*Taiwania*, **51**(3): 210-213, 2006

# The Merosporangiferous Fungi from Taiwan (VI)：Two New Records of *Piptocephalis* (Piptocephalidaceae, Zoopagales, Zygomycetes)

Hsiao-Man Ho[(1)]

(Manuscript received 23 December, 2005; accepted 15 March, 2006)

**ABSTRACT:** Two merosporangiferous fungi named *Piptocephalis debaryana* and *P. tieghemiana* are reported for the first time in Taiwan. Descriptions, photographs and short discussion are provided.

**KEY WORDS: Merosporangiferous fungi, *Piptocephalis*, Taiwan, Zygomycetes.**

## INTRODUCTION

The genus *Piptocephalis* de Bary (Piptocephalidceae, Zoopagales, Zygomycetes) comprises ca. 20 species (Gräfenhan, 1998; Kirk et al., 2001). Among them, three have been reported in Taiwan hitherto (Ho, 2003; 2004). Members of *Piptocephalis* bear sporophores dichotomously branched several times. At the branch apex, a sterile deciduous head cell is usually produced. Many uniseriate merosporangia are born on the head cell. The number of spores contained within a merosporangium is variable. The mature spores remain dry or are enclosed in a liquid drop (Kirk, 1978). Species of *Piptocephalis* are known to be obligate parasites of other fungi mainly in the Mucorales. The known habitats include dung, soil, and leaf litters. This paper intends to describe two additional new records of *Piptocephalis* isolated from mouse dung in Taiwan.

## MATERIALS AND METHODS

Dung samples were collected from Hsintien, Taipei County, and carried back to the lab. in sterile glass tubes. Each sample was placed on moist filter paper in a Petri-dish. The plates were incubated at 24℃ for a week. Then, the plate were observed under a dissecting microscope. Sporophores of *Piptocephalis* were transferred along with its host to fresh corn meal agar plates and incubated at 24℃. After one week, the regenerated, mature sporangia of *Piptocephalis* were transferred again by touching mature sporangia with a sterilized needle to pre-marked spots on fresh corn meal agar plates. A day after the inoculation, the spores of mucoraceous host were inoculated in the vicinity of the parasite. After 4-7 days, the host was found parasitized by the *Piptocephalis* species.

Microscopic characteristics were examined by light and scanning electron microscope as described previously (Ho, 2004).

All of the examined slides and cultures were deposited at the mycology laboratory, Department of Science Education, National Taipei University of Education, Taipei, Taiwan.

1. Department of Science Education, National Taipei University of Education, 134, Sect. 2, He-Ping E. Rd., Taipei 106, Taiwan. Tel: 886-2-27321104 ext. 3319; Email: ho@tea.ntue.edu.tw

## TAXONOMIC TREATMENT

***Piptocephalis debaryana*** B. S. Mehrotra, Proc. Natl. Sci. India, B. 30 (4): 370-372. 1960.

Fig. 1

Cultures growing on *Mucor* sp. on CMA at 24℃ originally hyaline becoming buff at maturity. Sporophores arising from the media, occasionally from rhizoids, at first ascending, becoming prostrate and stolon-like; main stalks at first smooth becoming distinctly longitudinally striate when mature, septate, 12.5-22.0 μm wide, up to 12 mm long; from the main stalk producing a fertile branch system consisting up to 8 successive dichotomous branches, branches of primary dichotomies often relatively short, each giving rise to long branches, 10-18 μm wide, penultimate branches 20-40 × 3-4.2(-5) μm, faintly striate; ultimate branches 4-38 × 3.5-4.5 μm, smooth; head cells deciduous, mainly 4-lobed, (11-)12-13(-15) μm in diam and (7-)8-9.5 μm high, bearing up to 40 merosporangia; merosporangia 22-23 × 3 μm, cylindrical with rounded ends, containing 4 spores; spores cylindrical, 4-5 × 3 μm, smooth; spore head forming a liquid droplet at maturity; zygospores not observed.

