

The Merosporangiferous Fungi from Taiwan (V): Two New Records of *Coemansia* (Kickxellaceae, Kickxellales, Zygomycetes)

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ABSTRACT: Two species of *Coemansia* (Kickxellaceae, Kickxellales) are reported as new records from Taiwan. They are *C. acicurifera* Lindner and *C. interrupta* Lindner. In this report, descriptions, distribution and photographs of both fungi are given.

KEY WORDS: *Coemansia*, merosporangiferous fungi, Taiwan, Zygomycetes.

INTRODUCTION

The genus *Coemansia* (Kickxellaceae, Kickxellales, Zygomycetes) was established by van Tieghem and Le Monnier (1873) to comprise a group of species characterized by: 1. slowly growing on culture media; 2. asexual reproduction by means of elongate-cylindrical to fusiform sporangiospores formed in one-spored sporangiola borne on the lower surface of sporocladia produced on sporangiophores; 3. sporangiophores bright yellow, erect or ascending, septate, simple, regularly or irregularly branched; 4. acrogenous formation of sporocladia that are laterally disposed by continued growth of the fertile axis of the sporangiophore and are stalked, elongate, nearly straight, slightly arcuate, septate and produce ellipsoidal to elongate-ovoid pseudophialides arranged in more or less transverse rows with one or two terminal sterile cells; 5. sexual reproduction by means of thick-walled, smooth zygospores formed from the fusion of small gametangia (Benjamin, 1959; Kwansa *et al.*, 1999).

Coemansia was isolated originally mostly from dung of small animals, especially rats and mice (Linder, 1943). However, its occurrence in forest and grassland soil or rhizospheres of wheat and barley were also reported (Chien, 1971; Kwansa *et al.*, 1999; Kurihara *et al.*, 2000; Warcup, 1951). To date, 17 species and one variety have been described (Kurihara *et al.*, 2000).

In Taiwan, reports regarding *Coemansia* are rare. Chien (1969) reported a fungus from Taiwan as *Coemansia formosanensis* (*nomen nudum* Chien, 1969) or *C. formosensis* (Chien, 1994), but these names were never validly described. Kurihara *et al.* (2000) reported a new species *C. furcata* Kurihara, Tokumasu & C.-Y. Chien, which was combined with Chien's isolates of *Coemansia* from Taiwan (*C. formosensis*, "*formosanensis*" Chien (1969), *nomen nudum*). This is the only species of *Coemansia* reported in Taiwan. In the present paper, the

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authors describe two more species of *Coemansia* new to Taiwan, which were found during serial investigations of Taiwan Zygomycetes (Ho, 2000; 2001; 2002; Hsu, 1989), *Coemansia aciculifera* (Fig. 1) and *Coemansia interrupta* (Fig. 2).

MATERIALS AND METHODS

Soil samples were collected from country roadside or in forest, and brought to laboratory in plastic bags. Two to three milligrams of soil particles were placed on corn meal agar plates. For the dung samples, dung of herbivores, small omnivorous rodents or amphibians were collected from forests, national parks, school campuses and houses, and then carried back to the laboratory in clean containers. Each sample was placed on moist filter paper in a Petri dish. The plates were left on a bench at room temperature, incubated for *ca.* 2 weeks, and then observed using a dissecting microscope. When the bright yellow sporangiophores of *Coemansia* were found, they were transferred by touching the mature sporocladia with a sterilized needle and transferred to a new 1/3 malt extract-yeast extract agar (1/3 MEA) plate. Slides were prepared of the ten days old culture by using tap water or lactic acid-cotton blue (cotton blue, 0.5 g; 90% lactic acid, 1 L) as mounting media (Kurihara *et al.*, 2000). They were observed and photographed using light and scanning electron microscopes.

SEM

Pertinent materials were selected under a dissecting microscope and fixed for 1 hr with 2.5% glutaraldehyde in distilled water, and post-fixed for 1 hr with 1% osmium tetroxide in distilled water. The materials were washed with distilled water and dehydrated in a graded acetone series. Specimens were dried in a critical point dryer, coated with gold, observed, and photographed with a Hitachi S-520 scanning electron microscope (SEM) at 20 KV.

LM

Materials observed were selected under a dissecting microscope and mounted in a drop of water or lactic acid – cotton blue. Photographs were taken with a Leica MPS32 light microscope (LM).

