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Zelodactylaria, an interesting new genus from semi-arid northeast Brazil

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Abstract — During investigation of microfungi on dead plant material in a semiarid region of northeast Brazil, an interesting fungus was collected that is described and illustrated here. *Zelodactylaria verticillata* anam. gen. & sp. nov. is distinguished by macronematous verticillate brown conidiophores with marked sympodially proliferating conidiogenous cells with long cylindrical denticles and solitary obovoid to clavate hyaline 0–1-septate conidia.

Key words — anamorphic fungi, systematic, bark

Introduction

The Brazilian semi-arid zone, called the Caatinga biome, is located almost exclusively in the northeast of the country. This is an expanse of dry land that stretches between 3–17°S and 35–45°W, covers almost 8% of Brazil, and occupies an approximate 900,000 km^2 area. The climate of northeast Brazil is one of the most complex in the world, with an annual rainfall up to 2000 mm along the coast and only 300–500 mm in the semi-arid zone (Giulietti et al. 2006). During a mycological survey of anamorphic fungi from the semi-arid region of Bahia state, a conspicuous fungus was collected that differed morphologically from any previously described anamorphic fungus. It is described here as a new genus.

Materials & methods

Samples of plant material were collected during a mycological survey from the semi-arid region of Bahia, Brazil. Individual collections were placed in paper and plastic bags, taken to the laboratory and treated according to Castañeda (2005). Mounts were prepared in polyvinyl alcohol-glycerol (8 g in 100 ml of water, plus 5 ml of glycerol) and measurements made at a magnification of ×1000. Micrographs were obtained with a Zeiss Axioskop 40.

Taxonomy

Zelodactylaria A.C. Cruz, Gusmão & R.F. Castañeda, **anam. gen. nov.**

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Conidiophora macronematosa, mononematosa, erecta, ramosa, septata, brunnea Cellulae conidiogenae polyblasticae, discretae, sympodialiter prolificantes, denticulatae. Conidia solitaria, clavata, obovoidea usque globosa, septata, hyalina. Teleomorphosis ignota.

Type Species: *Zelodactylaria verticillata* A.C. Cruz et al.

Etymology: Greek, *Zelo-* meaning emulation; *-dactylaria*, referring to a genus of anamorphic fungi.

Colonies on the natural substratum effuse, hairy, brown to olivaceous or black. Mycelium superficial and immersed. Conidiophores macronematous, mononematous, erect, branched, septate, brown or black, smooth or verruculose. Conidiogenous cells polyblastic, discrete, sympodially proliferating, denticulate. Conidial secession schizolytic. Conidia solitary, clavate, obovoid to globose, septate, smooth or verruculose, hyaline. Teleomorph unknown.

Zelodactylaria verticillata A.C. Cruz, Gusmão & R.F. Castañeda, **anam. sp. nov.** Figs. 1 –4

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Conidiophora macronematosa, mononematosa, cum ramis verticillatis (ramis 20–50 × 2.5–4.0 µm), 7- ad 12-septata, brunnea ad basim, 150–220 × 4–10 µm. Cellulae conidiogenae polyblasticae, 10–30 × 2–3 µm denticulatae cum denticulis conspicuis, 1.0–2.5 µm longis . Conidia solitaria, clavata vel obovoidea, 0- ad 1-septata, hyalina, 11–17 × 3–5 µm.

Type: BRAZIL. Bahia: Senhor do Bonfim, "Serra da Maravilha", 12°23′S 40°12′W, on decaying bark of unidentified plant, 22.IX.2006, coll. A.C.R. da Cruz (**Holotype**: HUEFS169132).

Etymology: Latin, *verticillata*, referring to the whorled branches of the conidiophores.

Colonies on the natural substratum, effuse, hairy, brown. Mycelium superficial and immersed. Hyphae septate, branched, smooth, brown. Conidiophores macronematous, mononematous, 7- to 12-septate, erect, straight or flexuous, smooth, 150–220 × 4–10 µm, brown at the base, subhyaline towards the apex; producing verticillate, 20–50 × 2.5–4.0 µm, septate, pale brown to subhyaline branches. Conidiogenous cells polyblastic, discrete, terminal and intercalary, 10–30 × 2–3 µm, subhyaline, with marked sympodial proliferations, with

Fig. 1. *Zelodactylaria verticillata*.
A–F. Conidiophores. Scale bar = 50 µm.

