Dactylella shizishanna sp. nov., from Shizi Mountain, China

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A new species, *Dactylella shizishanna*, is described from Hubei province, China and compared with the similar species of *Dactylella crassa*. A key to the species of *Dactylella* producing adhesive nets is given.

Keywords: *Dactylella*, new species, predacious fungi

Introduction

Following phylogenetic analysis of the 18S rDNA, 5.8S rDNA, ITS1 and ITS2 sequences, Scholler *et al*. (1999) proposed a new generic concept for predatory anamorphic *Orbiliaceae* (Ascomycota) in which the trapping device is the main morphological criterion for delimitation of the genera. Four genera were defined: *Dactylellina*, forming stalked adhesive knobs or non-constricting rings and adhesive knobs; *Gamsylella*, producing adhesive columns and unstalked knobs; *Arthrobotrys*, forming an adhesive network; and *Drechslerella* forming constricting rings. Non-predatory species were classified among *Dactylella* and *Gamsylella* and 51 new combinations were proposed. Trapping devices also provide the main morphological basis for delimiting species. The classification outlined by Scholler *et al*. (1999) has yet to be stabilized, and is not commonly accepted. For example, *Dactylella arcuata* Scheuer & J. Webster, which has adhesive networks and adhesive knobs on the conidia, was combined in *Gamsylella* where species form stalked adhesive knobs (Scholler, 1999).

During a survey of nematophagous fungi in China, soil samples from Shizi Mountain, Hubei Province were sprinkled on to corn meal agar (CMA) inoculated with the free-living nematode, *Paragrellus redivius*. After about one month, a fungus with multiseptate, clavate conidia and net trapping devices

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was discovered. It resembled *Dactylella crassa* Miao, Lei & Liu (Miao *et al*., 1999). However, a detailed study of our isolate and comparison with *D. crassa* clearly indicate that the fungi differ in conidial type, size and number of septa. Consequently, a new taxon is introduced to accommodate this new taxon. We follow the traditional view for the genera of *Arthrobotrys*, *Dactylella* and *Monacrosporium* which has been widely accepted and used (Cooke and Dickinson, 1965; Castener, 1968a,b; McCulloch, 1977; Schenck *et al*., 1977; Van Oorschot, 1985; Rubner, 1996; Liu and Zhang, 1994; Zhang *et al*., 1994). We therefore introduce the new fungus in *Dactylella* rather than in *Arthrobotrys*.

Dactylella shizishanna X.F. Liu & K.Q. Zhang, **sp. nov.** (Figs 1-13)

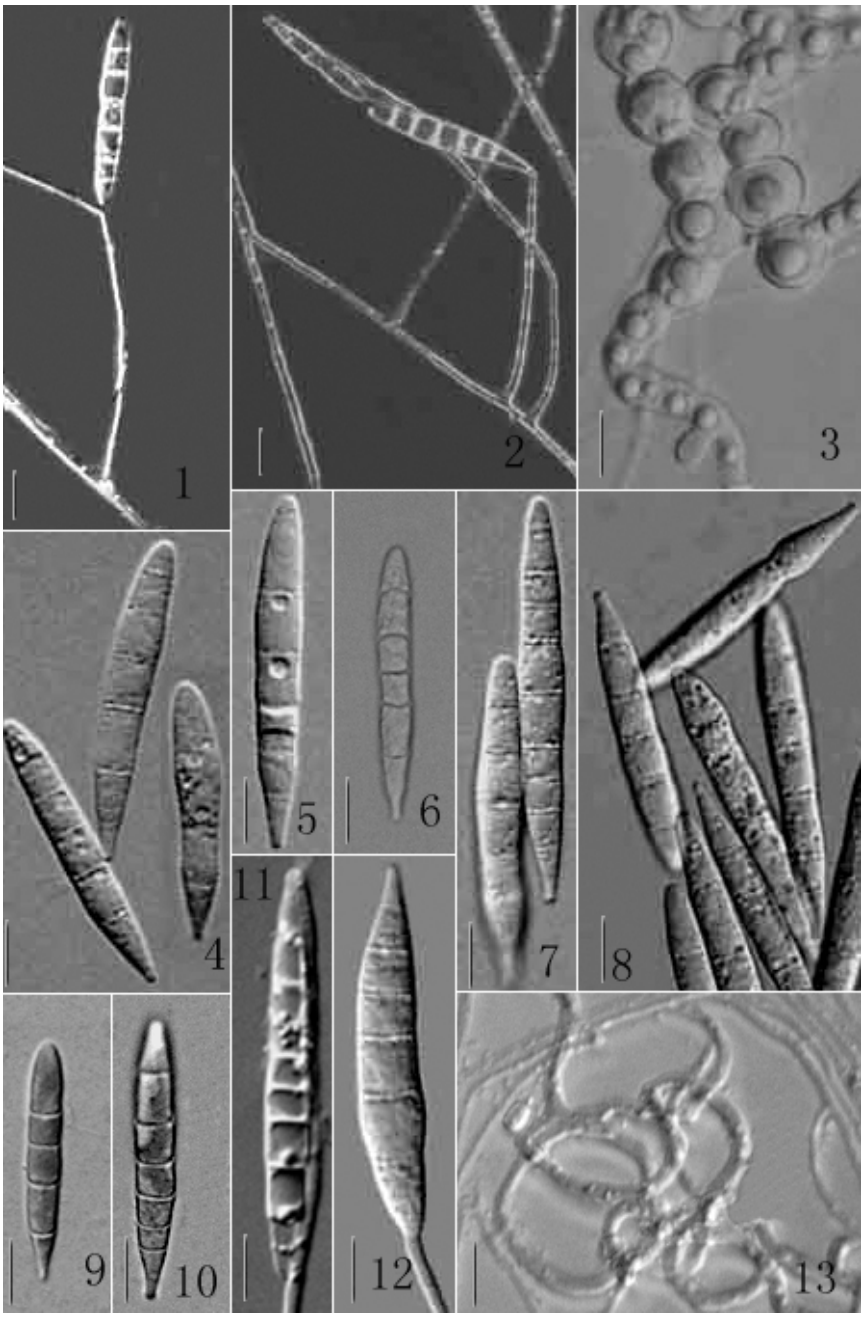
Etymology: in reference to Shizishan, the place where the soil samples were collected.