All examined specimens, slides and pure cultures are deposited in the mycology laboratory, Department of Natural Science Education, National Taipei Teachers College, Taipei, Taiwan.

TAXONOMIC TREATMENT

Coemansia aciculifera Linder, Farlowia 1: 49-77, Plate 4I-J. 1943.

Fig. 1

On 1/3 MEA, colonies growing slowly, light yellow. Sporangiohores slender, at first ascending later prostrate on the agar media surface forming new sporangiophores at the touch point, simple or irregularly branched, not furcated or ternate, distantly septate, over 600 μm long, 8.0-9.5 μm in diameter. Sporocladia distantly spaced (70-213 μm apart) forming on simple conidiophores or after branching on upper fertile region. Sporocladial stipe 1-celled, 25.2-31.5(-36.5) x (3.8-)5.7-6.9 μm . Sporocladia 8-10 septate, (44.7-)45.4-50(-53.0) x 6.3-8.2 μm , nearly parallel to the sporangiophore, the sterile apical cell recurved and tapering to the

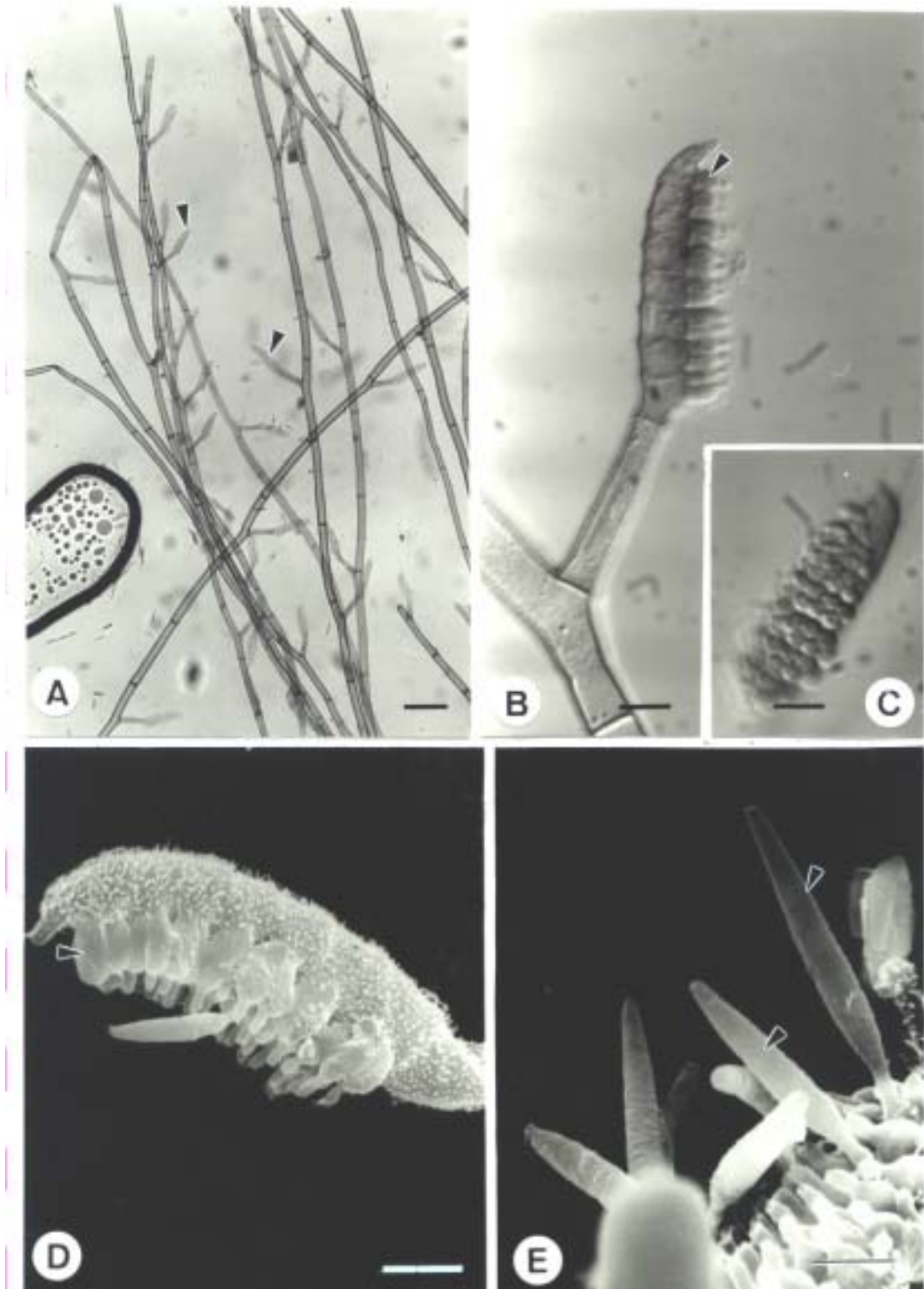


Fig. 1. *Coemansia aciculifera*, A-C, LM; D & E, SEM. A: Sporangiophores with sporocladia (arrow heads), bar = 50 μm . B: Sporocladium on stipe after sporangiospores detached showing pseudophialides (arrow head), bar = 10 μm . C: Lower surface of sporocladium showing pseudophialides on rows, bar = 10 μm . D: Sporocladium with pseudophialides (arrow head) and one sporangiospore, bar = 5 μm . E: Sporangiospore (arrow heads) on pseudophialide, bar = 3 μm .