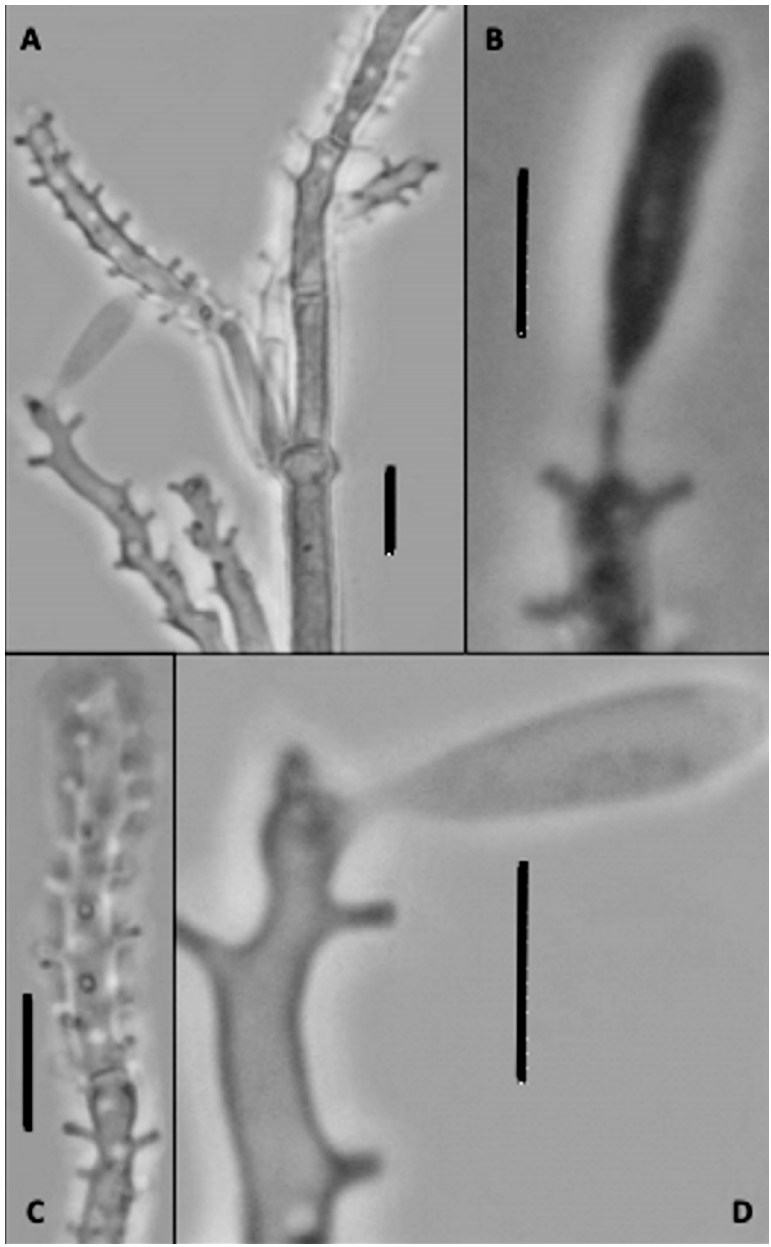

Fig. 2. *Zelodactylaria verticillata*.
A. Conidiophore and conidiogenous cells. B, D. Conidiogenous cells and conidia.
C. Conidiogenous cell. Scale bars = 10 μm.

