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Oxygeranylated Coumarins from The Root of *Limonia accidisima* L. and Their DPPH Radical Scavenging Activity

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ABSTRACT

*Four oxygeranylated coumarins namely as auraptene (**1**), 6-methoxy-auraptene (**2**), 7-(2'E,5'E)-7'-hydroxy-3',7'-dimethylocta-2',5'-dienyloxy) coumarin (**3**) and 7-((2'E,6'E)-5'-hydroxy-3',7'-dimethylocta-2',6'-dienyloxy) coumarin (**4**) were isolated from the roots of Limonia accidissima L. Their structures were determined based on UV, IR, HRESIMS, 1D and 2D NMR analysis.. The ethyl acetate extract as well as compounds **1-4** were evaluated for their antioxidant activity against DPPH radical scavenging. Compound **3** showed very high activity against DPPH radical*

Keywords: *Limonia accidisima* L., oxygeranylated coumarins, DPPH radical

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INTRODUCTION

Limonia accidisima L. (synonim *Feronia limonia*) belongs to the family Rutaceae, commonly known as Kawista in Indonesia. The plants used in traditional medicine, such as diarrhea, dysentery, tumor, asthma, and hepatitis. The utilization of this plant in traditional medicine is certainly related to secondary metabolites contained in this plant. The phytochemical investigations on *Limonia accidisima* L from different parts of this plant, have isolated various compounds, including alkaloids [1,2], coumarins [3,4,5], flavonoids [6,7], and tyramine derivatives [8]. Secondary metabolites *Limonia acidissima* L. have a variety of activities, such as, antitumor, antimicrobial, anti-inflammatory, antipyretic, and analgesic. In continuation of our phytochemical work of Indonesian *Limonia* plants aiming to find coumarin compounds from *Limonia accidisima* L., we report the isolation of coumarin compounds, auraptene (**1**), 6-methoxy-auraptene (**2**), 7-((2'*E*,5'*E*)-7'-hydroxy-3',7'-dimethylocta-2',5'-dienyloxy)coumarin (**3**) and 7-((2'*E*,6'*E*)-5'-hydroxy-3',7'-dimethylocta-2',6'-dienyloxy) coumarin **(4)** from the methanol extract of the root of *Limonia accidisima L*. Compounds **1-4** (Fig.1) which were evaluated for their radical scavenging against 2,2-diphenyl-1-picrylhydrazyl (DPPH) also briefly described.

MATERIALS AND METHODS

General

UV and IR spectra were measured with a Shimadzu 1800 (Kyoto, Japan) and Perkin Elmer Spectrum One FTIR spectrometer, respectively. ^{1}H and ^{13}C NMR spectra were recorded with a JEOL ECA 400 spectrometer operating at 400 (^{1}H) and 100 (^{13}C) MHz in $CDCl_3$ using TMS as the internal standard. Mass spectra were recorded using a Waters LCT Premier XE (Santa Clara, CA, USA). Coloumn chromatography and radial chromatography were