

(Short Communication)

***Pestalosphaeria hansenii*, the teleomorph of an anamorph *Pestalotiopsis* sp. on mangrove (*Kandelia candel* (L.) Druce) leaves and its ascomatal formation under laboratory conditions**

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Abstract. The connection of *Pestalosphaeria hansenii* and a species of *Pestalotiopsis* from mangrove was established. Single ascospore and single conidium cultures grown on autoclaved mangrove leaf sections on Sach's medium produced fruiting structures of both anamorph and teleomorph on the same leaf section, completing the life cycle of this fungus under laboratory conditions.

Key words: Ascomatal formation; Mangrove; *Pestalosphaeria hansenii*; *Pestalotiopsis* sp.

While working on the fungal flora of mangrove (*Kandelia candel* (L.) Druce) leaves in Tzuwei, Taiwan, a pyrenomycetous fungus belonging to the genus *Pestalosphaeria* Barr was observed along with another fungus, a species of the genus *Pestalotiopsis*. Single ascospore isolation was conducted and the pure cultures were grown on conventional laboratory media, including V-8 juice, PDA and cornmeal agar. All single ascospore isolation cultures formed the conidial stage of the genus *Pestalotiopsis* sp. which was identical with those found on mangrove leaves. This finding indicates that the fungal isolate of the genus *Pestalosphaeria* is the teleomorph of this *Pestalotiopsis* sp.. To further prove this teleomorph-anamorph relationship, 6 single ascospore isolation cultures and 6 single conidial isolation cultures were grown on V-8 juice agar and autoclaved corn leaf section (laid on Sach's medium in a 6 cm Petri-dish) and incubated at 25°C under 14 h photoperiod regime. Two weeks after incubation, the cultures from both source inocula produced only conidia but no perithecia on both culture conditions. We then grew both source inocula on autoclaved mangrove discs (3 x 2 cm) which were also laid on Sach's medium in a 6 cm Petri-dish. In this trial, perithecia of

the genus *Pestalosphaeria* and acervuli of *Pestalotiopsis* sp. formed on the same inoculated mangrove leaf discs were observed regardless of the sources of inoculum, i. e., either from single ascospore isolation cultures or single conidial isolation cultures. The result definitely proved the teleomorph-anamorph connection of this mangrove leaf surface fungus. After six successive cultivations of both single ascospore and conidial isolation cultures on autoclaved mangrove leaf discs the potential of perithecial formation remained as high as the original cultures. Ascospore and conidial cultures showed the same potential in producing perithecia on autoclaved mangrove leaf discs. This is the first report on the formation of perithecia of this fungus under laboratory conditions.

Description

***Pestalosphaeria hansenii* Shoemaker & Simpson**

Ascomata hypophyllous, scattered to aggregated, immersed in host mesophyll with an erumpent neck, globose to depressed globose, up to 200-270 μm in diameter, 180-267 μm high, unilocular, glabrous, dark brown, ostiole circular (Fig. 1, A). Asci unitunicate

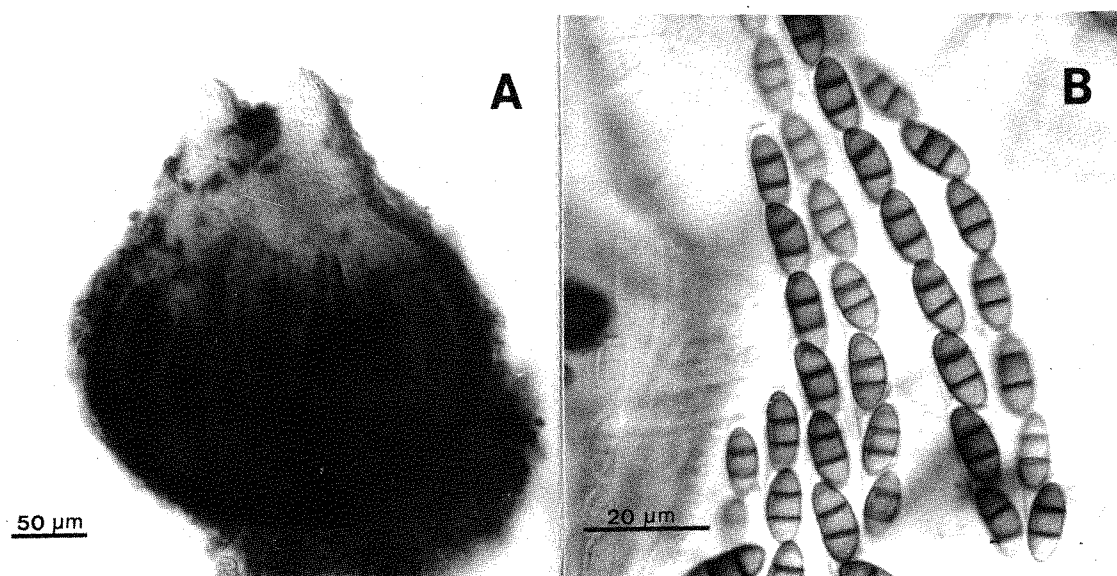


Fig. 1. *Pestalosphaeria hansenii*; A, perithecium filled with asci and ascospores, B, Ascospores.

