

SHORT COMMUNICATION

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## *Gliocephalotrichum microchlamydosporum* and *G. simplex* in the Ryukyu Islands, Japan

Received: June 30, 2004 / Accepted: August 25, 2004

**Abstract** Seven hyphomycete isolates from forest environments of the Ryukyu Islands, Japan, were identified to *Gliocephalotrichum microchlamydosporum* and *G. simplex*. The former species is a new record in Japan. Although the five known species in the genus *Gliocephalotrichum* including two isolates of *G. microchlamydosporum* and four of *G. simplex* in this study are all soilborne, another isolate of *G. simplex* was first isolated from an unidentified basidiocarp tissue.

**Key words** Anamorphic fungi · Identification · Isolation · Morphology · New record in Japan

Various noteworthy fungi were isolated in the Ryukyu Islands, Japan, during studies on diversities of fungi in various substrates and habitats and their biology, including *Cylindrocladium* species (Watanabe et al. 2001a–c, 2004).

Seven hyphomycete isolates were obtained by the direct inoculation or the toothpick bait method from soil samples (Watanabe et al. 2001a–c) and tissue isolation from basidiocarp tissues (Watanabe et al. 2003) in the Ryukyu Islands. The soil samples from the Ryukyu Islands were collected from mountainous forest soils of Komidake in Iriomote Island, Omotodake in Ishigaki Island, and Nagodake in Okinawa Island, Japan in 2002. Samples of the fruit bodies including basidiomata were collected from nearly the same locations with soil samples. All these fungi are nearly identical in colony characteristics, in being black or dark brown, homogeneous, spreading, and nonaerial.

These fungi belong to the genus *Gliocephalotrichum* J.J. Ellis & C.W. Hesselstine (1962) on the basis of conidiophores with apical verticillate penicilla and subapical sterile