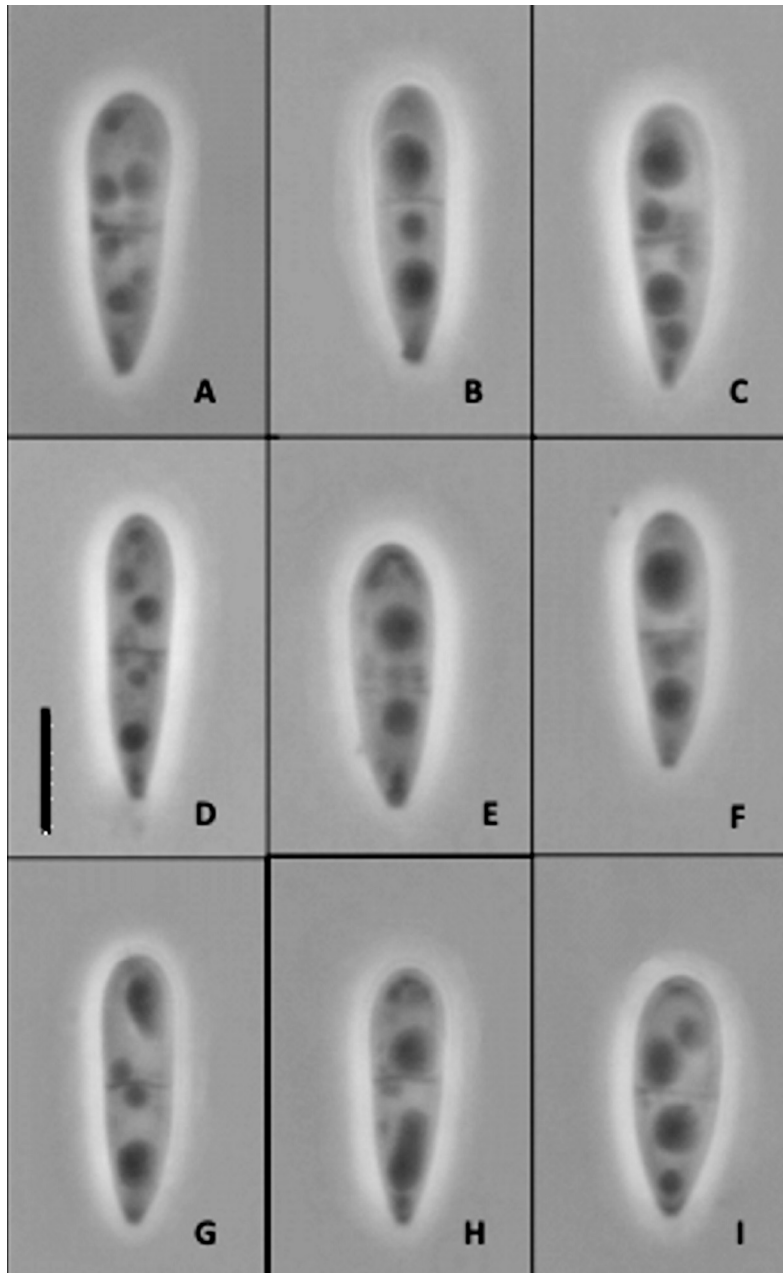

Fig. 3. *Zelodactylaria verticillata*.
A–H. Conidia. Scale bar = 10 μm.