(Fig. 1, B), cylindrical with a short stipe, apical apparatus with an amyloid annulus, octosporous, $70-100 \times 6.8-8.5 \mu\text{m}$, intermixed with simple, sparsely septate, hyaline, smooth walled paraphyses, $1.5-3.0 \mu\text{m}$ wide. Ascospore uniseriate, ellipsoidal, transversely hexagonal, two-septate, pale brown to amber brown, wall smooth and slightly constricted at the septa, $13.2 (11.5-15.7) \times 5.9 (4.9-6.9) \mu\text{m}$ (Fig. 1, B).

Conidiomata pycnidial later appearing acervular, abundant, hypophyllous, occasionally amphigenous, solitary, immersed with an erumpent apex, $100-180 \mu\text{m}$ in diameter, basal stroma of pale brown closely packed *textura angularis* cells $10-18 \mu\text{m}$ in diameter; walls and apex composed of loosely packed hyaline to subhyaline, thin-walled *textura angularis* to *textura globosa*, cells $15-30 \mu\text{m}$ in diameter. Conidiogenous cells holoblastic, proliferating percurrently with one to three indistinct anellations arising from the uppermost layer of cells of the basal stroma, cylindrical to lageniform, hyaline, smooth walled, $9-12 \times 2-3 \mu\text{m}$. Conidia fusiform, straight, four-septate, $23.46 (21.20-25.09) \times 5.79 (4.24-6.54) \mu\text{m}$; central cell dark brown, adjoining cells brown, apical cell hyaline, bearing 2 to 4 filiform, flexuous appendages $(9-17) \times 0.5-1 \mu\text{m}$, basal cell hyaline to subhyaline bearing a single, central, filiform appendage $(4-5) \times 0.5-1 \mu\text{m}$.

Discussion

The results presented here demonstrated the formation of ascomata of *Pestalosphaeria hansenii*, the teleomorph of an isolate of *Pestalotiopsis* sp. on mangrove leaves under laboratory conditions, and experimentally completed the life cycle of *Pestalosphaeria hansenii* under laboratory conditions. We identified our isolate as *P. hansenii* simply based on the morphology and dimensions of ascospores and conidia which are very close to and in the range of those of *P. hansenii* reported by Shoemaker and Simpson (1981) and Rag Raj (1985). The pathogenicity of present isolate to mangrove leaves has not been tested, however, the fungus was frequently isolated from young leaf discs indicating that the fungus is probably a leaf inhabiting one behaving as a weak pathogen. *Pestalosphaeria hansenii* reported by Shoemaker and Simpson (1981) acted as a pathogenic fungi on pine needles. In our survey of the fungal flora of mangrove leaves at Tzuwei, *P. hansenii* has been frequently isolated all year round from either undetached green or fallen yellow and brown leaves. It is clearly showed that *P. hansenii* is one of the main components of fungal community on mangrove leaves in that particular area of mangrove forest.

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Pestalosphaeria hansenii, 水筆仔紅樹林葉上一株 *Pestalotiopsis* sp. 之有性世代及其子囊殼之形成

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從淡水竹圍水筆仔紅樹林葉片分離到一株屬於子囊菌 *Pestalosphaeria hansenii* 和一株屬於不完全菌 *Pestalotiopsis* sp.。前者之單孢子囊孢子分離培養結果出現後者之分生孢子盤，單孢子囊孢子和單孢分生孢子分離培養在高壓滅菌之水筆仔葉片（葉片置於六公分皿內含五毫升沙克氏培養基）。十天後兩種接種原培養均出現 *P. hansenii* 及 *Pestalotiopsis* sp. 之子囊殼（內有子囊和子囊孢子）及分生孢子盤，結果明確證明兩種菌同屬一種菌之兩種不同世代。這也是本菌初次在實驗室條件下形成子囊殼，也是首次以實驗證明兩株菌同屬一種菌。