

Thesis Title	Diversity of Saprobic Fungi on Dead Leaves of <i>Magnolia liliifera</i> and <i>Cinnamomum iners</i> in Northern Thailand and Screening for Their Antimicrobial Activity
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ABSTRACT

Saprobic fungi play an important role as decomposers in natural ecosystems. These fungi also have the potential to produce bioactive compounds which can be applied for biotechnological uses. The diversity of fungi on decaying leaves of *Magnolia liliifera* and *Cinnamomum iners* collected in dry season at Doi Suthep-Pui forest, Chiang Mai, Thailand was studied. Thirty-five taxa were identified from *M. liliifera* comprising 8 ascomycetes and 27 asexual taxa. The most abundant species found were *Sporidesmium* sp. (80%), *Colletotrichum fructicola* (70%) and *Stachybotrys parvispora* (70%). For *C. iners*, 17 taxa were identified comprising 2 ascomycetes and 15 asexual taxa. Anamorph of *Eutypa* sp. 2 (60%) and *Pleurophragmium* sp. (60%) were the most abundant species on *C. iners*. A few genera and only one species (*Lasiodiplodia theobromae*) overlapped between the two hosts. The fungal diversity of *M. liliifera* is higher than that of *C. iners*. Distinct fungal communities were found between two hosts on each stage of decomposition and incubation periods. Decaying leaves collected in an early stage of decomposition

supported greater fungal diversity than those collected in a later stage of decomposition on both hosts. Saprobiic fungi were specific to different tissues types (leaf lamina, midrib, petiole). These results provide evidence for host-specificity in saprobiic fungi.

The three taxa obtained from the diversity study of saprobiic fungi on leaves of *M. liliifera* and *C. iners* are probably new to science. These taxa were described, illustrated and the nucleotide sequences of ITS and LSU regions were blasted in GenBank to reveal the closest matches. Molecular phylogenetic is needed to help identify these fungal taxa in the future.

Fungi in family *Planistromellaceae* are saprobes and pathogens on various plants and are characterized by multi or uniloculate ascostromata comprising several layers of brown to black thick-walled cells and pseudoparaphyses are not obvious in mature specimens. The type specimens of *Planistromellaceae* were examined and described including *Comminutispora agavacearum*, *Eruptio acicola*, *Loratospora aestuarii*, *Microcyclus angolensis*, *Mycosphaerellopsis myricariae*, *Planistroma yuccigenum* and *Planistromella yuccifoliorum*. Phylogenetic analyses based on molecular data from LSU and ITS genes provided three different groups represented by the type species of *Piptarthron*, *Planistroma* and *Kellermania*. Three genera; *Kellermania*, *Planistroma* and *Mycosphaerellopsis* were accepted in *Planistromellaceae*, while four other genera are excluded from this family.

Some saprobiic fungi were selected for screening of antimicrobial activity. Nine isolates were extracted for secondary metabolites and crude extracts were separated into four fractions (A: petroleum ether, B: acetone, C: ethanol and D: water). The antimicrobial activity of these extracts was assayed *in vitro* by modified disc diffusion methods against nine pathogenic microorganisms. The results showed that *Stachybotrys parvispora* (JM09), *Clonostachys rosea* (JM13), *Beltrania*

rhombica (JM14), *Fusicoccum aesculi* (JM19-1, JM19-2), Ascomycete sp. (JM25), and *Chaetomium* sp. (CI18) were effective against some test microorganisms. *Clonostachys rosea* (JM13) showed the highest antimicrobial activity with a broad spectrum of activity against several bacteria and fungi. Of these four fractions, ethyl acetates represented the maximum antibacterial activity. FTIR spectrums showed that these antimicrobial compounds are composed of various compounds. The results suggest that saprobic fungi could be a promising resource of useful bioactive compounds.

Keywords: Antimicrobial activity/Fungal diversity/*Planistromellaceae*/Saprobic fungi/Taxonomy/Thailand

