

Emericella qinqixianii, a new species from desert soil in China

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Emericella qinqixianii, a new species isolated from desert soil from Sanchakou, Aksu, Qiemo, Yuli, Yutian, and the Taklimakan desert 100 km inland from Minfeng, Xinjiang Province, China, is described and illustrated. It is characterized by grayish yellow to olive brown, non-ostiolate ascomata surrounded by hyaline to pale yellowish brown hülle cells, membranaceous peridium, prototunicate asci, and violet-brown, lenticular ascospores with two equatorial crests, smooth convex surfaces, and long filiform appendages. It has *Aspergillus* anamorph with biseriata aspergilla.

Key Words—*Aspergillus qinqixianii*; China; desert; *Emericella qinqixianii*; soil fungus.

During a survey of soil-borne fungi in China, an undescribed ascomycete was repeatedly isolated from Xinjiang soil by the soil-plate method (Warcup, 1950). The isolates are characterized by non-ostiolate ascomata surrounded by hülle cells, prototunicate asci, violet-brown, bivalved ascospores, and an *Aspergillus* anamorph with biseriata aspergilla. From these characters, the fungus is assignable to the genus *Emericella* Berk., Eurotiales (Malloch and Cain, 1972). However, the ascospores are peculiar in that the ornamentation is composed of two equatorial crests and filiform appendages. The fungus is similar to *E. appendiculata* Horie et D.-M. Li (Horie et al., 1998), but the ascospore convex wall is smooth in contrast to capitate surface in the latter species. Thus this new species is the second taxon in which ascospores have surface ornamentation with long filiform appendages.

Living cultures of the new species as well as dried materials are deposited at the Natural History Museum and Institute, Chiba (CBM).

Emericella qinqixianii Horie, Abliz et R. Li, sp. nov.

Figs. 1–7

Coloniae in agar maltoso expansae, ex mycelio basali coacto tenuiter constantes; ascomata abundanter producentia, olivacea; conidiogenesis limitata, sparsa; reversum laete aurantiacum vel flavo-brunneum.

Ascomata superficialia, dispersa, non ostiolata, globosa vel subglobosa, 150–400 μm diam, cum cellulis dictis “hülle” numerosis, crassitunicatis, globosis vel ovoideis, 12–26 μm diam circumcincta; peridium griseo-flavum vel olivaceo-brunneum, membranaceum, tenue,

bi- vel tri-stratum, ex “textura intricata” compositum. Asci 8-spori, stellati, 12–18 \times 14–17 μm , evanescentes. Ascosporae violaceo-brunneae, late lenticulares, sine ornamento 4–5 \times 3.2–3.6 μm , cristis aequatorialibus duabus ornatae, superficiei convexa laevi et ad marginem appendiculata. Status anamorphus: *Aspergillus qinqixianii*.

Holotypus: CBM-FA-866, colonia exsiccata in cultura ex solo, in Sanchakou, Xinjiang, Sina, 5 VIII 1997, a Y. Horie isolata et ea collectione fungorum Musei et Instituti Historiae Naturalis Chiba (CBM) conservata.

Etymology: named in memory of Professor Qin Qixian, Department of Dermatology, Shanghai Huashan Hospital, Shanghai Medical University, Shanghai, China, eminent medical mycologist.

Anamorphosis: *Aspergillus qinqixianii* Horie, Abliz et R. Li, anam. sp. nov.

Capitula conidica obscure viridia vel griseo-viridia, radiantia vel brevi-columnaria. Conidiophora ex mycelio basali oriunda, plus minusve sinuosa, 120–280 \times 5–7 μm , hyalina vel flavo-grisea, levia; vesiculae ampulliformes vel clavatae, hyalinae vel flavo-griseae, 9–16 μm diam. Aspergilla in summa 1/2 vesicula insidentia, biseriata; metulae 5–7(–8) \times 2.5–4(–5) μm ; phialides 4–6 \times 2–3(–4) μm . Conidia hyalina vel dilute flavo-brunnea, globosa vel subglobosa, 3–4 μm diam, laevia. Status teleomorphus: *Emericella qinqixianii*.

Holotypus CBM-FA-866, loc. cit.

Colonies on malt extract agar (MEA) spreading broadly, attaining a diam of 70–78 mm in 14 d at 25°C, consisting of a thin mycelial felt, granular due to the very abundant production of ascomata with hülle cells, Olive

(3D4 to 3E6, after Kornerup and Wanscher, 1978); conidiogenesis limited, scattered; reverse Light Orange (5A4) to Yellowish Brown (5E5).