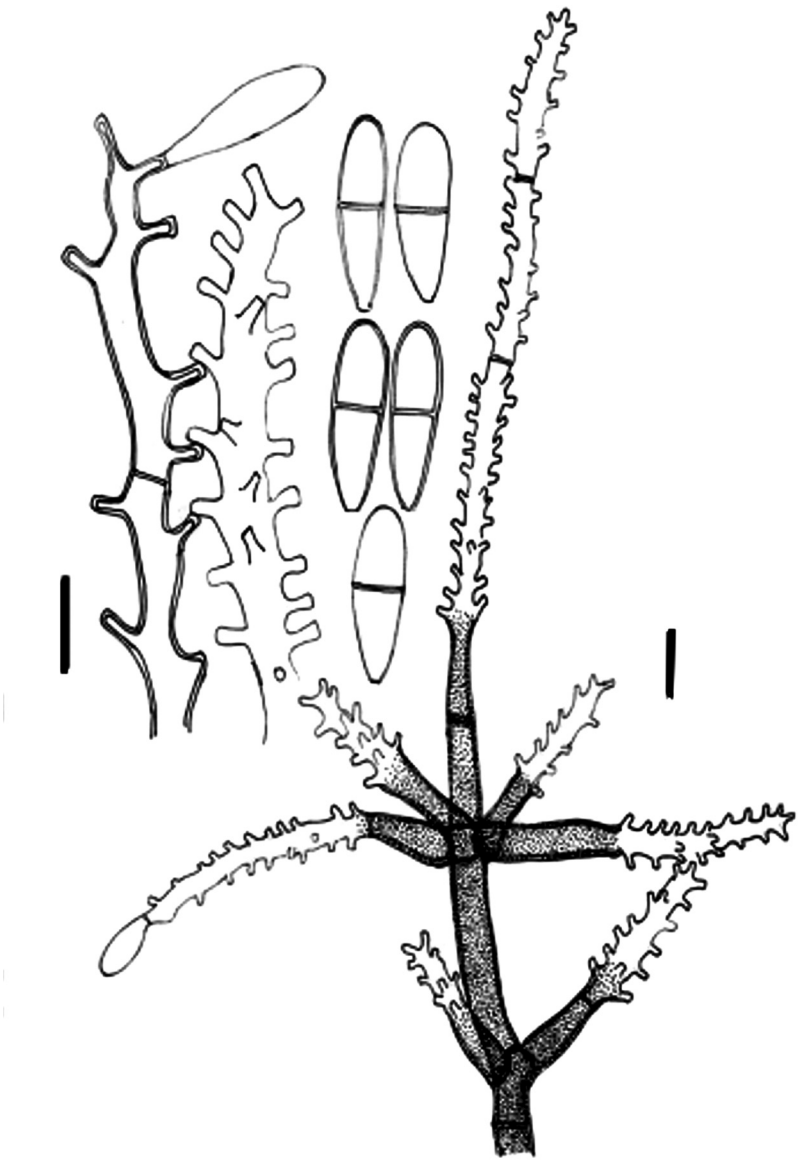

Fig. 4. *Zelodactylaria verticillata.*
Conidiophores, conidiogenous cells and conidia. Scale bars = 10 μm.

conspicuous, shortly cylindrical, 1.0–2.5 µm long, flat-topped denticles. Conidia solitary, clavate to obovoid, truncate at the base, (0–)1-septate, hyaline, guttulate, smooth, dry, 11–17 × 3–5 µm. Teleomorph unknown.

Note: Conidial ontogeny in *Dactylaria* Sacc. (De Hoog 1985, Goh & Hyde 1997, Paulus et al. 2003), *Calcarisporium* Preuss (De Hoog 1974) *Pleurophragmium* Costantin (Matsushima 1985, 1987, 1993, 1995, 1996; Heredia et al. 2007), *Selenosporella* G. Arnaud ex MacGarvie (Castañeda et al. 2009), *Selenosporopsis* R.F. Castañeda & W.B. Kendr. (Castañeda & Kendrick 1991), *Tritirachium* Limber (De Hoog 1972), and *Umbellidion* B. Sutton & Hodges (Sutton & Hodges 1975) can be compared with *Zelodactylaria,* particularly in terms of the sympodial proliferation with denticulate conidiogenous cells. There are, however, clear differences from those genera in respect of the verticillate ramification present in *Zelodactylaria*. The conidiophores in some *Selenosporella* species and the monotypic *Selenosporopsis* are verticillate, but conidia are unicellular, filiform to falcate, produced in short and long denticulate conidiogenous loci respectively. In *Calcarisporium* and *Tritirachium* conidia form on sympodially elongating conidiogenous cells arranged in verticils, but the conidiogenous loci in *Calcarisporium* develop at the top of each branch and in *Tritirachium* are inconspicuous scars in a long geniculate rachis (Kendrick 2003), which also differentiate both genera from *Zelodactylaria*. In *Umbellidion* the conidiogenous cells are arranged in umbels, with several short unthickened, inconspicuous denticles restricted to the apices and the conidia are aseptate.

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