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Aphanocladium macrosporum sp. nov. from Taiwan

Jin-Liang Chen[1,3], W.S. Lin[1], and S.S. Tzean[2]

[1]*Department of Hospital and Health Care Administration, Chia-Nan College of Pharmacy and Science, Tainan 717, Taiwan*

[2]*Department of Plant Pathology, National Taiwan University, Taipei 106, Taiwan*

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Abstract. A species of *Aphanocladium* was isolated from rotten bark in Kuohsing, Nantou, Taiwan. Its distinguishing characteristics are slender, acicular phialide-like conidiogenous cells and solitary, large, smooth, hyaline conidia. As these morphological characteristics differ from all other known species in the genus, this isolate can be recognized as a new species, *Aphanocladium macrosporum* J.L. Chen, W.S. Lin and S.S. Tzean.

Keywords: *Aphanocladium macrosporum* sp. nov.; Hyphomycetes; Taxonomy; Taiwan.

Introduction

Gams (1971) erected the genus *Aphanocladium* to include three species, *A. album* (Preuss) W. Gams (Basionym: *Acremonium album* Preuss), *A. aranearum* (Petch) W. Gams (Basionym: *Acremonium aranearum* Petch) and *A. meliolae* (Hansf.) W. Gams (Basionym: *Oospora meliolae* Hansf.). In 1973, the generic conception of *Aphanocladium* was revised as having solitary conidia borne on phialide-like conidiogenous cells, and *A. spectabile* W. Gams was named as a new species (Gams, 1973). *Aphanocladium album* (Preuss) W. Gams was designated the type species. Later, a further three species, *A. tomentosum* Arambarri, *A. aranearum* (Petch) W. Gams var. *sinense* J.D. Chen and *A. dimorphum* J.D. Chen were added to the genus (Arambarri, 1981; Chen et al., 1984; 1985; Petch, 1932) bringing the total number of species in *Aphanocladium* to seven. Three species—*A. album*, *A. aranearum* var. *sinense* and *A. dimorphum*—are parasitic on *Agaricus bisporus* (Lange) Sing and cause disease in the mushroom. *Aphanocladium aranearum* var. *sinense* is capable of infecting other mushroom species including *Hericium erinaceus* (Bull.) Pers., *Lentinus edodes* (Berk.) Sing. and *Pleurotus ostreatus* (Jacq. ex Fr.) Quél. (Chen et al., 1984). *Aphanocladium dimorphum* has two distinct types of conidial morphs, but conidial size was not described or measured (Chen et al., 1985).

During a taxonomic study of hyphomycetes, Duteromycotina, from rotten leaf litter in Taiwan, an interesting fungus was isolated from rotten bark in Kuohsing, Nantou County. The general morphological

