. Zhang & X.G. Zhang

Etymology: Referring to its similarity to *Blastocatena*.

Colonies on natural substrate effuse, hairy, brown to black. Mycelium partly superficial, partly immersed in the substratum. Conidiomata synnematus, determinate, dark brown to black, cylindrical, scattered. Conidiophores macronematous, unbranched, septate, smooth, brown to dark brown, diverging laterally and also terminally. Conidiogenous cells holoblastic, integrated, terminal, cuneate, curved. Conidial secession schizolytic. Conidia developing in short acropetal chains or solitary, holoblastic, dry, euseptate, acrogenous.

Parablastocatena tetracerae Y.D. Zhang & X.G. Zhang, sp. nov. Fig. 1

Mycobank no.: MB 563478

Coloniae effusae in substrato naturali, atrobunneae, pilosae. Mycelium partim superficiale et partim immersum in substrato. Conidiomata synnemata, solitaria, atrobunnea vel nigra, cylindrica, sporifera supra, attenuata ad apicem,

usque 1,030 μm alta, 22–44 μm crassa ad basim, saepe inflata, 15–23 μm ad apicem. Conidiophora macronematosa, non ramosa, septata, laevia, brunnea vel atrobunnea, usque 950 μm longa, 3.5–4.5 μm crassa, divergentia ad apicem et latera. Cellulae conidiogenae holoblasticae, integrae, terminales, determinatae, laeves, cuniformes, interdum curvata ad medium, brunneae vel atrobunneae, 6.5–13 μm longa, 4.5–6.5 μm crassa ad medium, 2.5–4.5 μm ad apicem. Seccessio conidica schizolytica. Conidia catenata vel solitaria, acropetaliter evoluta, holoblastica, sicca, acrogena, obclavata, 7–9 euseptata, laevia, brunnea, 44–77 μm longa, 8.5–13 μm crassa, attenuata, basi truncata 4–5 μm lata, cellula apicali hyalina vel subhyalina rostrata 3–4 μm lata. Teleomorphosis ignota.

Typus: China, Hainan Province, Bawangling Nature Reserve (19°10'N, 109°01'E), 300 m elevation, on dead branches of *Tetracera asiatica* (Lour.) Hoogland (Dilleniaceae), 10 December 2010, leg. Y.D. Zhang (Holotypus, HSAUP H3357; isotypus, HMAS 146136).

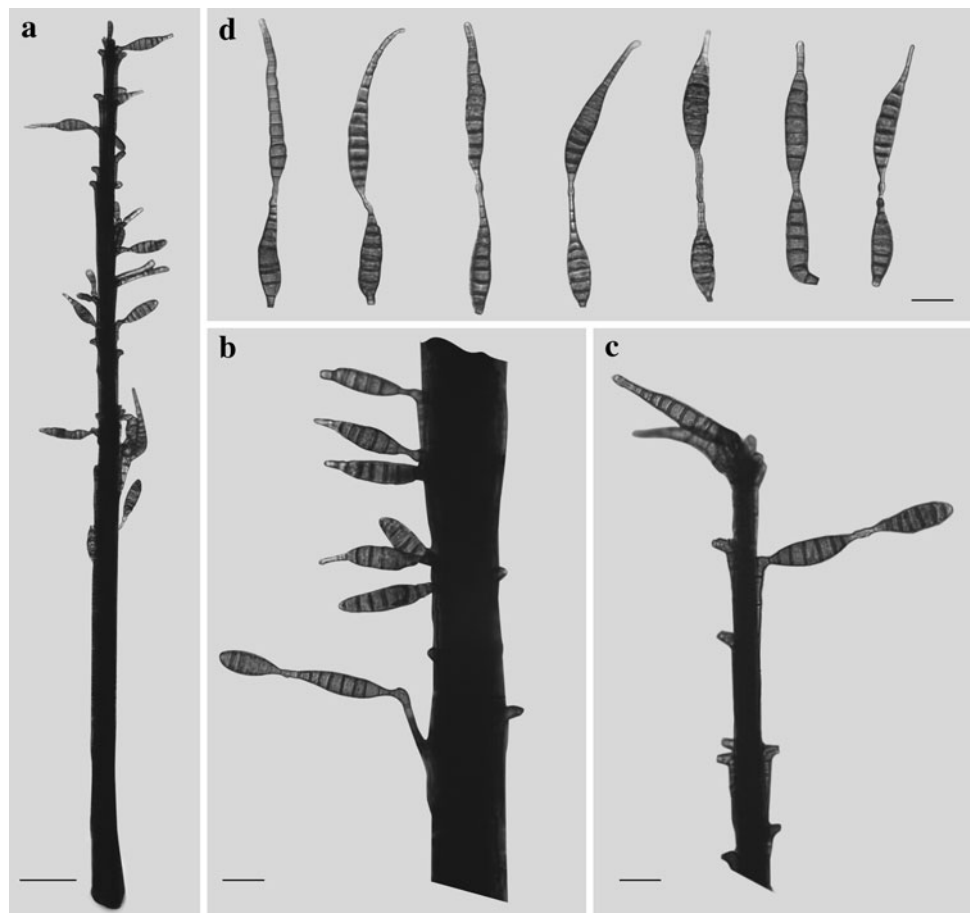
Etymology: *tetracerae*, in reference to the host genus *Tetracera*.

