

**Diversity of endophytic fungi isolated from different plant parts of *Acacia mangium*, and antagonistic activity against *Ceratocystis fimbriata*, a causal agent of *Ceratocystis* wilt disease of *A. mangium* in Malaysia**

**ABSTRACT**

*Acacia mangium* is an important wood for commercial products especially pulp and medium-density fibreboard. However, it is susceptible to *Ceratocystis fimbriata* infection, leading to *Ceratocystis* wilt. Therefore, the present work aimed to (i) establish the diversity of endophytic fungi in different plant parts of *A. mangium*, and (ii) evaluate the antifungal potentials of the isolated and identified endophytic fungi against *C. fimbriata*. Endophytic fungal identification was conducted by PCR amplification and sequencing of the internal transcribed spacer 1 (ITS1) and ITS4 regions of nuclear ribosomal DNA. A total of 66 endophytic fungi were successfully isolated from different parts of *A. mangium*; leaf (21), stem (13), petiole (12), root (9), flower (6), and fruit (5). The endophytic fungal isolates belonged to Ascomycota (95.5%) and Zygomycota (4.5%). For Ascomycota 13 genera were identified: *Trichoderma* (28.6%), *Nigrospora* (28.6%), *Pestalotiopsis* (12.7%), *Lasiodiplodia* (9.5%), *Aspergillus* (6.3%), *Sordariomycetes* (3%), and *Neopestalotiopsis*, *Pseudopestalotiopsis*, *Eutiarosporella*, *Curvularia*, *Fusarium*, *Penicillium*, and *Hypoxyton* each with a single isolate. For Zygomycota, only *Blakeslea* sp. (5%) was isolated. Against *C. fimbriata*, *Trichoderma koningiopsis* (AC 1S) from stem, *Nigrospora oryzae* (AC 7L) from leaf, *Nigrospora sphaerica* (AC 3F) from the flower, *Lasiodiplodia* sp. (AC 2 U) from fruit, *Nigrospora sphaerica* (AC 4P) from petiole, and *Trichoderma* sp. (AC 9R) from root exhibited strong inhibition for *C. fimbriata* between 58.33 to 69.23%. Thus, it can be concluded that certain endophytic fungi of *A. mangium* have the potential to be harnessed as anti-*Ceratocystis* agent in future biotechnological applications.