Two new species of *Humicola* from China

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Two new species of *Humicola*, *H. senseletii* and *H. subminima* from soil in China, are described and illustrated, examining the relationship with similar species. The type specimens (dried cultures) and living cultures are deposited in the Herbarium of Shandong Agricultural University: Plant Pathology (HSAUP).

Key words: aleuriospores, anamorphic fungi, soil, hyphomycetes, systematics.

The genus *Humicola* was erected by Traaen (1914) based on *Humicola fuscoatra* as the type species. Later, many discussions arose on the taxonomy of this genus. In agreement with Mason's views (1933, 1941), White & Dowing (1953) finally established the validity of *Humicola*, which included Traaen's original species. Fassatiová (1967) emended the diagnosis of this genus and constructed a key for the determination of the species of *Humicola*. She argued that the colour of hyphae was not considered as a decisive feature according to the taxonomic opinions of Hughes (1953) and Subramanian (1962). Meanwhile, she emphasized that only fungi forming aleuriospores are included within this genus. The taxonomic classification of species of *Humicola* is primarily based on the size of aleuriospores. More than 50 taxa of this genus had been reported to date (http://www.indexfungorum.org/Names/Names.asp).

During an investigation of dematiaceous hyphomycetes of soil in Southwest of China, two unknown fungi were isolated from forest and rice field soil. Both of them possess the typical characteristics of *Humicola*, but could not be assigned to any known species of this genus.

Materials and Methods

Two fungi were collected from forest soil in Sichuan and rice field soil in Hubei, China. The soil samples were stored at 4 °C after collection. Isolations were carried out within at most two months. The single

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spore cultures were taken by direct plating of soil particles and soil-dilution plate method. Cultures were grown for 2 weeks on potato-dextrose agar (PDA; 200 g white potato boiled and filtered, 20 g dextrose, 20 g agar, 1 L distilled water) in Petri dishes at ambient room temperature 23 °C, under a daily fluorescent light/dark cycle of 12/12 h. Microscopic analysis was carried out using lactic acid as mounting fluid. Dimensions of microscopic elements belonging to the holotype were obtained from the measurements of 50 mature conidia and 30 conidiophores in lactic acid, using an Olympus microscope (model BX 50), with 100x (oil immersion) objectives.

Results

Humicola senseletii Jiang & Zhang **sp. nov.** – Fig. 1.
MycoBank no.: MB 515171

Coloniae effusae, pallide griseo-brunnea. Mycelium superficialibus vel in substrato immersis, ex hyphis hyalinis, ramosis, septatis, laevibus, 1–3 µm crassis reticulatis compositum. Conidia globosa, aliquando piriformis, solitaria vel in brevicatenatis, natae vel directe in vegetalibus hyphis vel in brevibus lateralibus conidiophoris, unicellulares, laevibus, crasse tunicata, medio-brunnea vel atro-brunnea, 7–10.5 µm in diametro. Intercalares, globosa chlamydosporae solitaria vel in brevicatenatis aliquando producuntur. Phialosporae haud visae.

Holotype: From a soil of Luhuo Mountain forest, Sichuan Province, China, 26 Jun 2006, Y. L. Jiang, HSAUP II 069061, dried culture (holotype), and ex-type living culture.

Colonies on PDA effuse, pale greyish brown. Mycelium superficial and immersed: hyphae hyaline, branched, septate, smooth, 1–3 µm wide (n = 30). Conidia globose, sometimes pear shaped, solitary or forming short chains, produced either directly on the sides of vegetative hyphae or on short lateral conidiophores, unicellular, smooth, thick-walled, medium brown to dark brown, 7–10.5 µm in diameter (n = 50). Chlamydospores intercalary, globose solitary or in short chains sometimes produced. Phialospores not seen.

Etymology. – Refers to its conidia forming short chains.

Habitat. – In soil.

Distribution. – Known only from the type location in China.