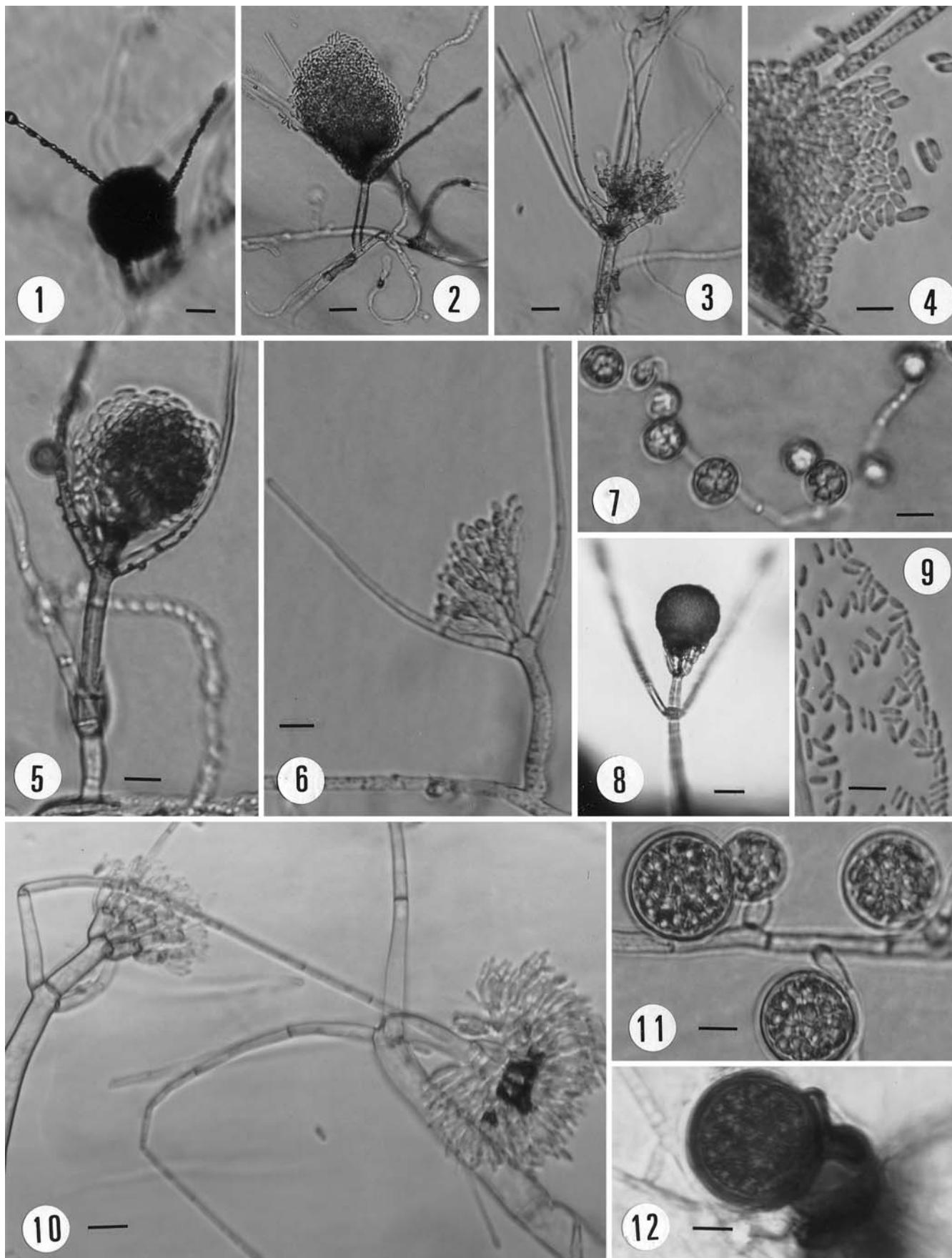
hairlike arms. Five known species are mainly separated on the basis of location of sterile hairlike arms and conidial and chlamydospore morphology and dimensions. Namely, sterile hairlike arms are usually directly subtending the penicillus in *G. bulbilium* J.J. Ellis & C.W. Hesselstine (1962), *G. microchlamydosporum* (J. Meyer) B.J. Wiley & E.G. Simmons (1971), and *G. ohiense* L.H. Huang & J.A. Schmitt (1973), and originating from 12–32 µm below the penicillus in *G. simplex* (J. Meyer) B.J. Wiley & E.G. Simmons (1971) and *G. cylindrosporium* B.J. Wiley & E.G. Simmons (1971). The chlamydospores are multicellular and large up to 112 µm in diameter in *G. bulbilium*, unicellular and less than 20 µm in diameter in *G. microchlamydosporum* with thin walls (0.5 µm thick), and in *G. ohiense* with thickened walls (up to 3 µm thick), and unicellular and more than 20 µm in diameter in *G. simplex* and *G. cylindrosporium*. The conidia of the latter two species are 6–9 × 1.3–2.6 µm and 9–13 × 1.3–1.9 µm, respectively. The teleomorph was reported only in *G. bulbilium* as *Leuconectria clusiae* A.Y. Rossman, G.J. Samuels & R. Lowen (Rossman et al. 1993).

In Japan, three *Gliocephalotrichum* species (*G. bulbilium*, *G. cylindrosporium*, and *G. simplex*) were isolated from soils collected at Ibaraki, Kagoshima, Kyoto, and Okinawa by Tubaki and Fujita in 1980.

Among seven isolates in this study, two isolates were identified to *G. microchlamydosporum* and five to *G. simplex* following previous work (Ellis and Hesselstine 1962; Huang and Schmitt 1973; Shipton 1975; Wiley and Simmons 1971).

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**Figs. 1–12.** *Gliocephalotrichum microchlamydosporum* and *G. simplex*. **1–7** *Gliocephalotrichum microchlamydosporum*. **1–3** Habit showing spore masses (**1, 2**) or apical penicillus with 2 (**1**), 4 (**2**), and several (**3**) subapical sterile hairlike arms. **4** Conidia. **5, 6** Conidiophores with spore mass (**5**) or apical verticillate penicilli (**6**) and subapical sterile hairlike arms. **7** Chlamydospores. **8–12** *G. simplex*. **8** Habit showing spore mass with two subapical sterile hairlike arms. **9** Conidia. **10** Conidiophores with verticillate penicilli and subapical sterile hairlike arms. **11, 12** Immature (**11**) and mature (**12**) chlamydospores. **Bars 1–3, 8** 20 µm; **4–7, 9–12** 10 µm



These isolates are deposited at the MAFF Genebank, National Institute of Agrobiological Sciences, Ministry of Agriculture, Forestry and Fisheries (with the MAFF number), and Research Institute for Biological Resources and Functions, National Institute of Advanced Industrial Science and Technology (AIST) (with the TW number), both in Tsukuba, Ibaraki, Japan.

