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***Paracryptophiale pirozynskii* sp. nov., an undescribed hyphomycete**

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*Paracryptophiale pirozynskii* sp. nov., occurring on dead branches of unidentified trees, collected from tropical China, is described and illustrated.

**Key words:** Anamorphic fungi, *Cryptophiale*, *Paracryptophiale kamaruddinii*

**Introduction**

We are studying the plant-inhabiting microfungi of tropical China (eg. Wu and McKenzie, 2003). In this paper, we report on two collections bearing an interesting dematiaceous hyphomycete belonging to the genus *Paracryptophiale*. Comparison of these collections to the only other species in the genus, *P. kamaruddinii* Kuthub. & Nawawi, showed that they represent an undescribed species (Kuthubutheen & Nawawi, 1994).

***Paracryptophiale pirozynskii* W. Wu & B. Sutton sp. nov.** (Figs 1-16)

*Coloniae* effusae, pilosae, inconspicuosae. *Mycelium* immersum sparsum, ex hyphis ramosis, septatis, brunneis, 2-5 µm diam. compositum. *Setae* steriles, simplices, erectae, rectae vel a basibus leniter curvatae, brunneae vel atrobunneae, laeves, 3-8 septata, apicem acutum versus attenuatae, 170-225 µm longae × 5-7.5 µm latae. *Conidiophora* macronematosa, mononematosa, erecta vel apicem versus curvata, non ramosa, atrobunnea, laevia, parietibus incrassatis, usque ad 12 septata, basim irregulariter bulbosa, regionem fertilem versus deminuta sed in regione fertili leviter latiora, demum apicem acutum abrupte deminuta, usque ad 500 µm longa, ad basim 30 µm lata deinde 15 µm lata, in regione fertili 5-10 µm lata. *Regio fertilis* apicalis, cylindrica, 37.5-50 µm longa × 17.5-22.5 µm lata, cellulis conidiogenis a clypeo ex cellulis sterilibus, lobatis, pallide brunneis 4 µm diam. vel 10 µm longis × 2.5-5.0 µm latis. *Causae conidiogenae* 15 ('phialidicae') (Kirk *et al.*, 2001). *Conidia* hyalina, laevia, ellipsoidea, dictyospora, 15-20 × 8-11.5 µm. *Setula* apicalis 12.5 µm longa deminuta.

*Colonies* effuse, hairy, inconspicuous. *Mycelium* partly superficial and partly immersed, sparse, composed of branched, septate, brown, smooth

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hyphae, 2-5 µm diam. *Setae* erect or slightly curved at base, simple, brown to dark brown, 3-8-septate, smooth, tapering towards acute apex, 175-225 µm long, 5-7.5 µm wide at the base. *Conidiophores* macronematous, mononematous, erect, curved towards the apices, unbranched, dark brown, smooth, thick-walled, up to 12-septate, bulbous to irregular at the base, tapering gradually towards the fertile region but becoming slightly wider in the fertile region finally abruptly tapering to an acute apex, up to 500 µm long, up to 30 µm wide at the base, tapering to 5-10 µm wide below the fertile region. *Fertile region* apical, cylindrical, 37.5-50 µm long × 17.5-22.5 µm wide, the conidiogenous cells obscured by a shield of sterile, flat, lobed, pale brown cells varying from 4 µm diam., up to 10 µm long × 2.5-5 µm wide. *Conidiogenous event* no. 15 ('phialidic') (Kirk *et al.*, 2001). *Conidia* hyaline, smooth, 2-3 transversely septate and 1-3 longitudinal septa, constricted at transverse septa, ellipsoid, 15-20 × 8.5-11.5 µm, apical cell with a single, apical appendage up to 12.5 µm long.

