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PHENOLIC COMPOUNDS FROM *Aquilaria microcarpa* STEM BARK

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ABSTRACT

This paper reports a study of secondary metabolites contained in Aquilaria microcarpa, a species belonging to Thymelaceae. This species has not been investigated so far. Aquilaria microcarpa is one of Aquilaria species that grows in Indonesia. The sample plant used is taken from east Kalimantan. Extraction of stem bark is done using methanol. Two phenolic compounds, namely 5,3',4'-trihydroxy-7-methoxyflavon or known as 3'-hydroxy genkwanin and 6-hydroxy-2-(2-phenylethyl)chromone are isolated and identified. The chemical structure of these compounds is determined based on spectroscopic data, as well as HR-ESI-MS and NMR spectra. Both compounds were reported previously but they were extracted from another species of Aquilaria.

Keywords: Aquilaria microcarpa, Thymelaeaceae, chromone, flavonoid.

INTRODUCTION

Aquilaria is a genus belonging to Thymaleaeceae family. The species of *Aquilaria* are widely distributed in Asia. Certain trees of *Aquilaria* species produce the fragrant resinous wood, known in the different regions as agarwood, eaglewood, gaharu, kanankoh, jinkoh, chen xiang or tram. Other people also call it aloeswood or agalloch [1, 2]. The *Aquilaria* genus is rich in a variety of different classes of natural products, especially sesquiterpenes and chromones. Flavonoid, benzophenone, diterpenoid, triterpenoid and lignin compounds are also present.

Agarwood preparations are used in Kampo medicine in Japan because of their sedative, analgesic or digestive properties [3]. *Aquilaria* leaves are applied in China topically to treat injuries such as fractures and bruises [4], while in Korea agarwood is used for the treatment of cough, asthma, and as a sedative among others [5]. In Saudi Arabia and other Arabic countries, the wood of *Aquilaria* trees is used as incense at important religious occasions [6, 7].

Some species of *Aquilaria* which are widely studied are *A. sinensis, A. malaccensis, A. crassna* and *A. agallocha,* whereas *A. beccariana, A. hirta, A. cumingiana, A. filaria* dan *A. microcarpa* are *Aquilaria* species that grow in Indonesia and are not studied so far.

This paper reports research results referring to *A. microcarpa* as one of these species. Two phenolic compounds are isolated from stem bark of *A. microcarpa*. They are identified as 5,3',4'-trihyroxy-7-methoxyflavon or known as 3'-hydroxy genkwanin **(1)** and 6-hydroxy-2-(2-phenylethyl)chromone **(2).** Their structure of is determined spectroscopically. It is presented in Fig. 1.

EXPERIMENTAL

Non infected stem bark of *A. microcarpa* obtained from Bukit Bangkirai forest conservation, Samboja, Samarinda, Kalimantan Timur was used.

Methanol, *n*-hexane, ethyl acetate, diisopropyl ether, chloroform, cerium sulfate, acetone, silica gel 60 GF_{254} (Merck), silica gel 60 PF_{254} (Merck), silica gel 60 GF_{254} 0.25 mm (Merck) were the chemical reagents applied.

A rotary vacuum evaporator, column and radial