

Title : Rock-Inhabiting Fungi from Northern Thailand and Their Ability to Grow in Drought Conditions

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ABSTRACT

Rock-inhabiting fungi (RIF) are specialized organisms with unique morphological characteristics and physiological adaptations that allow them to survive on rock surfaces. One of the adaptations of RIF is the production of melanin, which protects their cells from damage caused by various environmental factors, including extreme temperatures, low water availability, high UV, and solar radiation, dryness, and oligotrophic conditions. However, studies on RIF in Thailand are limited. This study aimed to identify RIF using morphological characteristics and multi-gene phylogeny. A total of fourteen fungal strains were identified, resulting in the description of one new genus, *Helicosporomyces*, eight new species in the genera *Alanomyces* (two species), *Cippomomyces* (three species), *Cladophialophora* (one species), *Coniocheata* (one species), and *Xylaria* (one species), and two previously known species (*Nothophoma gossypicola* and *Aureobasidium melanogenum*). The optimal temperature range for mycelial growth in all strains was between 20°C and 30°C. Moreover, four fungal strains (CMU-2, CMU2-1, LPN12-13, and LPN12-14) were selected and assessed for their potential drought tolerance using polyethylene glycol (PEG) 6000. The results indicated that all fungal strains demonstrated the ability to grow in 10% to 20% PEG and revealed that all fungal strains could produce melanin. *Helicosporomyces granitum* showed the highest melanin production when compared to the other strains.

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