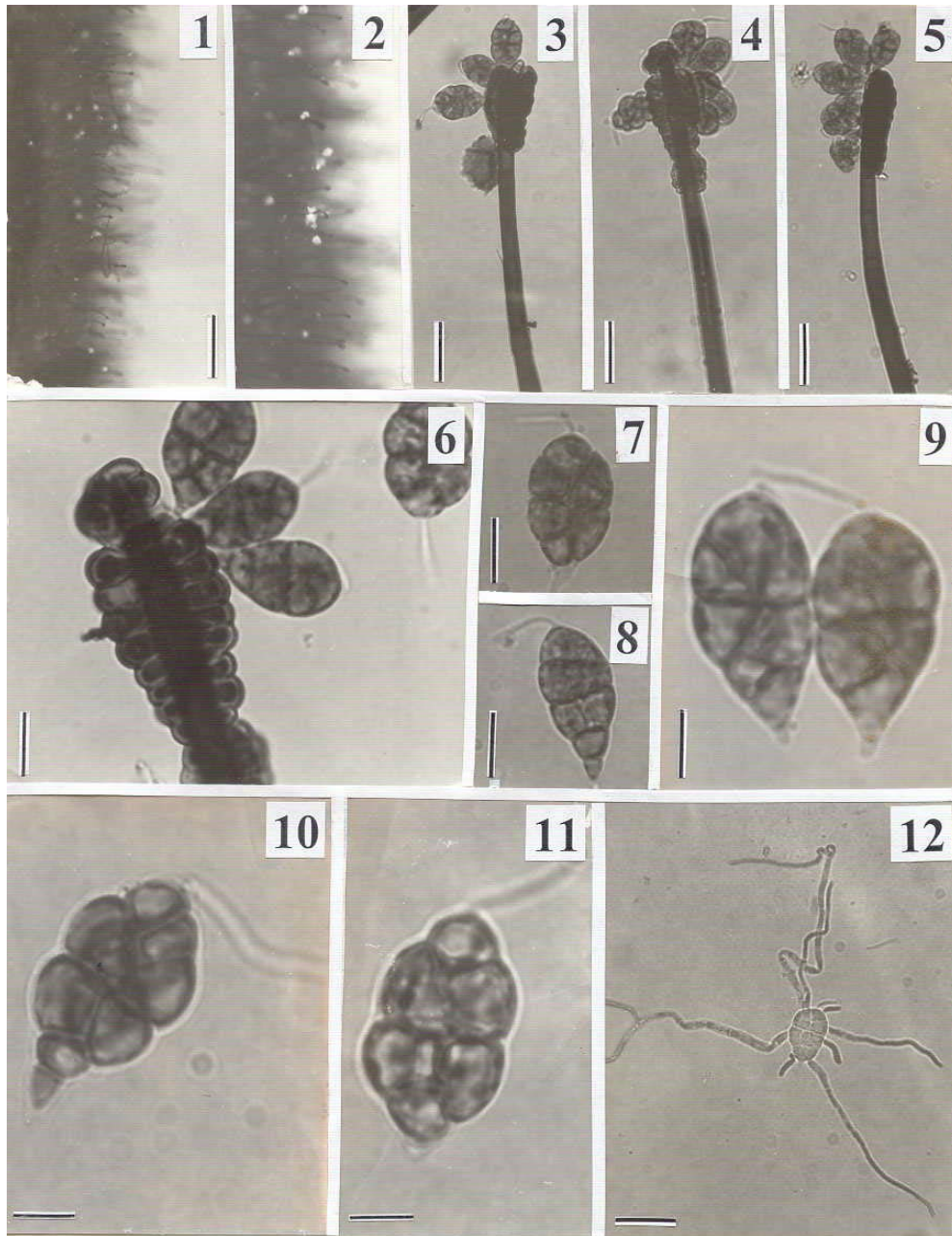
*Habitat*: On dead stem of unidentified plant.

*Known distribution*: China.

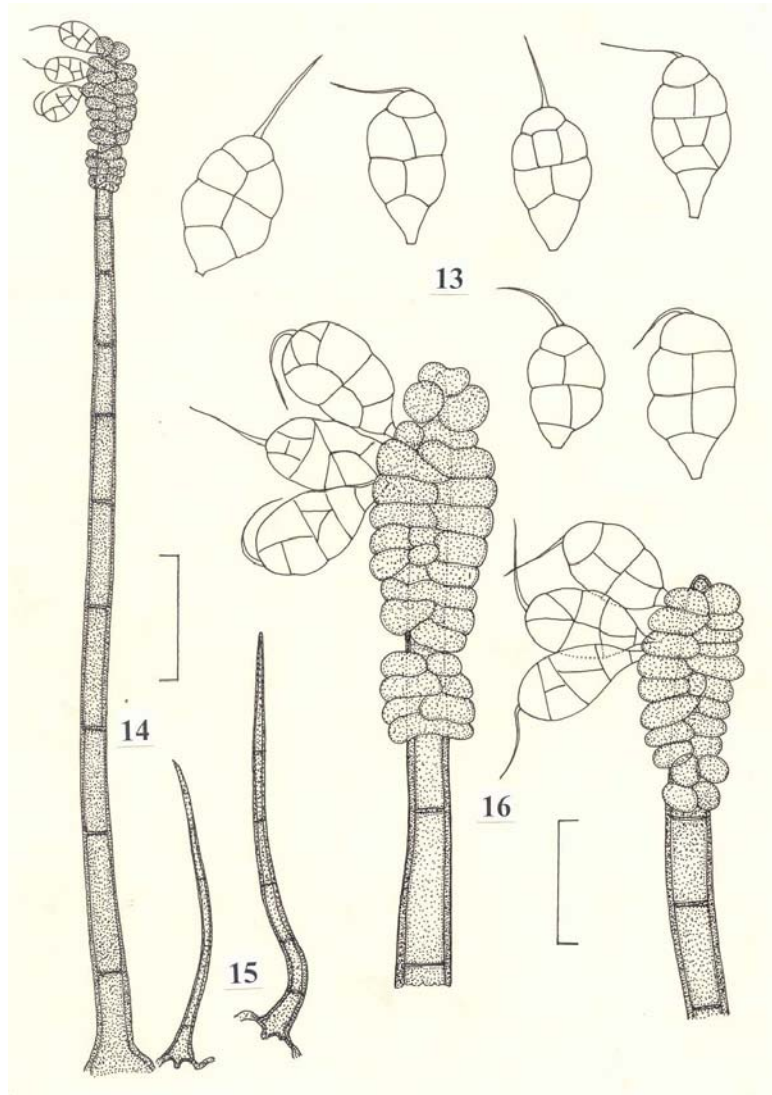
*Material examined*: CHINA, Guang Dong Province, Dinghushan, 10 October 1998, Wen Ping Wu (WUWP2008 holotypus in Herbarium of Novozymes China, Beijing; ATCB 260, isotypus). CHINA, Guang Dong Province, 9 October 1998, Wen Ping Wu (WUWP2050).