Humicola subminima Jiang & Zhang **sp. nov.** – Fig. 2.
MycoBank no.: MB 515172

Coloniae effusae, griseo-brunnea, reverse atro-brunnea. Mycelium superficialibus vel in substrato immersis, hyphis subhyalinis vel pallide flavo-brunnea, ramosis, septatis, laevibus, 1–3 µm crassis reticulatis compositum. Conidia globosa, natae directe in vegetalibus hyphis, solitaria, laevibus, flavo-brunnea, unicellulares, 3–7 µm in diametro, media magnitudine 3.8 µm. Intercalares, globosa chlamydosporae solitaria vel in brevicatenatis producuntur. Phialosporae haud visae.

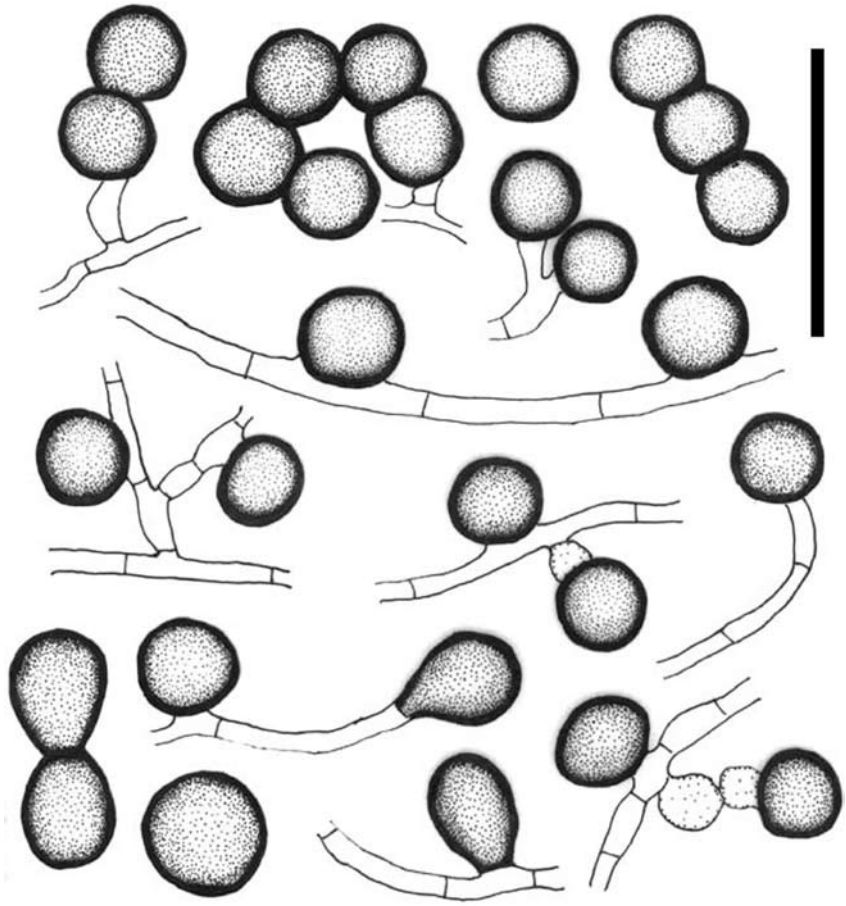

Fig. 1. Conidia and conidiophores of *Humicola senseletii* (holotype). (bar = 25 µm)

Holotype: From soil of a rice field in Wuchang, Hubei Province, China, 13 Oct 2004, Y. L. Jiang, HSAUP II $_{04}$6200, dried culture (holotype), and ex-type living culture.

Colonies on PDA effuse, greyish brown, reverse dark brown. Mycelium superficial and immersed: hyphae subhyaline to pale yellowish brown, branched, septate, smooth, 1–3 µm wide (n = 30). Conidia globose, produced directly on the sides of vegetative hyphae, solitary, smooth, yellowish brown, unicellular, 3–7 (commonly 3.8) µm in diameter (n = 50). Chlamydospores intercalary, globose solitary or in short chains. Phialospores not seen.

Etymology. – Refers to the small conidia.

Habitat. – In soil.

Distribution. – Known only from the type location in China.