Teleomorph: Unknown.

Colonies effuse on natural substratum, dark brown, hairy. Mycelium partly superficial, partly immersed in the

Fig. 1 *Parablastocatena tetracerae* (HSAUP H3357).

a–c Synnemata with conidiophores and conidia.
d Conidia in chain. Bars
a 50 μm ; **b–d** 20 μm



substratum. Conidiomata synnematos, solitary, dark brown to black, cylindrical, scattered, fertile in the upper part, becoming narrower toward the apex, up to 1,030 μm high, 22–44 μm wide at the often swollen base, 15–23 μm wide at the tip. Individual conidiophores macronematous, synnematos, unbranched, septate, smooth, brown to dark brown, up to 950 μm long, 3.5–4.5 μm wide, diverging laterally and also terminally. Conidiogenous cells holoblastic, integrated, terminal, determinate, smooth, cuneate, curved in the middle, broadest in the middle part, brown to dark brown, 6.5–13 μm long, 4.5–6.5 μm wide in the middle, 2.5–4.5 μm wide at the truncate apex. Conidial secession schizolytic. Conidia developing in short acropetal chains or solitary, holoblastic, dry, acrogenous, obclavate, 7–9 euseptate, smooth walled, brown, 44–77 μm long, 8.5–13 μm thick in the widest part, 4–5 μm wide at the truncate base, with apex 3–4 μm wide extended into a hyaline to subhyaline beak.

Note: An attempt to obtain this species in pure culture was unsuccessful. *Parablastocatena* demonstrates unique features in morphology and ontogeny. It has macronematous conidiophores forming distinct synnemata with holoblastic conidiogenesis and euseptate conidia in simple unbranched chains. In several studies, the type of conidial septation, euseptate versus distoseptate, has been used as a generic character to separate otherwise morphologically similar fungi (e.g., *Ellisembia*, *Sporidesmiella*) during the past three decades and provides a narrow generic concept. Thus, in our study we describe a new genus *Parablastocatena* that means near *Blastocatena* on the basis of euseptate conidia. Several existing genera including *Lylea*, *Podosporium*, *Neosporidmium*, *Novozymia*, *Sporidesmina*, and *Sporidesmiopsis* (Schweinitz 1832; Morgan-Jones 1975; Subramanian and Bhat 1987; Mercado and Mena 1988; Wu and Zhuang 2005) have morphological characters that resemble those of *Parablastocatena*. However, *Parablastocatena* differs from *Lylea* in its macronematous conidiophores forming distinct synnemata and conidia in unbranched chains. Conidiogenesis of *Podosporium* is monotretic, whereas that of *Parablastocatena* is holoblastic. Conidiogenesis in *Neosporidmium* is the same as in *Parablastocatena*, but *Parablastocatena* produces conidia in acropetal chains. *Novozymia* has conidiogenous cells with annellidic percurrent proliferation, which is obviously different from *Parablastocatena*. The conidial shape of *Sporidesmina* and *Sporidesmiopsis* resembles that of *Parablastocatena*, whereas conidia in *Parablastocatena* have short chains that are not found in *Sporidesmina* and *Sporidesmiopsis*.

