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2017 IOP Conf. Ser.: Earth Environ. Sci. 52 012108

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# New collection of *Acrogenospora sphaerocephala* from freshwater habitats of Northern Thailand

X J Liu, F P Li, W Liu, X L Huang and H Zhang<sup>1</sup>

Faculty of Environmental Science & Engineering, Kunming University of Science & Technology, Kunming 650500, People's Republic of China

E-mail: zhanghuang2002113@163.com

**Abstract.** During investigations of freshwater fungi in Thailand, we collected dematiaceous hyphomycetes *Acrogenospora sphaerocephala* in lotic freshwater habitat. The description and morphological photographs of new collection is illustrated. *Acrogenospora sphaerocephala* was characterized by unbranched conidiophores and producing solitary non-septate conidia acrogenously from recurrently proliferating conidiogenous cells. The conidia are dark brown to black when mature, paler at young, spherical to subspherical.

## 1. Introduction

So far, 537 hyphomycetes species were reported from freshwater habitats [1]. This number is almost as same as the freshwater ascomycota (579 species). More hyphomycetes were reported in many fungal diversity studies. [2], [3] Classification of freshwater hyphomycetes is based on morphological features. [4], [5]

During investigations of freshwater fungi in Thailand [6], we collected dematiaceous hyphomycetes *Acrogenospora sphaerocephala* in lotic freshwater habitat. The description and morphological photographs of new collection are illustrated. The differences between similar species are provided.

## 2. Methods

Submerged wood was randomly collected from the lotic freshwater habitats in Chiang Mai and Chiang Rai Province, Thailand, in January and April 2010, following the reported procedures described [2]. Samples were placed separately in Zip lock plastic bags with sterile moist tissue paper. The woody substrates were examined under a dissecting microscope for fruiting bodies after one week of incubation and until 2 months [7].

Observations and photomicrographs were made from material mounted in water or lactic acid (85%) using a Nikon ECLIPSE 80i microscope. Melzer's reagent (MEZ; 0.5 g iodine, 1.5 g IKI, 20 g chloral hydrate, 20 ml distilled water) and aqueous cotton blue were added to determine staining reactions of the ascus apical apparatus [8]. Measurements were made with the Tarosoft (R) Image Frame Work. The herbarium specimens are deposited at Mae Fah Luang University (MFLU), Chiang Rai, Thailand.

## 3. Results and discussions

*Acrogenospora sphaerocephala* (Berk. & Broome) M.B. Ellis, Dematiaceous Hyphomycetes (Kew): 114 (1971)



Basionym. – *Monotospora sphaerocephala* Berk. & Broome, *Ann. Mag. nat. Hist.*, Ser. 3 3: 361 (1859)

Synonym. – *Halysium sphaerocephalum* (Berk. & Broome) Vuill.

*Monosporella sphaerocephala* (Berk. & Broome) S. Hughes, *Can. J. Bot.* 31: 654 (1953)

*Monotosporella sphaerocephala* (Berk. & Broome) S. Hughes, *Can. J. Bot.* 36: 787 (1958)

Figure 1

Asexual morph – unknown.

Description – Colonies sparse, scattered, black, glistening, hairy. Mycelium mostly immersed, consisting of septate, thin-walled, smooth, pale brown to brown hyphae. Conidiophores macronematous, mononematous, 300–400 µm long, 8–10 µm wide at the base, 4–6 µm wide at the tip, solitary or in some groups, annellations at the apex of a conidiophore resulting from successive percurrent proliferations, septate, erect, unbranched, septate, long cylindrical, slightly tapering towards the apex, pale to mid brown, slightly paler at the apex, smooth, thick-walled at the base, slightly flexuous. Conidiogenous cells monoblastic, integrated, terminal, 70–80 × 4–6 µm, light brown, cylindrical, proliferate percurrently. Conidia acrogenous 24–32 µm ( $\bar{x}$  = 28.2, n =15) in diam., holoblastic, with young conidium developing at the apex of the conidiophore and mature conidia pushed sidewise in a sympodial manner after successive percurrent proliferations of the conidiophores, solitary, dry, dark brown to black when mature, paler at young, spherical to subspherical, with a truncate base, unicellular, smooth, thick-walled.

Habitat – On submerged decaying wood.