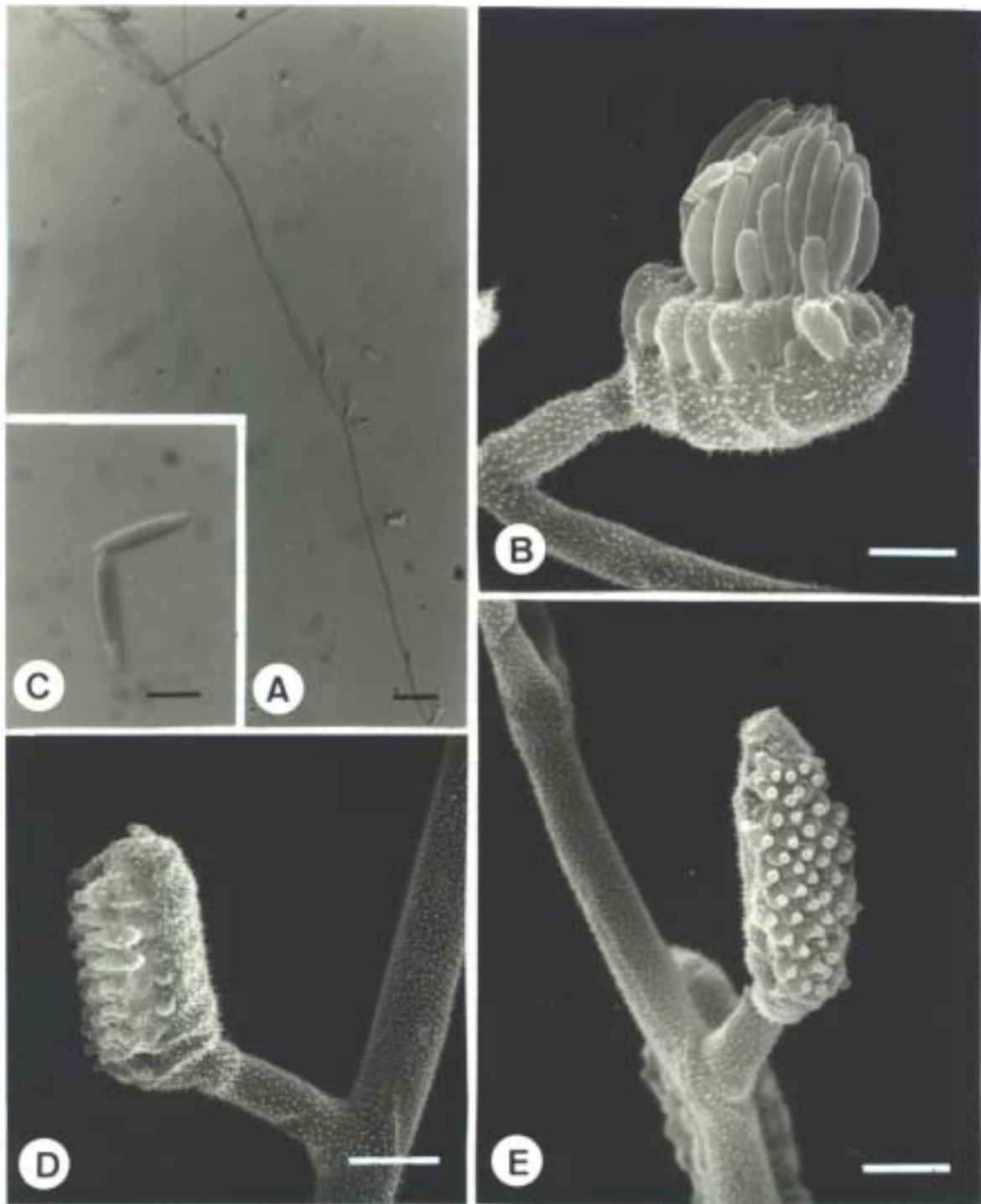


Fig. 2. *Coemansia interrupta*, A & C, LM; B, D & E, SEM. A: Portion of a sporangiophore with sporocladia, bar = 50 μm . B: Developing sporocladium with pseudophialides and sporangiospores, bar = 3.6 μm . C: Two detached sporangiospores, bar = 10 μm . D: Mature sporocladium with pseudophialides after sporangiospores detached, bar = 5 μm . E: Lower surface of the sporocladium showing pseudophialides, bar = 5 μm .

bluntly rounded tip. Pseudophialides 3-6 in one transverse row, forming on the lower surface of sporocladia, ellipsoidal, 4.2 x 2.8 μm . Sporangiospores acicular, (11.3-)12.6-15.0(-17) x 1.6-2.2 μm , tapering towards the rounded ends.

Specimen examined: *SKY0103*, isolated from soil, Kuanyuan, Hualien, Taiwan. Feb. 2002.

Distribution: Japan (Indoh, 1962), Lithuania (Peculyte & Adamonyte, 2004), Taiwan, and UK (Kwasna *et al.*, 1999).

Note: This species is characterized by the relatively simple or irregularly branched sporangiophores bearing distantly spaced sporocladia and the elongate sporangiospores.

Coemansia interrupta Linder, Farlowia 1: 49-77, Plate 4L. 1943. Fig. 2

On 1/3 MEA, colonies growing slowly, pale yellow. Sporangiohores slender, at first ascending, some grow to the Petri-dish cover in one week, later prostrate on the agar media surface, simple or occasionally irregularly