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Research Article

Fatty acids composition and antimicrobial activities of *Litsea garciae* pulp and seed extracts

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ABSTRACT

Litsea garciae is a native plant to Borneo Island. The current study aimed to identify and compare the fatty acids composition and antimicrobial activities of the pulp and seed extracts of *L. garciae.* The total lipids of *L. garciae* pulp and seed were extracted with petroleum ether (PE) and Bligh-Dyer (BD) methods and the fatty acids were analysed using gas chromatography. The fatty acids of seed extracts consisted of more than 80% saturated fatty acids whereas the pulp extracts contained a similar percentage of saturated and unsaturated fatty acids (approximately 50%). The predominant saturated fatty acids were palmitic acid followed by stearic acid for both PE and BD lipid pulp extracts. In contrast, the PE and BD lipid seed extracts had a high content of lauric acid followed by palmitic acid. The predominant monounsaturated fatty acid was oleic acid while polyunsaturated fatty acid was linoleic acid for all extracts. As for the antimicrobial activities, PE lipid pulp extract had higher antimicrobial activity against *S. aureus*, *P. aeruginosa*, and *S. epidermidis* than other extracts in both antimicrobial assays. This study showed that the PE and BD lipid pulp and seed extracts had similar major components of fatty acids but with different proportions. In addition, the components of fatty acids might contribute to the antibacterial activities of *L. garciae*.

Keywords: *Litsea*, lipids, GC-MS, petroleum ether, Bligh and Dyer, disk diffusion assay, broth microdilution assay

INTRODUCTION

Litsea garciae is from the Lauraceae family with the common name of engkala in the Malay language. It is a native plant of Borneo Island (Sarawak and Sabah in Malaysia, Brunei, and Kalimantan in Indonesia). *L. garciae* fruit has an oval shape and contains a single seed (Figure 1 and 2). It has a thin peel that turns red when ripens. The creamy white pulp of *L. garciae* fruit is edible and has a flavour reminiscent of the avocado with a soft and creamy texture (Lim, 2012). *L. garciae* fruit is nutritious for its high level of energy, fat, carbohydrate, protein, potassium, sodium, iron, zinc, and vitamin C (Voon and Kueh, 1999; Husen, 2015).

Some parts of the plants such as leaves and barks have been used by the indigenous people as traditional medicines for skin infections, diseases, and burns treatment. For instance, the Selako people apply *L. garciae* leaves and young shoots poultice to the site of skin infections and burns. A warm poultice of *L. garciae* leaves is used by Kayan people to treat diseases such as beriberi. Besides, the pounded and warmed bark of *L. garciae* is used as a poultice for muscular pains and sprained ankles and knees (Lim, 2012). Previous studies utilising different types of solvent

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