臺灣大學博碩士論文 期刊資料庫

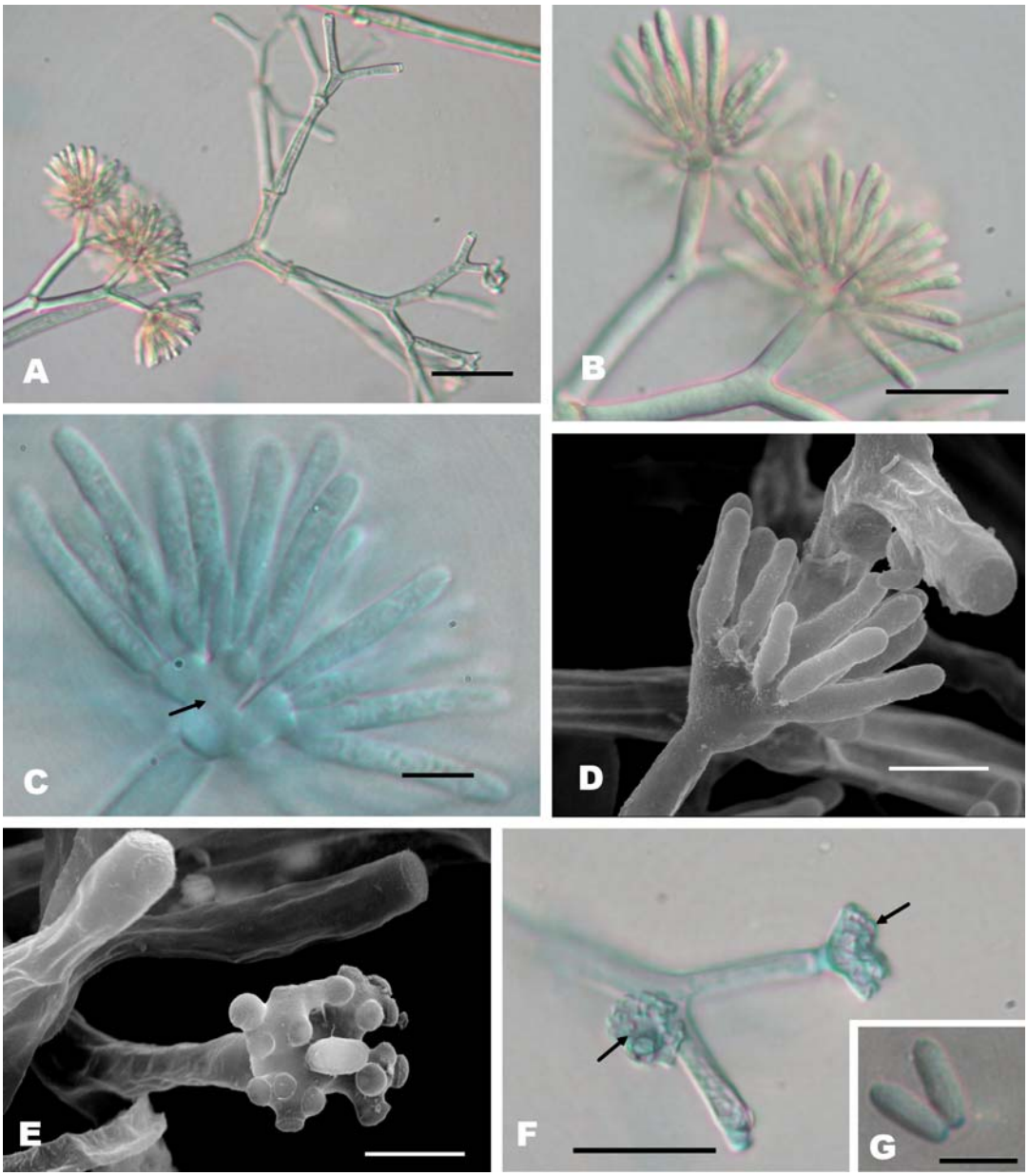



Fig 1. *Piptocephalis debaryana*. A-C, F, G, LM, DIC; D, E. SEM. A: Terminal portion of typical sporophore. Bar = 30.0 µm. B: Ultimate branches of a sporophore with head cells and nearly mature merosporangia. Bar = 20.0 µm. C: Nearly mature merosporangia and head cell (arrow) on the ultimate branch. Bar = 5.0 µm. D: Young merosporangia and head cell on the ultimate branch. Bar = 5.0 µm. E:. One head cell on the ultimate branch. Bar = 5.0 µm. F: Two head cells (arrows), one on the ultimate branch, the other detached. Bar = 20.0 µm. G: mature spores. Bar = 5.0 µm

Notes: This fungus is identified as *P. debaryana* based on the following distinguished characters: spore-heads enclosed in liquid droplets when mature; deciduous, large, lobed head cells; dichotomously branching fertile systems; cylindrical spores and the 4-spored merosporangia. The closely related species *P. cruciata* van Tieghem differs in having tripartite and quadripartite ramification and longer ultimate branch (Gräfenhan, 1998; Mehrotra, 1960).

