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Antifungal Activity of *Jatropha curcas* Pericarps and Leaves Extracts

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Abstract

Jatropha curcas usually have a variety of uses especially in traditional medicine such as to relieve pain and skin disease. The oil and aqueous extracts from all parts of plants have the potential to act as insecticide. The objectives of this study were to determine toxicity methanol extracts of *J. curcas* leaves and pericarps; and to analyse the chemical composition of *J. curcas* pericarps and leaves. Various concentration levels of methanol crude extracts of pericarps and leaves (50 µg/mL, 100 µg/mL, 250 µg/mL, 500 µg/mL and 1000 µg/mL) were prepared. The extracts were subjected to analysis on capillary GC/MS to determine the chemical constituents. Antifungal activities were determined by using paper disc diffusion method and the antifungal activities were evaluated after 72 h of incubation period. This study revealed that the leaves and pericarp extracts possessed significant activities against *Trametes versicolor*, *Gleophyllum trabeum* and *Chaetomium globosum*. Leaves and pericarps extracts showed antifungal activity against *T. versicolor* at 500 µg/mL. At the concentration of 1000 µg/mL leaves and pericarps extracts, it exhibited weak to moderate antifungal activity for *T. versicolor*, *G. trabeum* and *C. globosum*. The major components of hexane and dichloromethane (DCM) soluble fraction of methanol extract from pericarps and leaves were 9-octadecanoic acid, hexacosane, 1,2-benzenedicarboxylic acid mono 2-ethylhexyl ester and octacosane. The results suggest that *J. curcas* methanol extracts have weak to moderate antifungal activity against *T. versicolor*, *G. trabeum* and *C. globosum*. Further studies on antifungal and antibacterial activities are required in order to diversify the utilization of *J. curcas* plant.

Introduction

J. curcas Linn is commonly known as physic nut or 'Jarak pagar' in Malay language which belongs to the family *Euphorbiaceae* with approximately 170 known species. *J. curcas* is a perennial non-edible oil crop which is important as an energy crop in biodiesel production. *J. curcas* extracts were found to be able to inhibit the mycelial growth of *Colletotrichum musae* that causes anthracnose disease in bananas (Thangavelu *et al.*, 2004). Its leaf extract was effective in controlling the fungal pathogen *Sclerotium* sp. The chemicals responsible for those effects were suggested to be phorbol esters (Gübitz *et al.*, 1999). Non-durable woods are attacked by wood decaying fungi which have an ability to reduce the strength properties of wood and the wood preservatives that have been used to preserve wood mostly contain toxic compound. The exposure to those chemicals may present certain hazards to domestic animals or human. Due to the problem, the search for environmental-friendly wood preservation is actively progressing. As the leaves and pericarps extracts of *J. curcas* contain some toxic compounds, it is interesting to investigate the extracts of the plant parts, which might be also toxic to the wood-decaying fungi.