Coloniae in extracto granorum zeae maydis cum agaro albidis. *Mycelium* sparsum, *Hyphae* hyalinae, septatae, ramosae, *Conidiophora* erecta, septata, hyalina, simplicia vel ramosa, 35-200 µm altae, basi 1.5-2.5 µm crassae, sursum leniter attenuatae, apice 0.5-1 µm crassae, ibi unum conidium ferentes. *Conidiis* hyalinis, clavatis, rectis vel leniter curvatis, alquod constricta in septum 22.5-74 µm longis, 5-10 µm latis, 2-9-septatis, praecipue 3-7-septatis. *Reticula* tenacia quae vermiculos nematodeos capiunt evolventibus. *Chlamydosporis* in culturis vetustioribus.

Colonies on CMA whitish, slow growing, extending 3.5 cm in diam. in 15 days at 25ºC, aerial hyphae scant, hyaline, septate, branching, commonly 2.5-3.7 µm wide. *Conidiophores* growing from mycelium on the substratum, single, erect, rarely branched, 35-200 µm high, 1.5-2.5 µm wide at the base, tapering upward gradually to a distal width of 0.5-1 µm, and bearing a single conidium. *Conidia* colourless, clavate, gradually narrowing at the basal end, obtuse at the distal end, straight or sometimes slightly curved, sometimes constricted at septa, (2-)3-7(-9)-septate, 22.5-74 × 5-10 µm (mean 50.6 × 6.6 µm). The proportion of conidia with 3, 4, 5, 6 and 7 septa is 10%, 30%, 33%, 18% and 6%, respectively. The predacious organ exhibits a three-dimensional adhesive network. *Chlamydospores* formed in older cultures.

Holotype: CHINA, Hubei Province, Wuhan, Shizi mountain, 8 November 2001, Herbarium of Laboratory for Conservation and Utilization of Bio-resource, Yunnan University [YMF W7244021].

The morphology and trapping devices of *D. shizishanna* resemble those of *Dactylella crassa* (Miao *et al*., 1999). However, *D. crassa* forms both macrocondia and microcondia, and single spore isolation from either kind will give cultures that produce both spore types. In contrast, *D. shizishanna* forms only one type of conidium. The conidial width in the two species also differs greatly (*D. shizishanna* 5-10 µm wide, *D. crassa* 10-13 µm). The conidia of *D. shizishanna* are 2-9-septate (mainly 3-7-septate), whereas those of *D. crassa* are 1-5-septate (mainly 3-4-septate).



Figs 1-13. *Dactyllela shizishanna* X.F. Liu & K.Q. Zhang sp. nov. **1-2.** Conidiophores. **3.** Chlamydospore. **4-11.** Conidia. **12.** Germinating conidium. **13.** Adhesive network. **Bars.** 1, 2 = µm, 3 = µm, 4-12 = µm, 13 = µm.

Key to *Dactylella* species producing adhesive networks

1. Producing two types of trapping devices: three-dimensional adhesive network and a sticky knob at the tip of mature conidia. Conidia fusiform, commonly 3-septate, (30-)35-54 µm × 4-6 µm ..... ***D. arcuata***
1. Producing only three-dimensional adhesive network..... 2

2. Only one type of conidium. Conidia clavate, 2-9-septate, mainly 3-7, 22.5-73.8 × 5-10 µm ..... ***D. shizishanna***
2. Two types of conidia (macroconidia and microconidia) produced 3

3. Macroconidia 1-5-septate, mainly 3-4-septate, clavate, 44.5-60 × 10-13 µm; microconidia clavate, occasionally 1-septate, 22-30 × 4-5 µm..... ***D. crassa***
3. Macroconidia 4-12-septate, secondary conidia commonly formed..... 4

4. Macroconidia clavate to cylindric-clavate, non-branched, 35-90 × 4-7.5 µm; microconidia clavate, non-septate, 15-17 × 5 µm ..... ***D. multiformis***
4. Macroconidia fusiform, commonly 1-2 branches, 47.5-155 × 7.5-16.5 µm; microconidia 0-1-septate, cylindric, fusiform, 24-47.5 × 3-5.3 µm..... ***D. iridi***

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