

# Two *Aschersonia* species from Fujian new to China

QIU Jun-Zhi MA Hui-Fei WANG Ying-Ying GUAN Xiong\*

Key Laboratory of Biopesticide and Chemical Biology, Ministry of Education, Fujian Agriculture and Forestry University, Fuzhou 350002, China

**Abstract:** Two species of entomogenous *Aschersonia*, *Aschersonia turbinata* and *Aschersonia blumenaviensis*, collected from Wuyi Mountains in Fujian Province, are newly recorded from China. *Aschersonia turbinata* is different from other species in *Aschersonia* by its yellowish-white subcylindric stromata when fresh, irregular pycnidia produced in one or more flat or concave disks on a more or less bulbous base and fusoid conidia with conical tips. *Aschersonia blumenaviensis* was originally described from Brazil, it may be confused with *Aschersonia flavocitrina* by sharing same stromatic color (lemon-yellow), however, the latter species has larger spores ( $12-18 \times 2 \mu\text{m}$ ) and longer paraphyses ( $140-180 \mu\text{m}$ ). The illustrated descriptions of the two entomogenous fungi are provided on the basis of Chinese materials.

**Key words:** *Aschersonia*, *Aschersonia turbinata*, *Aschersonia blumenaviensis*, taxonomy

## 采自福建的中国座壳孢菌两新记录种

邱君志 马慧斐 王滢滢 关雄\*

福建农林大学生物农药与化学生物学教育部重点实验室 福州 350002

**摘要:** 两种虫生座壳孢菌包括锥形座壳孢 *Aschersonia turbinata* 和布鲁门拿维安座壳孢 *Aschersonia blumenaviensis*, 是中国新记录种。锥形座壳孢有别于该属其他成员的特征是新鲜时具有微黄白色近圆柱形的子座, 不规则的孢子器产生于1个或更多个平或凹盘里, 梭状的孢子具有锥形尖端。布鲁门拿维安座壳孢最初在巴西描述, 与 *Aschersonia flavocitrina* 的子座均为柠檬黄而易混淆, 但是后者有更大的孢子 ( $12-18 \times 2 \mu\text{m}$ ) 和更长的侧丝 ( $140-180 \mu\text{m}$ )。根据中国材料对这两个虫生真菌进行了详细描述。

**关键词:** 锥形座壳孢, 布鲁门拿维安座壳孢, 分类

## INTRODUCTION

The genus *Aschersonia* (Coelomycete) was erected

by Montagne in 1848 to accommodate type species, *A. taitensis* Mont., from the tropics (Petch 1921; Kirk *et al.* 2001). Subsequently *A. cubensis* Berk. & Curtis

Supported by the National Natural Science Foundation of China (No. 30500005), Key Project of Fujian Provincial Programs for Science and Technology (No. 2006S0002), Fujian Provincial Natural Science Foundation (No. B0610007) and Fujian Provincial Programs for Science and Technology (No. 2007F5022)

\*Corresponding author. E-mail: guanxfafu@126.com

Received: 28-07-2008, accepted: 09-10-2008

collected from Cuba was added into the genus (Mains 1959a). It is characterized by particular globose pycnidia formed in hemispherical or cushion shaped stroma, slender branched conidiophores, and unicellular, fusiform, hyaline conidia that are brightly colored in mass and produced in copious slime and parasitic on homopteran insects (Petch 1921; Mains 1959b; Qiu *et al.* 2004, 2005; Chaverri *et al.* 2008; Chio-Srichan *et al.* 2008). During an investigation on the diversity of microfungi in Fujian Province of China, two interesting entomogenous fungi were found in Wuyi Mountain in October of 2007. The morphological characteristics of the two species fit *Aschersonia* generic concept. However, they both were not reported previously in China. The descriptions in detail for them based on the Chinese specimens were given in the present study.