Corynesporella licualae Y.D. Zhang & X.G. Zhang, sp. nov. Fig. 2

Mycobank no.: MB 561090

Coloniae effusae, atrobrunneae, pilosae. Mycelium partim superficiale et partim immersum in substrato. Conidiophora macronematica, mononematica, singula, erecta, ramosa ad apicem, recta vel leviter flexuosa, 185–300 \times 5–8.5 μm , saepe basi ad 7–10 μm inflata. Cellulae conidiogenae monotreticae, integrae, terminales, percurrentes successivae elongatae, laeves, brunneae, cylindricae vel subcylindricae, 5.5–11 \times 2–4.5 μm . Conidia solitaria, sicca, acrogena, obclavata, 3–5-distoseptata, laevia, brunnea, sursum pallidiora, 27–48 μm longa, 6.5–8.5 μm crassa, basi truncata 3–4.5 μm lata, cellula apicali hyalina vel subhyalina, aspetata, laeves, appendicem filiformem ad 11–32 μm longa 0.5–1.5 μm lata. Teleomorphosis ignota.

Typus: China, Hainan Province, Bawangling Nature Reserve (18°20'N, 109°38'E), 200 m elevation, on dead branches of *Licuala fordiana* Becc. (Arecaceae), 10 December 2010, leg. Y.D. Zhang (holotypus, HSAUP H3196; isotypus, HMAS 146137).

Etymology: *licualae*, in reference to the host genus *Licuala*.

Teleomorph: Unknown.

Colonies on decaying wood effuse, dark brown, hairy. Mycelium partly superficial, partly immersed in the substratum. Conidiophores macronematous, mononematous, arising singly, erect, branched at the apex forming a stipe, stipe straight to slightly flexuous, 185–300 \times 5–8.5 μm , often swollen at the base, 7–10 μm wide. Branches usually paler than stipe, producing secondary or tertiary branches. Conidiogenous cells monotretic, integrated, terminal on stipe and branches, elongating by successive percurrent proliferations, smooth, brown, cylindrical or subcylindrical, 5.5–11 \times 2–4.5 μm . Conidia solitary, dry, acrogenous, obclavate, 3–5-distoseptate, smooth walled, brown, paler at the apex, 27–48 μm long, 6.5–8.5 μm thick in the widest part, 3–4.5 μm wide at the truncate base, sometimes apex extended into a hyaline to subhyaline, aseptate, smooth, with filiform appendage of 11–32 \times 0.5–1.5 μm . No sporulating structures were observed in pure culture.

Note: *Corynesporella* was established with *C. urticae* as the type species, which was collected from stems of *Urtica dioica* in India (Munjal and Gill 1961). Subsequently, *C. pinarensis* and *C. helminthosporioides* were described in Cuba (Castañeda Ruíz 1985; Holubová-Jechová 1987). Subsequently, three more species were added: *C. superioramifera*, *C. simpliphora*, and *C. bhowaliensis* (Matsushima 1993; Subramanian and Srivastava 1994). The genus is mainly characterized by macronematous, mononematous, branched conidiophores, monotretic, cylindrical conidiogenous cells, and thick-walled, distoseptate conidia (Munjal and Gill 1961).

Munjal and Gill (1961) compared *Corynesporella* with three similar genera: *Corynespora*, *Dendryphiopsis*, and *Brachysporiella* (Güssow 1906; Batista 1952; Hughes