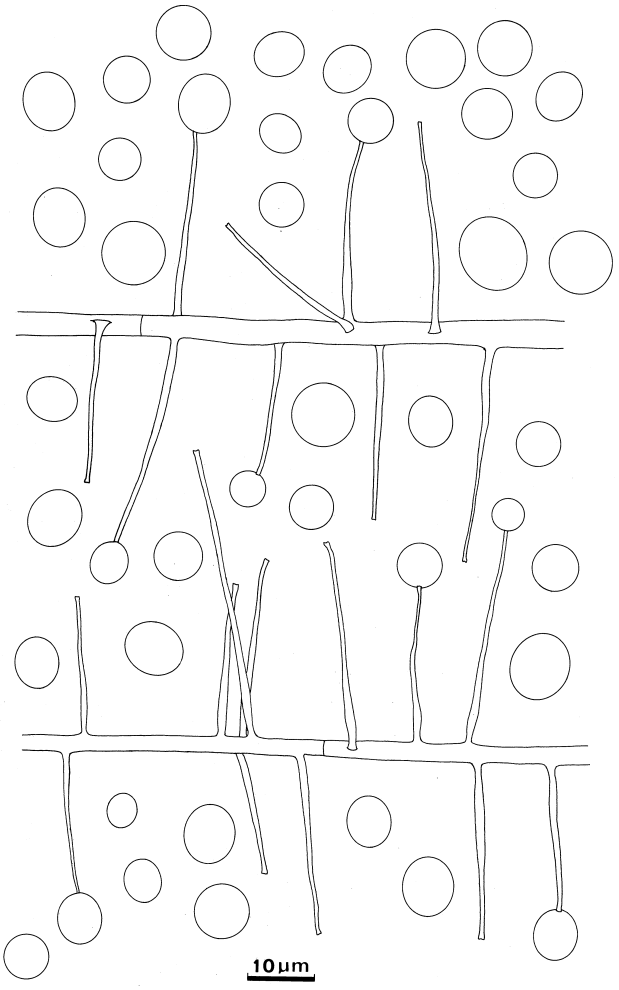

Figure 1. *Aphanocladium macrosporum*. Characteristics of its conidiophores and conidia on oat meal agar.

[3]Corresponding author. Tel: 06-266-4911 ext. 284; Fax: 06-266-7322; E-mail: ccl51911@ms29.hinet.net

characteristics of this isolate fit the generic concept of *Aphanocladium*. Phialide, conidial morphology and dimensions easily distinguish this isolate from other known species in the genus. Thus, a new species, *Aphanocladium macrosporum* J.L. Chen, W.S. Lin and S.S. Tzean is proposed.

Materials and Methods

Samples were collected from rotten bark in Kuohsing, Nantou County during October, 1996 and incubated in moist chambers (plastic boxes, 30 × 20 × 12 cm, with three layers of moistened papers) to encourage fungal sporulation. Pure culture was established by isolating a single spore or spores with a sterile glass microneedle on 3% agar. A piece of agar containing isolated spores was cut out and transferred to oat meal agar (OMA) slants or plates under a stereomicroscope. Details of fungal morphology and conidiogenesis were studied and recorded. The fungus was illustrated using a drawing tube and photographed using an Olympus light microscope (BX50). The taxonomic systems of Barron (1968), Hughes (1953), Tubaki (1963), Ellis (1971) and Saccardo (1882-1931) were used for identification. Both live cultures and dried specimens were deposited in the Herbarium of the Chen-Fungi-Collection (Herb. CFC).

Species Descriptions

Aphanocladium macrosporum J.L. Chen, W.S. Lin, and S.S. Tzean sp. nov. (Figures 1-2)