## 1 MATERIAL AND METHODS

Isolates and dried specimens of the species studied were deposited in Mycology Herbarium at Fujian Agricultural and Forestry University (MHFAFU). The conidiomata, carefully dissected with the aid of a razor blade, were mounted in water or lactic acid-cotton blue on a slide. The microscopic features of the fungus were examined using a light microscope and a stereoscope. Spores were measured from sections cut from the stroma. CB is the abbreviation of Cotton Blue. In presenting the variation in the size of the spores, 5% of measurements were excluded from each end of the range, and are given in parentheses. In the text the abbreviations are used as follows: L = mean spore length (arithmetic mean of all spores), W = mean spore width (arithmetic mean of all spores), Q = variation in the L/W ratios between the specimens studied (quotient of the mean spore length and the mean spore width of each specimen), n = number of spores tested from given number of specimens. Special colour terms are from Kornerup & Wanscher (1967).

## 2 RESULTS AND DISCUSSIONS

### Descriptions

*Aschersonia turbinata* Berk., Ann. Nat. Hist. 2: 192, 1852. Fig. 1

— *Hypocrella turbinata* (Berk.) Petch, Ann. Perad. 5: 535, 1914.

Stromata — Yellowish-white, simple, subcylindric,

about 1mm or more in diameter and 0.5mm or more in height, expanded at the base into a stout horizontal margin up to 0.3mm or more in width, upper surface truncate, sometimes plane, more usually concave, minutely umbilicate in the centre; or egg-cup shaped; or compound with a solid hemispherical or convex basal stroma up to 2mm in diameter, from which arise several (up to 7) cylindric or obconic processes with a concave upper surface; white, becoming black when old, minutely tomentose; moderately hard.

Pycnidia — Pycnidial orifices on the concave disc, sometimes solitary and central; pycnidia irregular, branching internally, CB–, (125–)165(–240) × (55–)127(–200)µm; paraphyses not produced.

Conidia — Narrow-oval, ends pointed, with apparently solid, conical tips about 2µm long, (13.1–)13.5(–14.2) × (1.8–)2.2(–2.4)µm, L = 13.57µm, W = 2.13µm, Q = 6.37 (n=30/1).

Specimen examined — China: Wuyishan Nature Reserve, Wuyishan County, Fujian Province, on homopteran cadaver, 22 X 2007 Qiu 0025 (MHFAFU).

Remarks — *Aschersonia turbinata* is distinguished from other species in *Aschersonia* Mont. by its yellowish-white subcylindric stromata when fresh, irregular pycnidia produced in one or more flat or concave disks on a more or less bulbous base and fusoid conidia with conical tips.

*Aschersonia blumenaviensis* Henn., Hedwigia 41: 27, 1902. Fig. 2

Stromata — Up to 2mm diameter, circular, discoid, up to 1mm thick, margin rounded above and below, constricted at the base, surrounded by a thin fibrillose hypothallus up to 1mm wide, upper surface sometimes umbilicate in the centre; lemon-yellow; minutely pruinose. Pycnidial orifices moderately large and arranged in a peripheral circle, darker than the stroma, scarcely depressed, about 0.05mm diameter, with a thin, scarious margin.

Pycnidia — Flattened-globose, CB–, up to 0.5mm diameter, 0.4mm deep, with a conical neck 0.1mm high; paraphyses 41.5–91.5µm long.

Conidia — Fusoid, ends pointed, (8.5–)9.8(–10.5) × (1.5–)1.8(–2)µm, L = 9.91µm, W = 1.85µm, Q = 5.34–5.38 (n=60/2).

Specimen examined — China: Wanmulin Nature

Reserve, Jian'ou County, Fujian Province, on homopteran cadaver, 19 X 2007 Qiu 0047 (MHFAFU).

Remarks — *Aschersonia blumenaviensis* was originally described from Brazil by Petch (1921). It may be confused with *Aschersonia flavocitrina* (Henn.) by having similar stromatic color (lemon-yellow) (Mains 1959b), however, the latter species has larger spores ( $12\text{--}18 \times 2\mu\text{m}$ ) and longer paraphyses ( $140\text{--}180\mu\text{m}$ ) (Mains 1959b).