*Notes*: The genus *Paracryptophiale* was erected by Kuthubutheen and Nawawi (1994) for a dematiaceous hyphomycete, *P. kamaruddinii*, which is similar to *Cryptophiale* in having setiform conidiophores and lateral 'phialidic' conidiogenous cells, which are shielded by a plate of modified cells. It however, differs from *Cryptophiale* by its appendaged dictyospores. Until now, the genus has remained monotypic. *Paracryptophiale pirozynskii* is congeneric to *P. kamaruddinii* but differs from it by the presence of sterile setae mixed together with conidiophores, smaller conidia (28-35 × 14-16 µm in *P. kamaruddinii*), and longer appendages (4-6 µm in *P. kamaruddinii*).

Among the many hyphomycete genera, *Cryptophiale* is the only genus which shows any similarity with *Paracryptophiale*, especially the setiform conidiophores with a shield-shaped outgrowth of cells associated with the conidiogenous apparatus (Pirozynski, 1968; Ellis, 1971, 1976; Carmichael *et al.*, 1980; Kuthubutheen and Nawawi, 1994). Sixteen species are accepted in *Cryptophiale* (Sutton *et al.*, 1989; Goh and Hyde, 1996). All have falcate or subulate conidia with only transverse septa. Appendaged conidia are found in *C. aristata* Kuthub. & B. Sutton, *C. enormis* B. Sutton, Nawawi & Kuthub., *C. iriomoteana* Matsush. and *C. udagawae* Piroz.. However, in *Cryptophiale* the appendages are simply a cellular extension of the apical cell, while in *Paracryptophiale* the apical appendage is not cellular but setular.



**Figs 1-12.** *Paracryptophiale pirozynskii* (from holotype). **1-2.** Setae and conidiophores on natural substrate. **3-5.** Conidiophores with attached conidia. **6.** Fertile region with attached conidia. **7-11.** Conidia. **12.** Germinated conidia. Bars: 1, 2 = 500  $\mu\text{m}$ ; 3, 4, 5, 12 = 25  $\mu\text{m}$ ; 6, 7, 8 = 10  $\mu\text{m}$ ; 9, 10, 11 = 5  $\mu\text{m}$ .



**Figs 13-16.** *Paracryptophiale pirozynskii* (from holotype) **13.** Conidia. **14.** Conidiophore. **15.** Setae. **16.** Fertile regions with attached conidia. Bars: 13, 16 = 20  $\mu$ m; 14, 15 = 50  $\mu$ m.

The striking feature of this fungus, the shield-like outgrowth of cells associated with the conidiogenous apparatus, is found in only one other genus, *Cryptophiale* (Pirozynski, 1968; Ellis, 1971, 1976; Carmichael *et al.*, 1980). Development of conidiophores and conidiogenous cells in *Cryptophiale* were described by Pirozynski (1968) and the same development was found in *Paracryptophiale*. At first the conidiophore is a typical sterile seta and it is not until the setiform axis has developed fully that differentiation of the fertile

region is initiated. Pale brown, thick-walled, subglobose or somewhat lobed cells are budded off laterally, usually one at a time in acropetal succession from the top part of the setiform conidiophore. As growth continues these cells become crowded, much lobed and compressed laterally, and eventually form a compact, scutelliform plate that presumably protects delicate conidiogenous cells, which subsequently become functional. The cells of the shield are elongated horizontally and tangentially to the conidiophores. They fuse in the middle, form an irregular crest, and extend laterally into two palisade rows one on each side of the conidiophore. The top part of the conidiophore thus becomes covered on one side and partly enveloped laterally by this compact cellular plate. As in the *Cryptophiale*, the conidiogenous cells are exceedingly difficult to see.

The conidia of *P. pirozynskii* germinate readily on potato dextrose agar (PDA) producing germ-tubes from several cells (Figs 12). On PDA the fungus grows slowly and forms a compact colony with a diameter of 10 mm in 14 days at 27°C. The colony is at first colourless but soon becomes olivaceous green to dark gray with a thin margin. The aerial mycelium is grey and composed of pale brown to medium brown, septate, smooth hyphae. No sporulation was observed on PDA within 4 weeks. The pure culture isolated from holotype specimen WUWP2008 is preserved in Novozymes A/S culture collection.

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