

3',4'-Dimethoxy Quercetin, a Flavonol Compound Isolated from *Kalanchoe pinnata*

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ABSTRACT

From methanol extract of *Kalanchoe pinnata* (Lam.) Pers. leaves, a flavonol compound has been isolated. Fractionation of the methanol extract with ethyl acetate, followed by ethyl acetate fraction purification using column chromatography method with ethyl acetate : *n*-hexane as mobile phase gave a yellow crystal compound (A). Further analysis using 1D- and 2D-nuclear magnetic resonance (NMR), confirmed with mass spectrometer (LC-MS), compound A identified as 3',4'-dimethoxy quercetin.

INTRODUCTION

Kalanchoe is a plant genus widely distributed in tropical and subtropical countries (Beckett, 1990), has been used in Indonesian folk medicine to treat infections, rheumatism, cough, fever, inflammation, wounds, boils, arthritis, gastric ulcer, dysentery, cholera, whitlow, headaches (Siddiqui *et al.*, 1989; Hutapea, 1994; Akinpelu, 2000; Kuo *et al.*, 2008; Shivananda *et al.*, 2010), and their extracts also reported potential as antifungal (Misra and Dixit, 1979), antiinflammatory (Pal *et al.*, 1991; Afzal *et al.*, 2012), antiulcer (Pal *et al.*, 1999), antimicrobial (Akinpelu, 2000), insecticidal (Supratman *et al.*, 2000 and 2001a), anti-tumor (Supratman *et al.*, 2001b), antihypertensive (Ojewole, 2002), antihyhepatoprotective (Yadav and Dixit, 2003), analgesic (Nguelefack *et al.*, 2006), anti-leishmanial (Muzitano *et al.*, 2006), immunomodulatory (Cruz *et al.*, 2008). Many chemical compound group constituents had been isolated from *Kalanchoe* genus, such as triterpenoids, sterol, phenanthrenes (Gaiind *et al.*, 1976; Siddiqui *et al.*, 1989), bufadienolides (Supratman *et al.*, 2000 and 2001a; Wu *et al.*, 2006; Kuo *et al.*, 2008), flavonoids (Liu *et al.*, 1989; Singab *et al.*, 2011).

Kalanchoe pinnata (Lam.) Pers. also known as cocor bebek (Indonesia), is one of the *Kalanchoe* species. This paper describe about extraction, fractionation, purification and structure elucidation of phenolic compound content from the methanol extract of *K. pinnata* leaf as part of our research study about bioactive compounds from *K. pinnata*.

MATERIAL AND METHODS

General

The infra-red spectrum was recorded with Shimadzu Prestige-21 Instrument, mass spectrum recorded using a Mariner Biospectrometry-Finnigan instrument, and 1D- and 2D-NMR spectra was obtained with a JEOL JNM-ECA 500 spectrometer using TMS as internal standard. Chromatographic separation process carried out using silica gel (Kieselgel 60, Merck 1.07734). Purity confirmation carried out using Silica gel 60 F₂₅₄ (Merck 1.05554) with 10% H₂SO₄ in ethanol as compound detection reagent.

Plant material

Kalanchoe pinnata leaf was collected from Bogor regions, West Java, Indonesia, and determined at Herbarium Bogoriense, Research Center for Biology, Indonesian Institute of Sciences, Bogor, Indonesia.

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NMR data confirmed by mass spectroscopy data, it can be concluded that compound A is a flavonol compound named 3',4'-dimethoxy quercetin.

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