**Acknowledgements:** We thank Prof. Ying-Lan Guo, Institute of Microbiology, Chinese Academy of Sciences, for her helpful suggestions and critical review of the manuscript.

## [REFERENCES]

- Chaverri P, Liu M, Hodge KT, 2008. A monograph of the entomopathogenic genera *Hypocrella*, *Moelleriella* and *Samuelsia* gen. nov. (Ascomycota, Hypocreales, Clavicipitaceae), and their aschersonia-like anamorphs in the Neotropics. *Studies in Mycology*, **60**: 1-66
- Chio-Srichan S, Matthieu R, Jamme F, Kascakova S, Rouam V, Paul D, 2008. Photosensitizer effects on cancerous cells: a combined study using synchrotron infrared and fluorescence microscopies. *Biochimica et Biophysica Acta*, **1780**: 854-860
- Kirk PM, Cannon PF, David JC, Stalpers JA, 2001. Ainsworth & Bisby's dictionary of the fungi (9th ed). CAB International, Wallingford. 39-40
- Kornerup A, Wanscher JH, 1967. Methuen handbook of colour. Methuen, London
- Mains EB, 1959a. North American species of *Aschersonia* parasitic on Aleyrodidae. *Journal of Insect Pathology*, **1**: 43-47
- Mains EB, 1959b. Species of *Aschersonia* (Sphaeropsidales). *Lloydia*, **22**: 215-221
- Petch T, 1921. Studies in entomogenous fungi. II. The genera of *Hypocrella* and *Aschersonia*. *Ann Roy Bot Gard Peradeniya*, **7**: 167-278
- Qiu JZ, Huang ZP, Pan JR, Xie XQ, Zhu YP, Zhang SS, Guan X, 2004. Infection behavior of entomopathogenic fungus *Aschersonia aleyrodis* on *Bemisia tabaci*. *Mycosystema*, **23**(1): 115-121
- Qiu JZ, Huang ZP, Pan JR, Xie XQ, Zhu YP, Fang F, Zhang SS, Guan X, 2005. RAPD and large subunit nuclear rDNA sequence analyses of the entomogenous fungus *Aschersonia*. *Chinese Journal of Agricultural Biotechnology*, **2**(2): 85-90