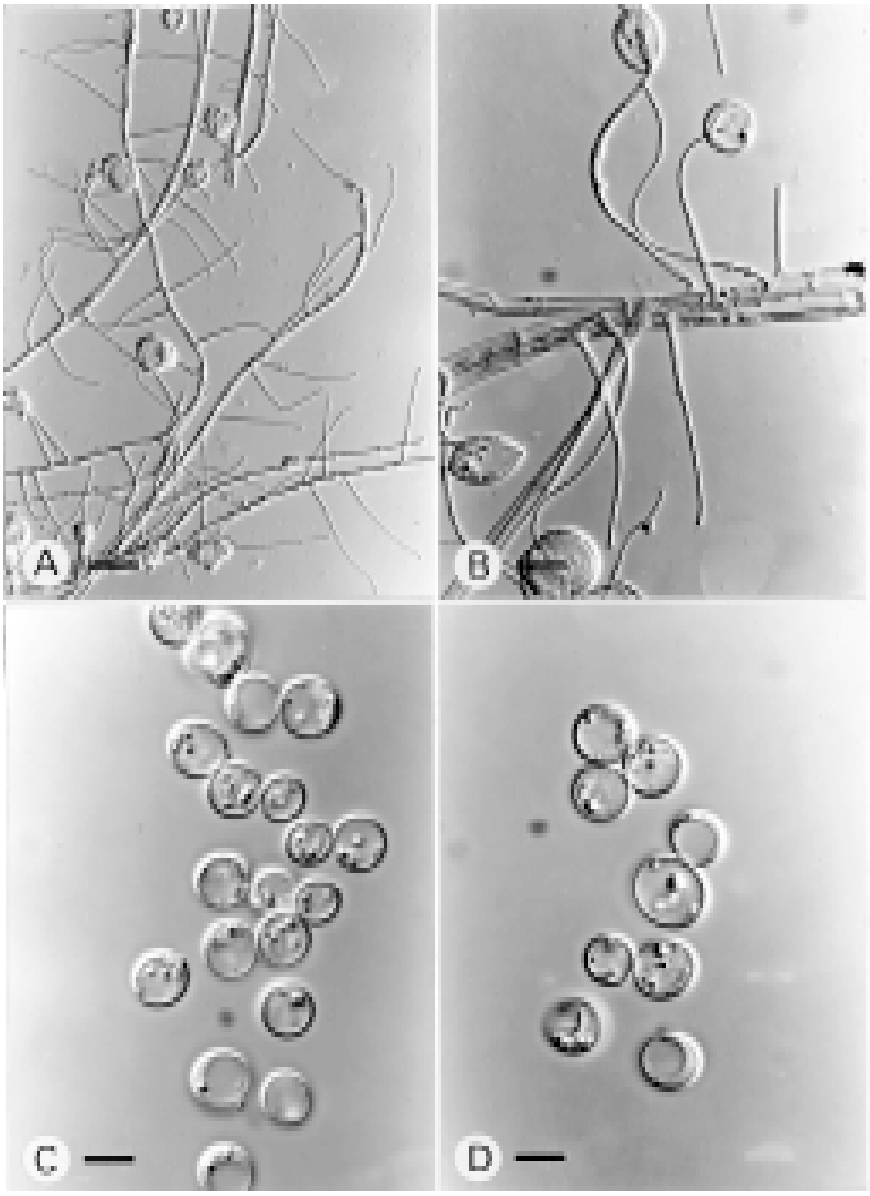

Figure 2. *Aphanocladium macrosproum.* A-B, phialide-like conidiogenous cells. A. Bar = 50 μm; B. Bar = 20 μm. C-D, globose, subglobose or ellipsoidial conidia. Bars = 20 μm.

Coloniae in OMA effusae, floccosae, albae; reversae albae; Mycelium fere superficiale, ex hyphis ramosis, septatis, lenibus, hyalinis, 1.6-8.0 µm latum compositum; Cellulae conidiogenae terminales vel laterales, monoblastae, directae, simplices vel fasciculatae, aciculares, laeves, hyalinae, 20.0-67.2 × 0.6-1.6 µm, cum collum ad apicem; Conidia solitaria, globosa ad subglobosa vel ellipsoidea, lenia, hyalina, 5.2-14.1 µm longus, 4.8-13.6 µm latus.

In Cortice putrido, Kuohsing, Nantou, 13-X-96; Holotypus, Herb. CFC-2.

Colonies on Oat meal Agar effuse, floccose, white; reverse white; Mycelium mostly superficial, composed of branched, septate, smooth, hyaline, 1.6-8.0 µm wide hyphae; Conidiogenous cells terminal or lateral, monoblastic, simple or fasciculate, acicular, with a collar at the apex, smooth, hyaline, 20.0-67.2 × 0.6-1.6 µm; Conidia solitary, globose to subglobose or ellipsoidal, smooth, hyaline, 5.2-14.1 µm long, 4.8-13.6 µm wide.

Isolated from: rotten bark, Kuohsing, Nantou, Oct. 13 1996. CTN-69.