Ascomata superficial, scattered, non-ostiolate, globose to subglobose, 150–400 μm in diam, surrounded by a thick layer of numerous hülle cells, hyaline to pale yellowish brown, totally 320–470 μm in diam; hülle cells globose to ovoid, thick-walled, 12–26 μm in diam; peridi-

um grayish yellow to olive brown, membranaceous, thin, 2-3-layered, "textura intricata", consisting of irregular cells measuring 8–15 \times 1–3 μm . Asci 8-spored, stellate, 12–18 \times 14–17 μm , evanescent. Ascospores at first Dull Red (9C4) to Brownish Red (9C6), then becoming Violet-Brown (10E5 to 10F5), broadly lenticular, spore body 4–5 \times 3.2–3.6 μm , with two equatorial crests measuring 0.5 μm wide; convex surfaces smooth and mar-

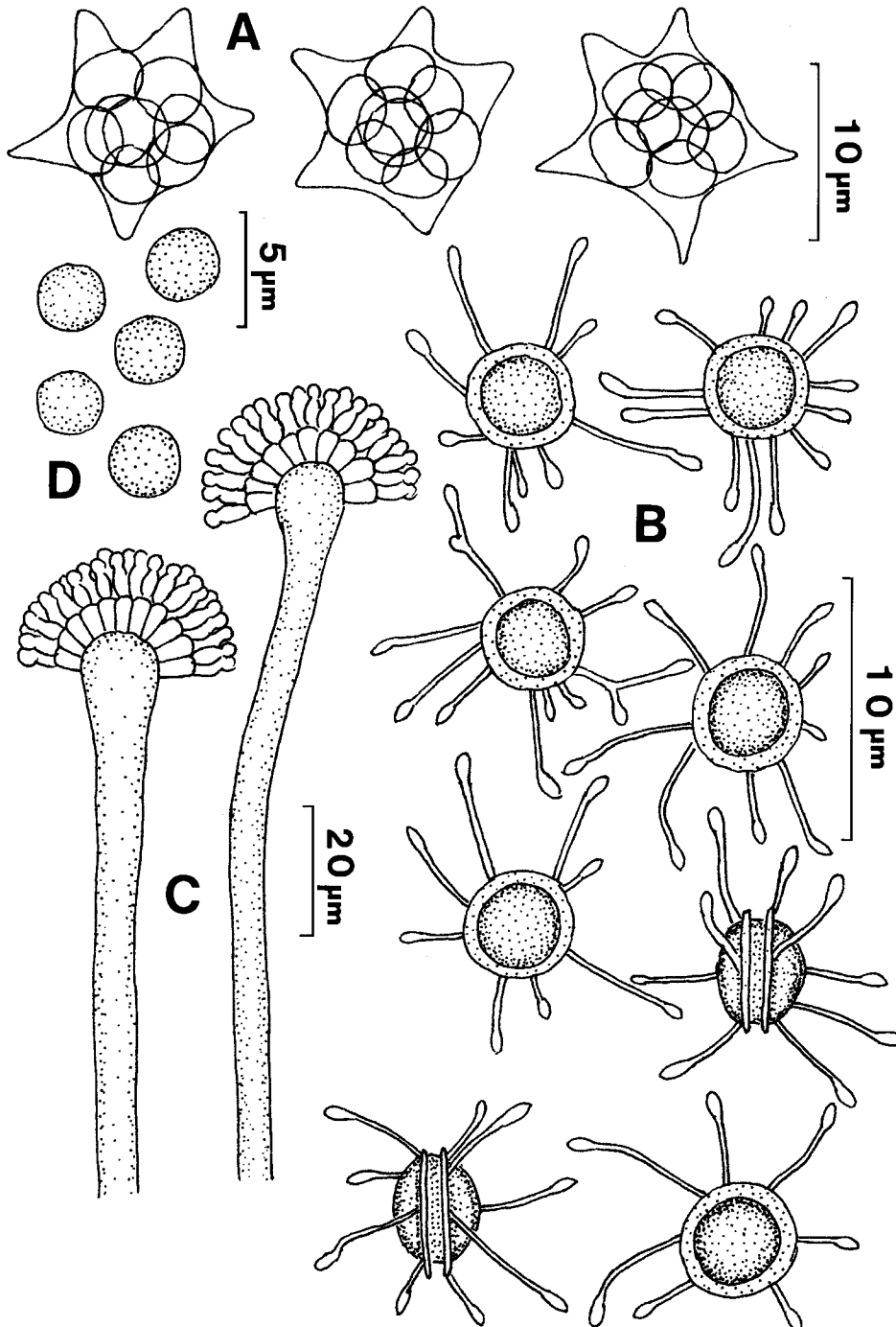
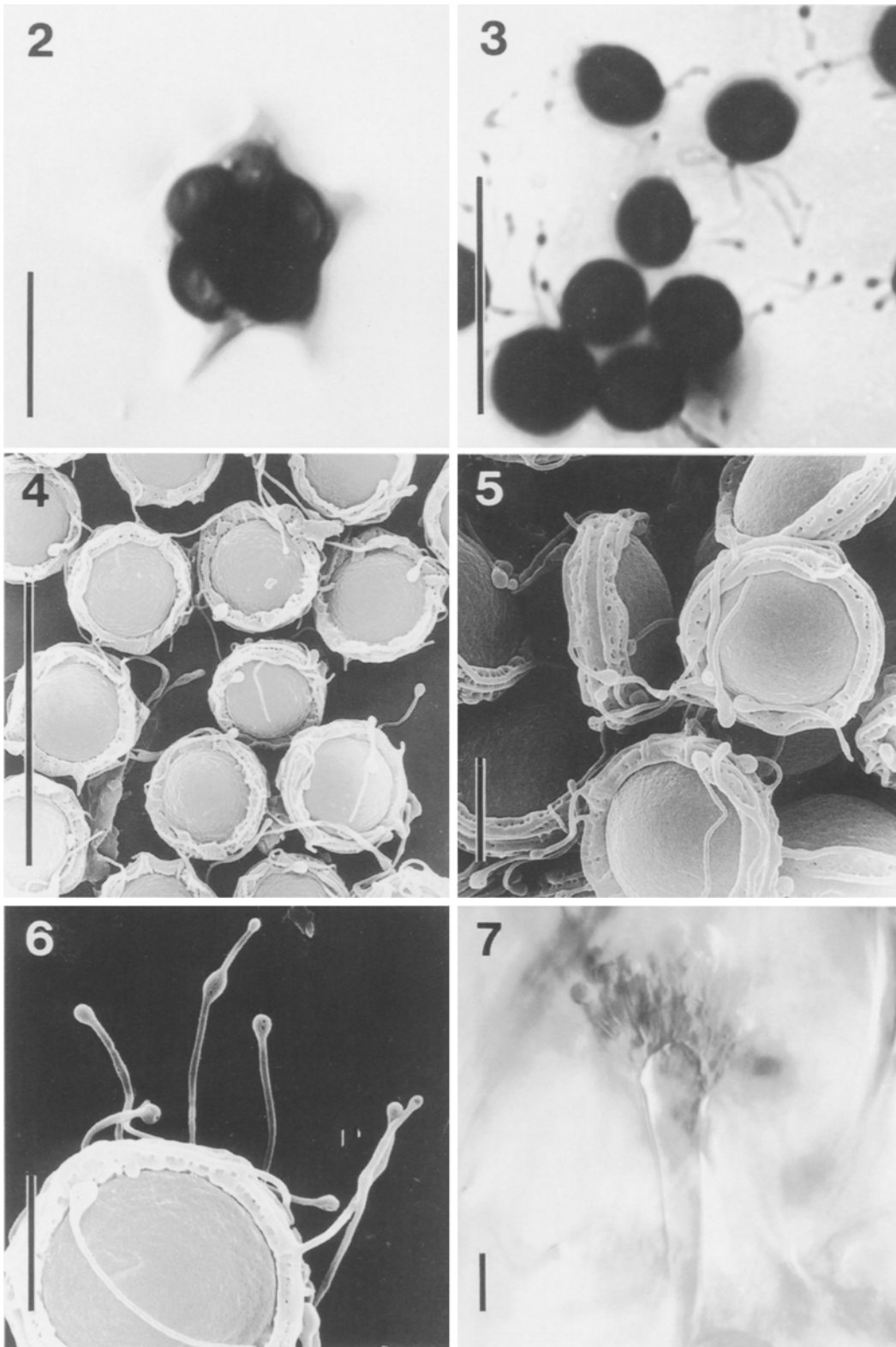


Fig. 1. *Emericella qinqixianii*.