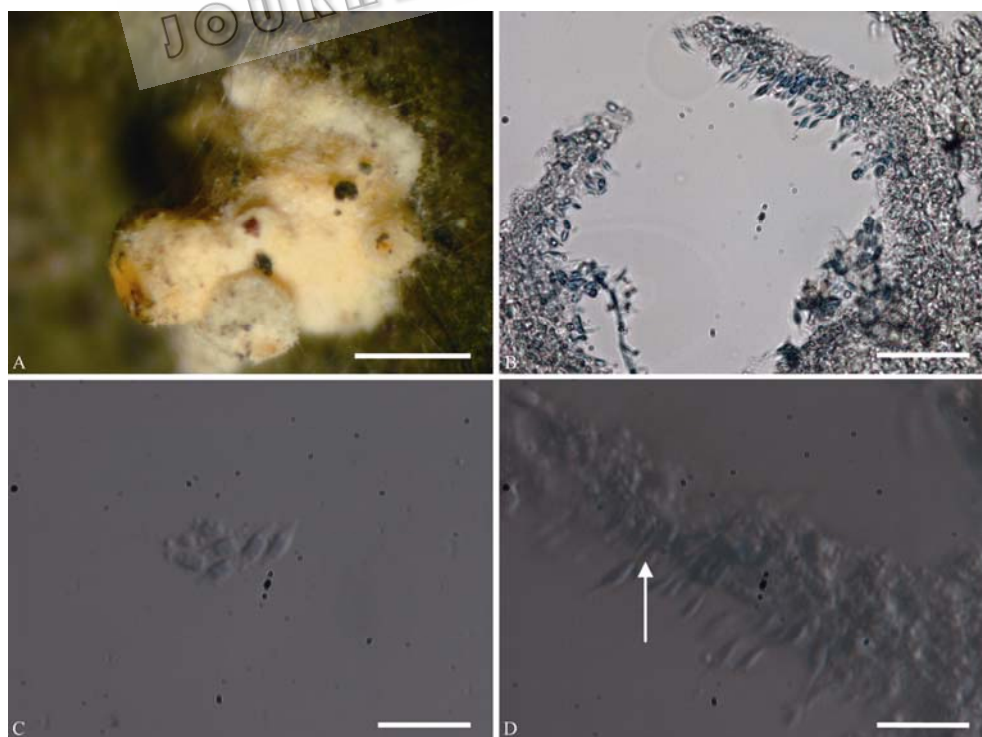


Fig. 1 Microscopic structures of *Aschersonia turbinata* Berk. A: Stroma, bar=0.5mm; B: Globular pycnidia, bar=50 $\mu\text{m}$ ; C: Conidia, bar=20 $\mu\text{m}$ ; D: Conidiogenous cells, bar=20 $\mu\text{m}$ .

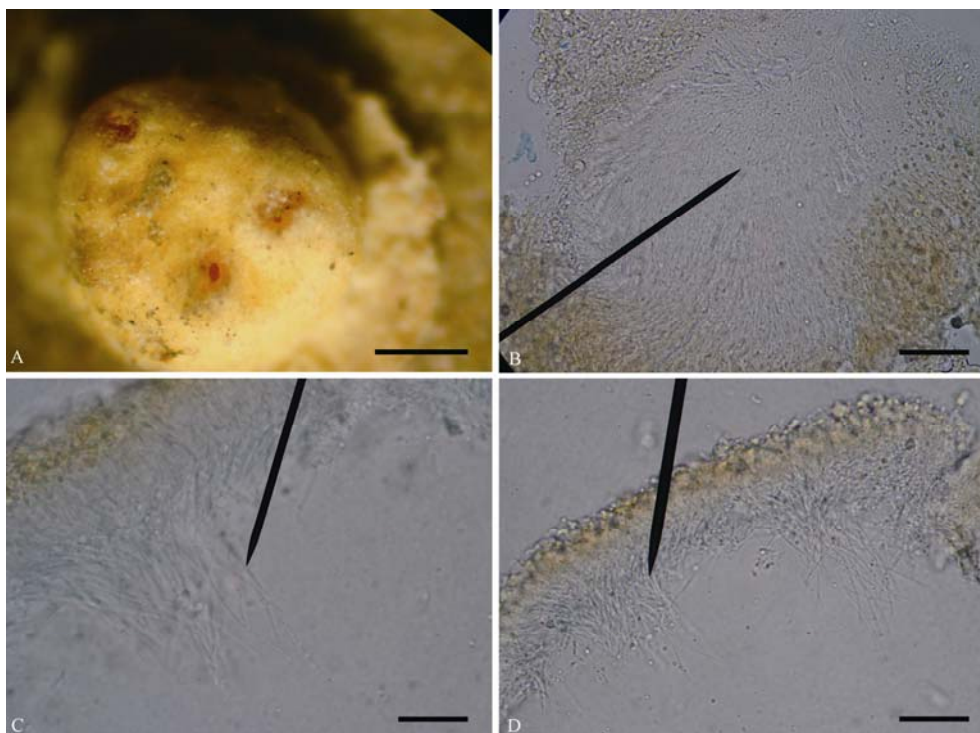


Fig. 2 Microscopic structures of *Aschersonia blumenaviensis* Henn. A: Stroma, bar=0.5mm; B: Pycnidia, bar=50 $\mu$ m; C: Filiform paraphyses, bar=20 $\mu$ m; D: Paraphyses and conidia, bar=20 $\mu$ m.

JOURNALS.IM.AC.CN