branched, over 1.5 cm high, 8.0-17.0 μm in diameter, bearing the sporocladia close together in clusters of 2-15, often continuing to grow and to produce after a brief interval, additional clusters of sporocladia. Sporocladia stipe 1-celled, 10.7-13.0 x 3.8-5.3 μm . Sporocladia 9-12 septate, (29.0-)37.8-45.4(-50) x 6.3-7.6 μm , the basal cell angularly upturned so that the sporocladia approximately parallel to the main axis of the sporangiophore, the terminal cell sterile and recurved. Pseudophialides ovoid or elongate ellipsoid, (2.2-)4.0-5.0 x 1.8-2.2 μm . Sporangiospores narrow-fusoid or subcylindrical, (11.3-)12.0-15.0 x 1.9-2.5(-3.0) μm .

Specimens examined: *D10202*, isolated from mouse dung, Miaoli, Taiwan, Jan. 2002; *Hsu001*, isolated from frog dung, Wulai, Taipei County, Taiwan, May, 1988.

Distribution: Taiwan.

Note: This species is characterized by the sporocladia which are occurring in cluster and the conidia are shorter and stouter and not so sharply pointed at the ends.

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台灣管狀孢子囊接合菌之研究(V)：兩種下梳黴屬新紀錄種

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摘 要

本文報告兩種具單孢子管狀孢子囊的下梳黴屬接合菌 *Coemansia aciculifera* Lindner (針狀下梳黴) 及 *C. interrupta* Lindner (間斷下梳黴)，兩者均為台灣的新紀錄種。本文對此兩種真菌作形態觀察並提供描述、分佈地點及光學與電子顯微鏡照片。

關鍵詞：下梳黴屬、管狀孢子囊真菌、台灣、接合菌綱。

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