

SHORT COMMUNICATION

Antifungal Properties of Selected Medicinal Plant Species Against *Fusarium* spp. – A Preliminary Study

IZZA NADIRA ABU BAKAR, ABDUL RAFFAR ABDUL RAZAK, MUHAMMAD NUR HAKIM ZULKIFLE, NUR ALIAH ROSLI & YEO FREDDY KUOK SAN*

Faculty of Resource Science and Technology, Universiti Malaysia Sarawak,
94300 Kota Samarahan, Sarawak, Malaysia

*Corresponding author: yksfreddy@unimas.my

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ABSTRACT

Usage of synthetic fungicides has inevitably been one of the agricultural practices in combating crop pathogens and maintaining the quality of production. Although fungicides have been proven to be profoundly effective, excessive and frequent reliance on these synthetic fungicides have caused negative impacts to the environment and human health. Besides that, indiscriminate use of fungicides may lead to the development of resistant strains of pathogenic fungi. The need to find an alternative solution to synthetic fungicides has led to the interest in finding plant-based fungicides. This study aimed to test the antifungal properties of plant extracts from 13 different medicinal plant species towards plant pathogenic fungi. Absolute methanol was used as a solvent to extract the secondary metabolites from the different plant species. The effect of methanolic crude extract at different concentrations (500 µg/ml, 250 µg/ml and 100 µg/ml), from different medicinal plant species, were tested on the growth of two *Fusarium* spp., *FsB* and *FsP*. The assay showed that the methanolic crude extract from six plant species viz. *Alpinia galanga*, *Annona muricata*, *Archidendron jiringa*, *Nephelium lappaceum*, *Polygonum minus* and *Artocarpus* hybrid (Nanchem) had successfully inhibit the radial mycelial growth of either *FsB* or *FsP*, or both. The assay suggested that the six plant species have antifungal properties towards the crop pathogenic fungi tested.

Keywords: antimicrobial, *Fusarium*, plant extracts, methanolic extracts, biofungicides

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Combating plant pathogens has always been a constant struggle for farmers to obtain high yield with good quality produce. Agricultural practices such as application of synthetic fungicides are commonly used to reduce diseases (Brent & Holloman, 2007). However, the excessive usage and frequent reliance of synthetic fungicides, have led to several other problems such as toxicity towards the environment due to the residues of synthetic fungicides (Wightwick *et al.*, 2010), threatening the functionality of human reproductive system by the active compounds (Peraica *et al.*, 1999; Hossain *et al.*, 2010) and emergence of resistant strains. These may cause more severe diseases and outbreaks (Francis & Keinath, 2010). Hence, there is a need to produce a safer and biodegradable fungicides derived from natural resources (Brito-Argaez *et al.*, 2009).

Plant-based compounds are one of the potential resources for production of safer and biodegradable fungicides. Secondary metabolites from plants such as alkaloids, terpenoids, cyanogenic, glucosides, and phenolics are groups of compounds known to be involved in plant defence mechanisms (Bennett & Wallsgrove, 1994; Bravo, 1998; Balasundram *et al.*, 2006). These compounds are the possible candidates for developing biofungicides. For instance, phenolic compounds such as luteolin-7-glucoside, oleuropein, rutin, and tyrosol in olive plants were reported to possess antimicrobial effect against selected pathogens (Báidez *et al.*, 2007; Pereira *et al.*, 2007). The present study aimed to test the antifungal properties of methanolic crude extracts from 13 plant species against two *Fusarium* spp., a common plant pathogenic fungus. Table 1 shows the list of