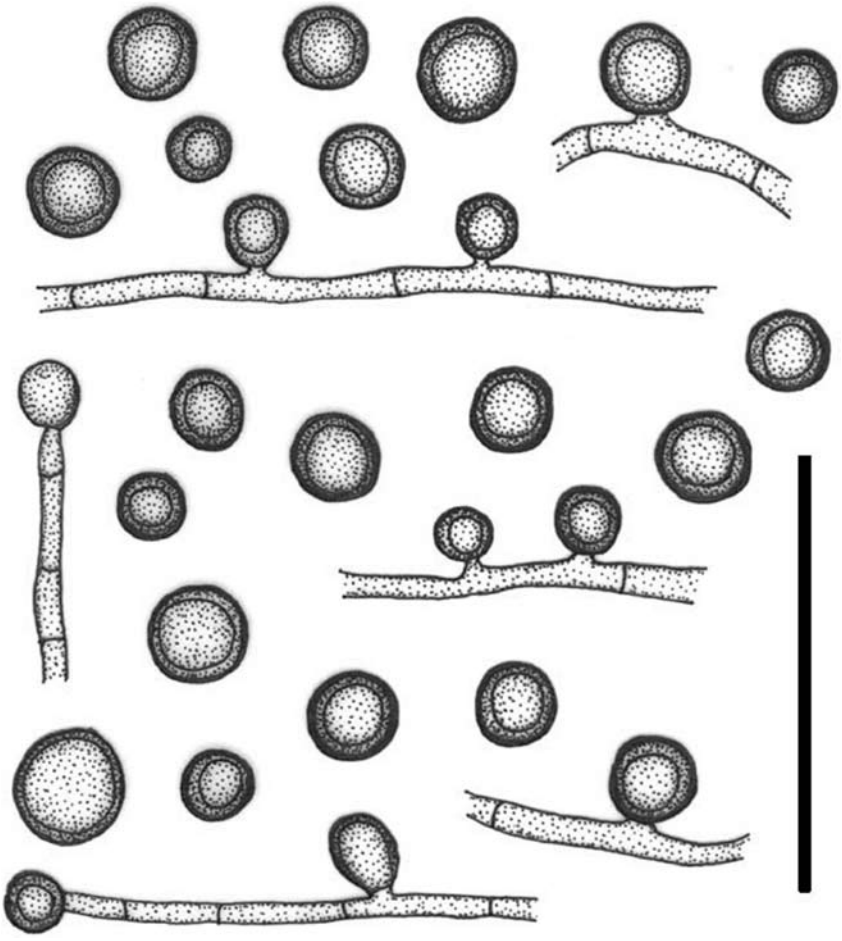

Fig. 2. Conidia and conidiophores of *Humicola subminima* (holotype). (bar = 25 µm)

Discussion

The two species exhibit the key morphological characters of *Humicola*, which produce abundant aleurospores that are stabilized and dominant in the culture (Fassatiová 1967).

Humicola senseletii morphologically resembles *H. fuscoatra* (Traaen 1914), *H. atra* (De Bertoldi 1976) and *H. nivea* (De Bertoldi 1976). However, *Humicola fuscoatra* produces light brown and thin-walled conidia rarely in catenation, which are different from *H. senseletii*. Additionally, the size of conidia of *H. fuscoatra* (6.9–12 µm) is larger than those of *H. senseletii*. *Humicola atra* differs from *H. senseletii* mainly in having darker (dark brown to black) and rarely in chains

conidia. *H. nivea* is separated from *H. senseletii* by having golden-brown to brown, slightly rough and never pear shaped conidia.

The size of conidia of *H. subminima* is similar to that of *H. minima* (Fassatiová 1967) and *H. indica* (Agarwal 1982), but *H. minima* differs *Humicola subminima* in having very slender hyphae (1.3–1.7 µm wide), pale yellowish brown conidia. *Humicola minima* produces some conidia in a double-celled formation with the bearing cell, which is different from *Humicola subminima*. The shape (globose to elliptical) and color (smoky-brown) of conidia of *H. indica* differentiate it from *H. subminima*.

Acknowledgments

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