

Two Flavonoids From Stem Bark of *Casimiroa edulis* and Their Antidiabetic and Antioxidant Activities

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Abstract: *Casimiroa edulis* Llave et Lex (Rutaceae), popularly known as white sapote. The main aim of this study is to isolate and investigate the bioassay of the stem bark of *Casimiroa edulis*. Two flavonoids were isolated from the methanolic fraction of the stem bark of *Casimiroa edulis*. The isolated compounds can be identified as 6,7-dimethoxyflavone (**1**) and 5,6,2'-trimethoxyflavone (**2**) by using advance spectroscopic methods, including FT-IR, UV, 1D NMR, 2D NMR. Compounds **1** and **2** were evaluated for their antidiabetic and antioxidant activities. The result revealed that the two compounds did not have antidiabetic activity and antioxidant activity. This is the first phytochemical study of 6,7-dimethoxyflavone from the genus *Casimiroa*.

Key words: *Casimiroa edulis*, white sapote, Rutaceae, flavonoids

1. Introduction

Natural products are used as medicines for treating and preventing various diseases since prehistoric times. According to the record of fossil, human use of plants as medicines for their diseases may be traced back at least 60,000 years. [11; 18]

Casimiroa is a tree belongs to the family of Rutaceae, found in the tropical and subtropical areas of Central America and Mexico, the Caribbean, the Mediterranean region, India, Southeast Asia, South Africa, Australia, and New Zealand. The best-known species is *Casimiroa edulis* [14; 17]. It has been widely used as sedative for the treatment of anxiety and dermatological problem. The early pharmacological studies of an aqueous extract and alcohol extracts of the seeds and leaves of *C. edulis* exhibited the cardiovascular, anticonvulsant, sedative, anti-inflammatory, anti-mutagenic, diuretic, hypnotic, anti-hypertension, anti-inflammatory, muscle relaxant and contractile activities [4; 15]. In Myanmar, local people used this for the treatment of stomach problem.

Many of the phytochemical analysis have been done on the leaves, fruits, seeds and bark of *Casimiroa edulis*. The previous studies indicated that this plant contains flavonoids, coumarin, alkaloids, and limonoids [1-3, 5-9; 12]. In this study, two flavonoids namely, 6,7-dimethoxyflavone (**1**) and 5,6,2'-trimethoxyflavone (**2**) have been isolated from the stem bark of *Casimiroa edulis*. Their structures have been elucidated through FT-IR, UV, ¹H-NMR, ¹³C-NMR, and 2D NMR. Furthermore, the antidiabetic and antioxidant activity of isolated compounds were investigated against α -glucosidase inhibition and DPPH assay.

2. Experimental Methods

2.1 General

UV spectra were recorded on UV-Vis Shimadzu spectrometer. IR spectra were recorded on FT IR-8400 spectrophotometer. NMR spectra were recorded in CDCl₃ by using a JEOL ECA-500 (¹H: 500 MHz and ¹³C: 125MHz). Positive mode HRFABMS was obtained by using a JEOL JMS HX-110 mass spectrometer. Column chromatography was carried out on silica gel (BW-820H). Analytical TLC was performed on silica