Specimens examined: *D94032402*, parasitized on *Mucor* sp, isolated from mouse dung, Hsintien, Taipei Co., March, 2005.

***Piptocephalis tieghemiana*** Matruchot. Bull. Soc. Mycol. France 16: 58-64. 1900. Fig. 2

Colonies growing on *Mucor* sp. on CMA at 24℃ at first hyaline becoming Buff at maturity. Sporophores arising from the media, erect or ascending; main stalks 6.5-10 µm wide, becoming

臺灣大學學術期刊資料庫

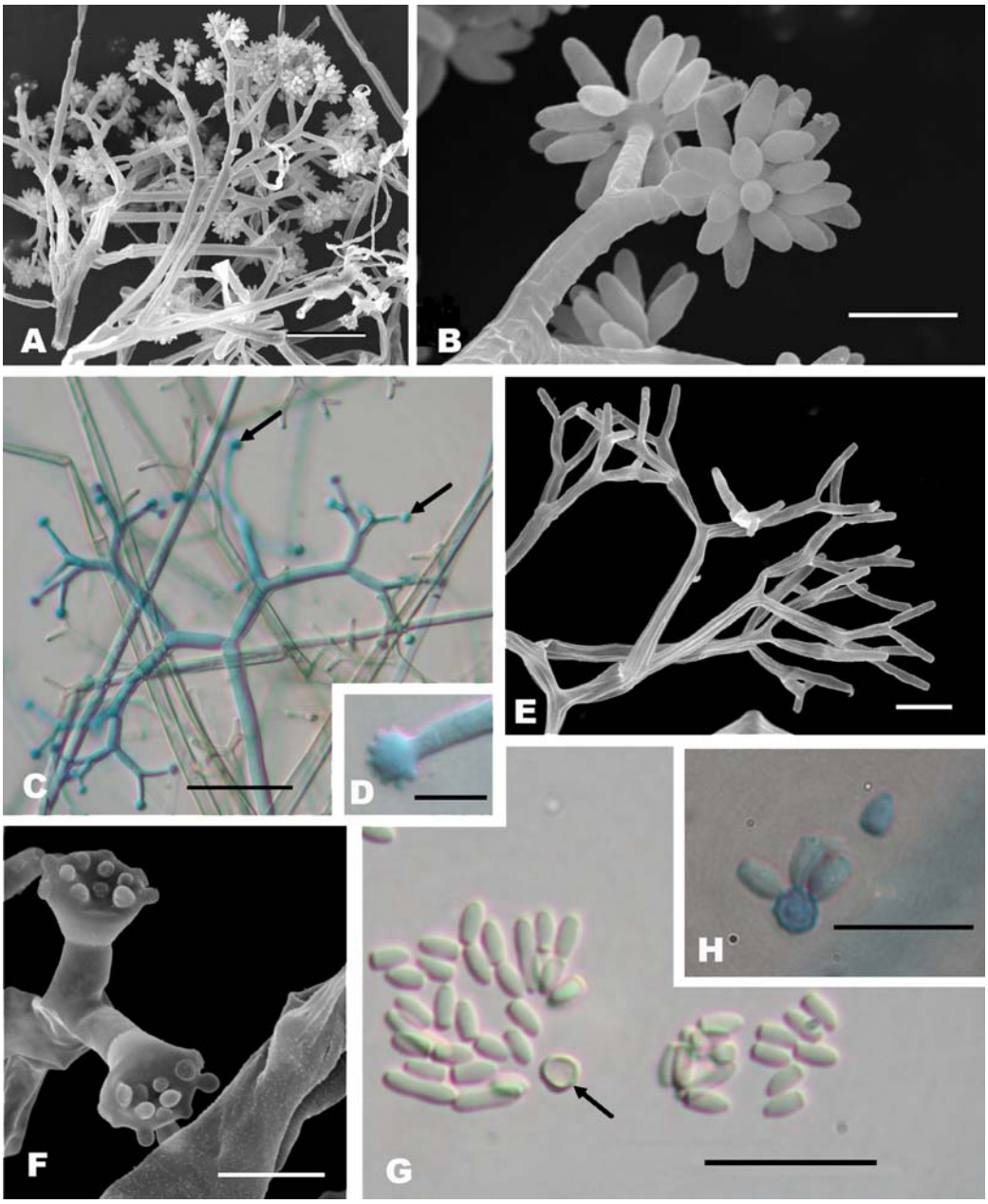



Fig 2. *Piptocephalis tieghemiana.* A, B, E, F, SEM; C, D, G, H, LM, DIC. A: Terminal portion of typical sporophore. Bar = 50.0 μm. B: The ultimate branches of a sporophore showing young merosporangia on head cells. Bar = 5.0 μm. C: Young head cells (arrows) on the ultimate branch. Bar = 20.0 μm. D: One head cell on the ultimate branch. Bar = 5.0 μm. E: Terminal portion of sporophore after head cells detached. Bar = 10.0 μm. F:. Two head cells on the ultimate branch, depressions on the top side is caused by dehydration. Bar = 5.0 μm. G: Mature spores and head cell (arrow). Bar = 30.0 μm. H: One head cell with 3 spores attached. Bar = 30.0 μm.

distantly septate in age; this and the lower portion of the fertile branch system becoming distinctly longitudinally striate in age; the fertile branch system consisting of up to 7 successive dichotomies; branches of primary dichotomies often relatively short, 12.5-44 × 5-10 μm, each giving rise to long branches up to 200 μm long, becoming distantly septate; septa simple; penultimate branches 5-16 × 2-4 μm; ultimate branches 5-14 × 1.2-2.5 μm; head-cells deciduous, globose or obconical, 4-4.5 × 4-5 μm, bearing 20-30 merosporangia; merosporangia 6.8-7 × 2-3(-3.5) μm, containing 2 spores; spores bullet shaped, smooth-walled, 4-5 × 2-3 μm; spore heads remaining dry at maturity. Zygospores not observed.

Notes: This fungus is identified as *P. tieghemiana* based on the following distinguished characters: spore heads remaining dry when mature;