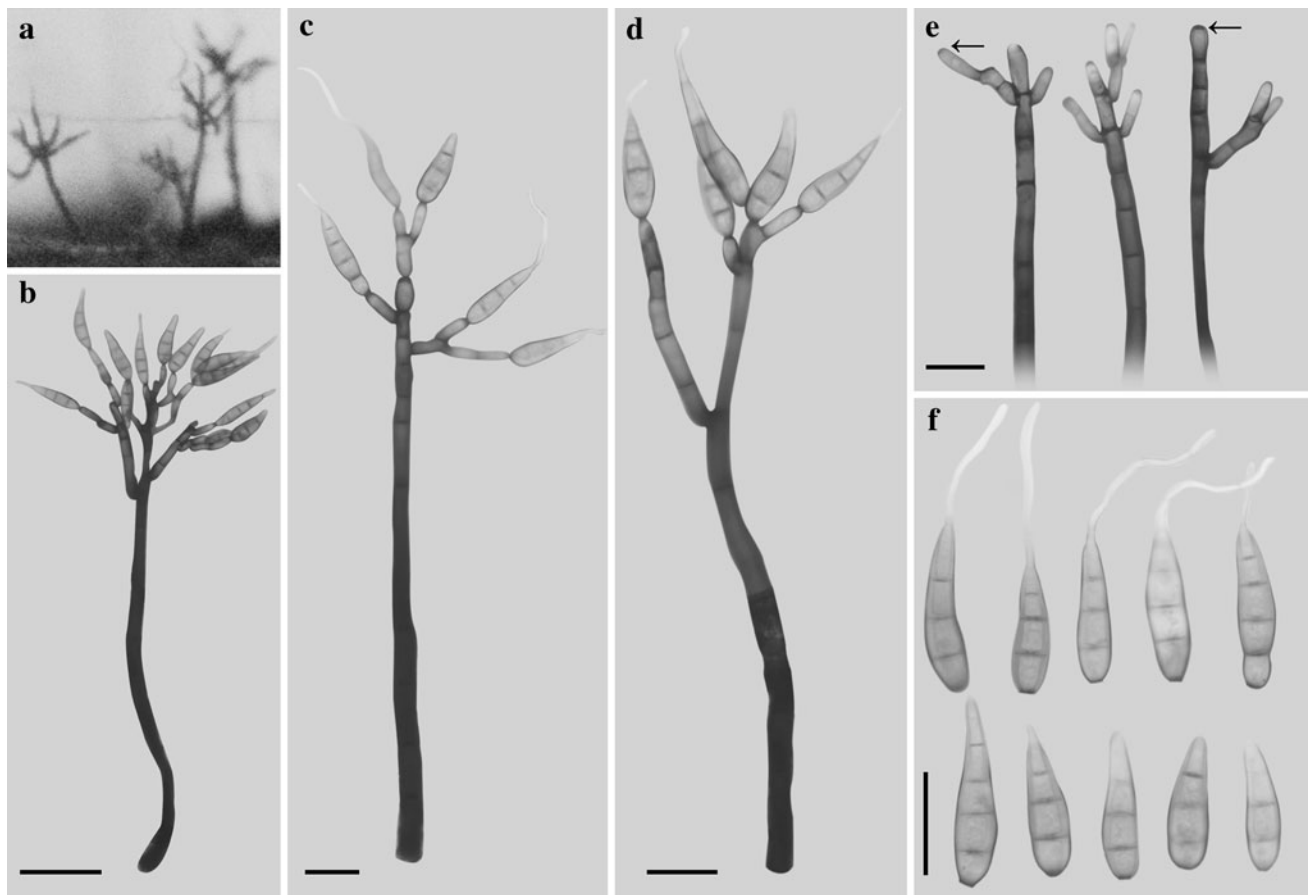


Fig. 2 *Corynesporella licualae* (HSAUP H3196). **a** Colonies on natural substratum. **b–d** Conidiophores with conidia. **e** Conidiophore apices showing conidiogenous cells. Conidiogenous cell pore (arrows). **f** Conidia. Bars **b** 50 μm , **c–f** 20 μm

1953). *Corynesporella* is distinct from these genera in having branched conidiophores and monotretic conidiogenous cells that produce distoseptate phragmoconidia. The new species *C. licualae* is similar to *C. bhowaliensis* (Subramanian and Srivastava 1994), but the conidia of *C. licualae* are smaller than those of *C. bhowaliensis* ($70\text{--}192 \times 8\text{--}10 \mu\text{m}$). Furthermore, the conidia of *C. licualae* have fewer distosepta than those of *C. bhowaliensis* (15–32). In addition, *C. licualae* conidia sometimes have a long appendage, which the other species do not possess.

Key to species of *Corynesporella*

1. Conidia sometimes in chains.....2
1. Conidia solitary.....5
2. Conidia more than 7-distoseptate.....*C. urticae*¹
2. Conidia 0–7-distoseptate.....3
3. Conidiogenous cells monotretic.....*C. pinarensis*²
3. Conidiogenous cells polytretic.....4

4. Conidiogenous cells with proliferations.....*C. superioramifera*³
4. Conidiogenous cells without proliferations.....*C. simpliphora*³
5. Conidia sometimes with appendages.....*C. licualae*⁶
5. Conidia without appendages.....6
6. Conidia $70\text{--}192 \mu\text{m}$ long, $8\text{--}10 \mu\text{m}$ wide.....*C. bhowaliensis*⁴
6. Conidia $50\text{--}75 \mu\text{m}$ long, $8.8\text{--}12.8 \mu\text{m}$ wide.....*C. helminthosporioides*⁵

¹Munjal and Gill (1961), ²Castañeda Ruíz (1985), ³Matsushima (1993), ⁴Subramanian and Srivastava (1994), ⁵Holubová-Jechová (1987), ⁶this study

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