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Macagigantin, a farnesylated flavonol from *Macaranga gigantea*

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A new farnesylated flavonol derivative, macagigantin (**1**), together with two known flavonoids, glyasperin A (**2**) and apigenin (**3**), had been isolated from the acetone extract of the leaves of *Macaranga gigantea*. The structure of the new compound was elucidated as 6-farnesylkaempferol based on its spectroscopic data, including UV, IR, 1D and 2D NMR, and HR-EI-MS spectra. Compounds **1**–**3** were evaluated for their cytotoxic properties against P-388 cells, their IC_{50} values being 11.3, 6.0, and 5.1 μM, respectively.

Keywords: macagigantin; farnesylated flavonol; *Macaranga gigantea*; Euphorbiaceae; cytotoxicity; P-388 cells

1. Introduction

The genus *Macaranga* (Euphorbiaceae) contains about 250 species distributed very widely from Africa and Madagascar in the west to tropical Asia, North Australia, and Pacific Islands in the east [1]. This genus has been shown to produce a number of phenolic compounds, particularly flavonoids and stilbenoids [2]. Recently, we have reported the first dihydrochalcone derivatives, along with flavanones, from an endemic *Macaranga* species in Indonesia, *Macaranga trichocarpa* [3]. In continuation of our phytochemical work on Indonesian tropical plants aiming to find new cytotoxic compounds [4–9], we had examined another *Macaranga* species, *Macaranga gigantea* (Reichb.f. & Zoll.) Müll. Arg. In this paper, we report the isolation of a farnesylated flavonol, 6-farnesylkaempferol (**1**), together with two known compounds **2** and **3** (Figure 1), from the acetone extract of the title plant leaves. The cytotoxic properties of compounds **1**–**3** against murine leukemia P-388 cells are also briefly described.

2. Results and discussion

Compound **1** was isolated as a yellow solid and the molecular formula $C_{30}H_{34}O_6$ was deduced from its HR-EI-MS data. The UV spectrum of **1** exhibited maxima typical for a flavonol structure (λ_{max} 271, 348, and 283 nm), and showed bathochromic shifts on addition of $AlCl_3$ and NaOAc [10]. The IR spectrum indicated absorptions for hydroxyl (3419 cm^{-1}), conjugated carbonyl (1649 cm^{-1}), and aromatic (1608 and 1560 cm^{-1}) groups. In the ^{13}C NMR spectrum (APT experiment; Table 1), 28 carbon signals representing 30 carbon atoms were observed. Two of them,

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