A. Asci. B. Ascospores. C. Aspergilla. D. Conidia.



Figs. 2-7. *Emericella qinqixianii*.

2. Ascus (LM); 3. Ascospores with appendages (LM); 4, 5. Ascospores (SEM); 6. Ascospores with appendages (SEM); 7. Aspergillum. Scales: Figs. 2-4, 7 = 10 μm ; Figs. 5, 6 = 2 μm .



Figs. 8, 9. *Emericella appendiculata* and *E. nidulans*.
8. *E. appendiculata*; Ascospores with appendages (SEM). 9. *E. nidulans*; Ascospores (SEM). Scales: Figs. 8, 9 = 10 μm .

ginally ornamented by hyaline, filiform appendages, which are rarely branched, measuring 3–7 μm long, 0.4–0.7 μm in diam and swollen at the end (Figs. 5–7).

Specimens examined: CBM-FA-866 (holotype), a dried culture derived from an isolate of desert soil at Sanchakou, Xinjiang Province, China, collected by Y. Horie, as strain No. 97-XY-780-1, 5 August 1997; CBM-XY-867, a dried culture derived from an isolate of desert soil at Aksu (Aksu Yangi Shahr), Xinjiang Province, China, as strain No. 97-XY-789-2, 5 August 1997; CBM-FA-868, a dried culture derived from an isolate of wasteland soil at Qiemo (Qarqan), Xinjiang Province, China, as strain No. 98-TA-321-C, 30 July 1998; CBM-FA-869, a dried culture derived from an isolate of grassland soil on dry riverbed of Tarim river, at Yuli (Lopnur), Xinjiang Province, China, as strain No. 98-TA-194, 28 July 1998; CBM-FA-870 and CMB-FA-875, dried cultures derived from isolates of desert soil of the Taklimakan desert, 100 km inland from Minfeng (Niya), Xinjiang Province, China, as strains No. 98-TA-528 and 98-TA-540-B, 2 August 1998; CBM-FA-871 and CMB-FA-872, dried cultures from isolates of reedy wasteland soil, at Yutian (Keriya), Xinjiang Province, China, as strains No. 98-TA-411 and 98-TA-408, 31 July 1998. All strains were isolated by Y. Horie in the laboratory of the Research Center of Medical Mycology, Beijing Medical University, Beijing.

The holotype is deposited in the Natural History Museum and Institute, Chiba (CBM).

Conidial heads dull green to grayish green, radiate to short columnar, 55–105 \times 50–85 μm . Conidiophores mostly arising from basal mycelium; stipes more or less sinuous, 120–280 \times 5–7 μm , hyaline to yellowish gray, smooth; vesicles flask-shaped to clavate, hyaline to yellowish gray, 9–16 μm in diam, fertile over the upper half. Aspergilla biseriata; metulae hyaline to pale yellowish brown, 5–7(–8) \times 2.5–4(–5) μm ; phialides hyaline to pale yellowish brown, 4–6 \times 2–3(–4) μm . Conidia

hyaline to pale yellowish brown, globose to subglobose, 3–4 μm in diam, smooth.

Colonies on Czapek's solution agar growing rapidly, attaining a diam of 55–62 mm in 14 d at 25°C, consisting of a thin mycelial felt; ascomata abundantly produced, granular in appearance; conidiogenesis limited, Greyish Orange (5B3) to Brownish Orange (5C5); reverse Brownish Orange (6C4) to Light Brown (6D6).

Colonies on oatmeal agar spreading broadly, attaining a diam of 55–58 mm in 14 d at 25°C, with surface resembling those on MEA but overgrown by loose network of aerial hyphae, Light Brown (5D4) to Yellowish Brown (5E7); reverse Yellowish White (4A2) to Greyish Brown (6D3).

At 37°C, growth is slower than at 25°C; ascomata are limited in number.

The genus *Emericella* has been reviewed several times, most recently by Horie et al. (1996a), who recognized 32 species since then, three additional species have been described by Horie et al. (1996b, 1998) and Stchigel and Guarro (1997). Based on wall ornamentation of ascospores in scanning electron microscopic (SEM) work, these taxa fall into nine groups in the synoptic key, although the majority of the species are contained within the smooth group represented by *E. nidulans* (Eidam) Vuill (Fig. 9). *Emericella qinqixianii* is apparently included in the smooth group, but the outstanding characters described above (e.g., stellate asci and appendaged ascospores) seem to indicate a close relationship to *E. appendiculata* (Figs. 8).

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