***Gliocephalotrichum microchlamydosporum*** (J. Meyer) B.J. Wiley & E.G. Simmons, *Mycologia* 63:580, 1971.

Figs. 1–7

Conidiophores erect, subhyaline, usually 0–2-septate, 60–98 µm tall, 5–8 µm broad basally, often constricted at the base, terminated with apical 2–3-seriate penicilli consisting of primary branches (6–14 × 4–5 µm), secondary branches (6–12 × 3–4.2 µm), tertiary branches (6–10 × 3 µm) and terminal phialides (8–14 × 2.2–3 µm), bearing yellowish or subhyaline spherical or ellipsoidal gloiosporous spore masses (44–75 µm in diameter) and 1–7 subapical sterile hairlike arms originated from 0–25 µm below the penicilli. Sterile hairlike arms septate, 82–165 µm long, 2.8–5(–7) µm wide basally, gradually tapering towards the apices (1.8–2 µm wide), subhyaline to brown, smooth, often partially covered with water droplets at the apices. Conidia hyaline, cylindrical or ellipsoidal, 5.6–10 × 2–3.6(–5) µm. Chlamydo-spores single or in chains, 10–15 µm in diameter.

Materials examined: Japan, Okinawa Pref., culture from forest soil at Omotodake, Ishigaki Island, Jan. 9, 2002, isolated by T. Watanabe (TW 02-187), and at Komidake, Iriomote Island, Jan. 11, 2002 (TW 02-135 = MAFF 239481).

***Gliocephalotrichum simplex*** (J. Meyer) B.J. Wiley & E.G. Simmons, *Mycologia* 63:578, 1971.

Figs. 8–12

Conidiophores erect, subhyaline to pale brown, usually 1–2-septate, 52–190 µm tall, 7.5–12 µm broad basally, terminated with apical 2–3-seriate penicilli consisting of primary branches (6–10 × 4–5 µm), secondary branches (6–9 × 3–5 µm), tertiary branches (6–9 × 3–4 µm), and terminal phialides (6–9 × 2–3 µm) bearing white gloiosporous spherical or ellipsoidal spore masses (50–85 µm in diameter), and 1–7 subapical sterile hairlike arms originated from 20–30 µm below the penicilli. Sterile hairlike arms septate, subhyaline, 60–255 µm long, 4–7.5 µm basally. Conidia hyaline, cylindrical or ellipsoidal, 5.6–7 × 1.2–2 µm. Chlamydo-spores golden-brown, single, thick-walled (up to 2 µm thick), 18–36 µm in diameter.

Materials examined: Japan, Okinawa Pref., culture from forest soil at Omotodake, Ishigaki Island, Jan. 9, 2002, iso-

lated by T. Watanabe (TW 02-194), at Komidake, Iriomote Island, Jan. 11, 2002 (TW 02-125), at Nagodake, Okinawa Island, Jan. 13, 2002 (TW 02-247; TW 02-257 = MAFF 239480), and from an unidentified basidiocarp tissue collected at Nagodake, Okinawa Island, Jan. 13, 2002 (TW 02-319 = MAFF 239482).

This species was previously isolated from soil of Iriomote Island, Okinawa Pref. and other areas of Japan (Tubaki and Fujita 1980).

Five known species belonging to the *Gliocephalotrichum* (Wiley and Simmons 1971; Huang and Schmitt 1973) including two isolates of *G. microchlamydosporum* and four of *G. simplex* in this study are all soilborne, but it is interesting to note that another isolate (TW 02-319 = MAFF 239482) of *G. simplex* was isolated from an unidentified basidiocarp tissue. Such isolation examples may be common, because we have isolated at least 88 fungus species of 58 genera from fruit body tissues belonging to mainly Aphyllophorales (Basidiomycetes) during this study (Watanabe and Nakamura, unpublished data), although we do not know whether they are parasitic, strong associates, or casual contaminants of these.

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