Malays. Appl. Biol. (2022) 51(1): 99–118
https://doi.org/10.55230/mabjournal.v51i1.2038

ANTIOXIDANT CAPABILITIES OF *Litsea garciae* BARK EXTRACTS AND THEIR RELATION TO THE PHYTOCHEMICAL COMPOSITIONS

SITI ZALEHA RADUAN[1,2], QAMAR UDDIN AHMED[3*], ABDUL RAZAK KASMURI[1], MUHAMAD RUSDI AHMAD RUSMILI[1], MD ABDUR RASHID MIA[4], WAN MOHD AZIZI WAN SULAIMAN[5], MUHAMMAD HAMDI MAHMOOD[2] and MOHD FAROOQ SHAIKH[6]

[1]*Department of Basic Medical Sciences, Kulliyyah of Pharmacy, International Islamic University of Malaysia*
[2]*Department of Paraclinical Sciences, Universiti Malaysia Sarawak*
[3]*Department of Pharmaceutical Chemistry, Kulliyyah of Pharmacy, International Islamic University of Malaysia*
[4]*Department of Pharmaceutical Technology, Kulliyyah of Pharmacy, International Islamic University of Malaysia*
[5]*Faculty of Health Sciences, PICOMS International University College*
[6]*Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia*
[*]*E-mail: quahmed@iium.edu.my*

Accepted 3 February 2022, Published online 31 March 2022

ABSTRACT

The plant species belonging to the *Litsea* genus are widely investigated due to their nutritional and medicinal purposes. In this regard, this study is another similar sincere effort in which the antioxidant property and phytochemical composition of *Litsea garciae* (*L. garciae*) bark's hexane, chloroform, methanol, and aqueous extracts were evaluated to confirm its traditional benefits. The total flavonoid content (TFC) and total phenolic content (TPC) were determined first, followed by an assessment of in vitro antioxidant activity using the DPPH and FRAP assays. The composition of the secondary metabolites was determined using Ultra-High-Performance Liquid Chromatography-Mass Spectrometry (UHPLC-MS). As a result, methanol extract was recorded to have the highest TPC value aligned with its positive appearance in phytochemical screening. Its antioxidant capacity indicated the least IC_{50}. The results indicated that the significant free radical scavenging activity was due to the methanolic extract's high phenolic content. The secondary metabolites found in the methanol extract varied significantly according to UHPLC-MS analysis. The major phenolic compounds were found including N-*trans*-feruloyl-4-O-methyldopamine, N-*cis*-feruloyltyramine, epicatechin-(4beta->6)-epicatechin-(2beta->7,4beta->8)-epicatechin, 7-Hydroxy-3-(4-methoxyphenyl)-4-propyl-2H-1-benzopyran-2-one and 9-O-Methylneodunol. In general, the results indicate that *L. garciae* bark may be a promising source of novel natural compounds with antioxidative properties.

Key words: Antioxidant, aqueous, chloroform, hexane, *Litsea garciae*, methanol

INTRODUCTION

Plants are an essential component of traditional medicine, as they contain a diverse array of bioactive compounds that are useful against several ailments. According to Kuruppu *et al*. (2019), around 70,000 plant species ranging from lichens to trees have been shown to have the ability to treat a variety of ailments.

Litsea garciae S. Vidal is a Sarawak native plant that is usually referred to as Engkala (Lim, 2012). It is one of the 50 genera that comprise the Lauraceae family (Yen *et al*., 2008). Additionally, it is endemic in Malaysia's southwest Sabah region, Kalimantan, Indonesia, the Philippines, and Taiwan (Lim, 2012). The plant grows in inland riparian forests, secondary woods, and on rare occasions, mixed dipterocarp forests. It is a medium-sized tree with a loose crown (long brittle spreading branches) and lanceolate or obovate leaves, 25 cm long or more and hairless. Flowers are borne on the branches with pale yellow color (Chai, 2006). The wild edible fruit of pale greenish-white can be found seasonally and will turn pink or red at maturity (Lim, 2012). Historically, several tribes, notably those in Sarawak, have used various components of this plant (i.e. leaves, bark, & wood chips) as traditional herbal medicines to cure various ailments. For instance, the Iban (Lim, 2012) and Bidayuh (Chai, 2006) have been using the lightly burned bark (ash) to ease pain caused by caterpillar stings. The Selako tribe utilized a pounded poultice of the leaves or young shoots combined with fennel seed and shallot to treat skin disorders and infections of the

* To whom correspondence should be addressed.