臺灣大學農業術期刊資料庫

deciduous, small, globose head cells; 2-spored merosporangia and dichotomously branching fertile system. The closely related species *P. lepidula* (Marchal) R. K. Benjamin differs in the mode of distal spore formation which is budding from the basal one (Gräfenhan, 1998; Zycha et al., 1969).

Specimens examined: *D94032401*, parasitized on *Mucor* sp, isolated from mouse dung, Hsintien, Taipei Co., March, 2005.

## ACKNOWLEDGEMENTS

This study was supported by grant NSC92-2621-B-152-001 from National Science Council, Taiwan.

## LITERATURE CITED

Gräfenhan, T. 1998. Taxonomic revision of the genus *Piptocephalis* (Fungi). Master thesis. Mathematisch-Naturwissenschaftlichen Fakultät der ernst-Moritz-Arndt-Universiät. Greifswald, Holland. 102pp.

Ho, H.-M. 2003. The Merosporangiferous Fungi from Taiwan (III): Three New Records of Piptocephalidaceae (Zoopagales, Zygomycetes). Taiwania **48**: 53-59.

Ho, H.-M. 2004. The Merosporangiferous Fungi from Taiwan (IV): Two New Records of *Piptocephalis* (Piptocephalidaceae, Zoopagales). Taiwania **49**: 188-193.

Kirk, P. M. 1978. A new and unusual species of *Piptocephalis* (Mucorales). Trans. Brit. Mycol. Soc. **70**: 335-340.

Kirk, P. M., P. F. Cannon, J. C. David and J. A. Stalpers, eds. 2001. Dictionary of the fungi. 9th. Ed. CABI International, Wallingford, UK. 655pp.

Mehrotra, B. S. 1960. Studies on Mucorales III. *Piptocephalis debaryana* sp. nov. Proc. Natl. Acad. Sci. India, B, **30**: 370-372.

Zycha, H., R. Siepmann and G. Linnemann. 1969. Mucorales. J. Cramer. Germany. 355pp.

# 台灣管狀孢子囊接合菌(六)：兩種頭珠黴屬新紀錄種

何小曼[1]

(收稿日期：2005 年 12 月 23 日；接受日期：2006 年 3 月 15 日)

## 摘　　要

本文描述兩種頭珠黴屬接合菌 *Piptocephalis debaryana* 及 *P. tieghemiana*，兩者均為臺灣的新紀錄種，文中並提供照相及與接近種類比較之簡短討論。

關鍵詞：管狀孢子囊接合菌、頭珠黴屬、臺灣、接合菌綱。

1. 國立台北教育大學自然科學教育系，106 台北市和平東路 2 段 134 號，臺灣。Tel: 886-2-27321104 ext. 3319; Email: ho@tea.ntue.edu.tw

臺灣大學學術期刊資料庫