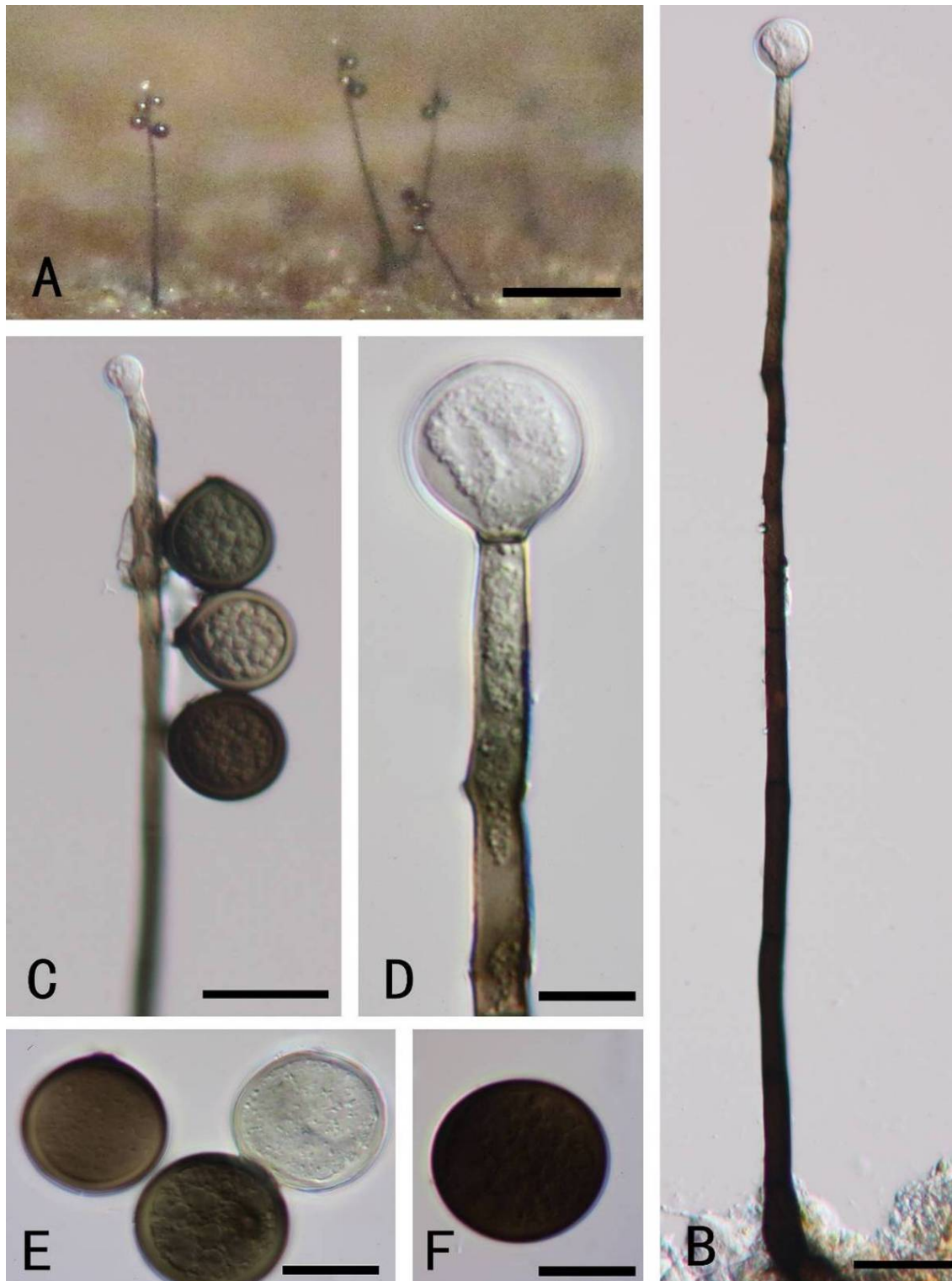
Known freshwater distribution – Brunei, Hong Kong, Hungary, Philippines, South Africa, the Seychelles, Thailand, U.S.A.

Material examined. – Thailand, Chiang Mai, Doi suthep Pui National Park, on submerged wood, 25 Apr. 2010, Huang Zhang, MFLU11-1064; ibid MFLU11-1068; ibid MFLU11-1132.

Notes – The genus *Acrogenospora* was established to accommodate the species transferred from *Monotosporella* which have unbranched conidiophores and producing solitary non-septate conidia acrogenously from percurrently proliferating conidiogenous cells [9]. *Monotosporella* species are similar to *Acrogenospora* in many respects, the main differentiating characters being conidia: septate vs. unicellular [10].

Ten species were reported so far, in which six were from freshwater habitats. They are *A. sphaerocephala* (Berk. & Broome) M.B. Ellis, *A. ellipsoidea* D.M. Hu, L. Cai & K.D. Hyde, *A. gigantospora* S. Hughes, *A. ovalis* Goh, K.D. Hyde & K.M. Tsui, *A. subprolata* Goh, K.D. Hyde & K.M. Tsui and *A. verrucispora* Hong Zhu, L. Cai & K.Q. Zhang. They are distinguished by the color of conidiophores and conidial color, shape and dimension. The asexual morph of *A. altissima* and *A. megalospora* are associated with *Farlowiella*. *A. sphaerocephala* is collected in this study.

*A. sphaerocephala*, the type species of *Acrogenospora*, is characterized by dark brown to black when mature, paler at young, spherical to subspherical conidia [9]. It differs from *A. verrucospora* by the smooth and larger conidia [11]. *A. sphaerocephala* is frequently found on submerged wood. We tried to do single spore isolation but the conidia do not germinate on WA or PDA.



**Figure 1.** *Acrogenospora sphaerocephala*. A. Colonies on wood. B–D. Successive production of holoblastic conidiophores. Note the percurrent proliferation of conidiogenous cells. E–F. conidia. Scale bars: A = 300 µm, B–C = 30 µm, D–F = 5 µm.

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