Chen et al. (1984, 1985) have made two comparative tables detailing the morphological characteristics of six species of *Aphanocladium*. The six species were compared and discussed including *A. aranearum* var. *sinense*, *A. dimorphum*, *A. album*, *A. aranearum*, *A. meliolae* and *A. spectabile*. The remaining species not included in the tables is *A. tomentosum* Arambarri, which is the only synnematous species of *Aphanocladium* and was collected from fallen leaves of *Nothofagus pumilio* in Argentina. The conidiogenous cells of *A. tomentosum* differ from those of *A. macrosporum* as they are shorter and broader (11.0-13.5 × 2.4-3.0 µm) and produce smaller conidia (8.0-9.6 × 1.8-4.5 µm). Conidiogenous cells of *A. macrosporum* are more slender and longer (20.0-67.2 × 0.6-1.6 µm) than those of all other known species in the genus, and the conidia, which are globose or subglobose, are the largest (5.2-14.1 × 4.8-13.6 µm) among the species. The conidial morphology of *A. album* is similar to that of *A. macrosporum*, but the conidia of *A. album* are smaller (2.8-5.5 µm long, 1.7-3.7 µm wide). Conidial shape in other species of *Aphanocladium* is described as obovoid, ellipsoidal, short-ellipsoidal or ovoid. The unique characteristics of *A. macrosperum* clearly distinguish it from all other members of *Aphanocladium*.

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Literature Cited

Arambarri, A.M. 1981. Micoflora de La hojarasca de *Nothofagus obliqua* de Y *N. pumilio*. I. Boln. Soc. Argent. Bot. **20**(1-2)**:** 19-30.

Barron, G.L. 1968. The Genera of Hyphomycetes from Soil. The Williams and Wilkins Co., Baltimore.

Chen, J.D., J.G. Liu, S.S. Chen, F.J. Cai, and Z.C. Zhang. 1984. Studies on *Aphanocladium aranearum* (Petch) Gams var. *sinense* var. nov. — A fungus parasitic on *Agaricus bisporus* (Lange) Sing. Acta Mycol. Sin. **3**(2)**:** 96-101

Chen, J.D., J.G. Liu, S.S. Chen, F.J. Cai, and Z.C. Zhang. 1985. A new species of *Aphanocladium* on *Agaricus bisporus*. Acta Mycol. Sin. **4**(4)**:** 227-233.

Ellis, M.B. 1971. Dematiaceous Hyphomycetes. Commonwealth Mycological Institute. Kew. Surrey, England.

Gams, W. 1971. Cephalosproiumartige Schimmelpilze (Hyphomycetes). Gustar Fischer Verlag, Stuttgart, 262 pp.

Gams, W. 1973. Phialides with solitary conidia? Remarks on conidium ontogeny in some hyphomycetes. Persoonia **7**(2)**:** 161-169.

Hughes, S.J. 1953. Conidiophores, conidia and classification. Can. J. Bot. **31:** 577-659.

Petch, T. 1932. Notes on Entomogenous Fungi. Trans. Br. Mycol. Soc. **16:** 242-243.

Saccardo, P.A. 1882-1931. Sylloge Fungorum Omnium Cognitorum. 25 volumes. Pavia, Italy.

Tubaki, K. 1963. Taxonomic study of Hyphomycetes. Annu. Rep. Inst. Ferment. Osaka **1:** 25-54.

台灣產不完全菌新種 *Aphanocladium macrosporum* sp. nov.

陳琥篠[1]　林為森[1]　曾顯雄[2]

[1]私立嘉南藥理學院醫務管理系

[2]國立台灣大學植物病理學系

本文描述一種分離自南投縣、國姓鄉，腐朽樹皮上之絲孢綱不完全菌新種 *Aphanocldium macrosporum* J.L. Chen, W.S. Lin and S.S. Tzean。此新種其最主要的形態特徵與產孢方式爲：產孢細胞 (conidiogenous cells; phialide-like) 上，能產生單一 (solitary)，巨大，平滑，無色，圓形、次圓形或橢圓形之分生孢子。若與屬內之已知種互相比較形態特徵，則可輕易地區別此真菌，例如：*Aphanocladium macrosporum* 具有細長的產孢細胞以及大型的分生孢子。此等獨一無二的特徵，乃確立此一新種之創設。

關鍵詞：不完全菌；絲孢綱；新種 (*Aphanocladium macrosporum* sp. nov.)；台灣。