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

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**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 (Piptocephalidaceae, 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°C 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°C. 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.

**TAXONOMIC TREATMENT**


![Fig. 1](image-url)  
Cultures growing on *Mucor* sp. on CMA at 24°C 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 x 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 x 3 µm, cylindrical with rounded ends, containing 4 spores; spores cylindrical, 4-5 x 3 µm, smooth; spore head forming a liquid droplet at maturity; zygospores not observed.

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).


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

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

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;
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).


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**LITERATURE CITED**


**台灣管狀孢子囊接合菌(六)：兩種頭珠黴屬新紀錄種**

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**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。