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Research Article

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Antioxidant activity of flavonoid compounds from the leaves of *Macaranga gigantea*

Nanik Siti Aminah*, Alfinda Novi Kristanti and Mulyadi Tanjung

Natural Products Chemistry Research Group, Organic Chemistry Division, Department of Chemistry, Faculty of Science and Technology, Airlangga University, Surabaya, Indonesia

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ABSTRACT

*Three flavonoid compounds have been isolated from the leaves of Macaranga gigantea (Euphorbiaceae) namely as glyasperin A (**1**), broussoflavonol F (**2**), apigenin (**3**). Their structures were elucidated by spectroscopic methods including UV, IR, HRESIMS, 1D and 2D NMR analysis. Compounds **1**–**3** were evaluated for their radical scavenging against 2,2-diphenyl-1-picrylhydrazyl (DPPH), showing their IC_{50} were 125.10, 708.54, and 518.01 μM, respectively. The results indicate that as glyasperin A (**1**) more active than ascorbic acid (329.01 μM).*

Keywords: Glyasperin *A*, Broussoflavonol F, Apigenin, Flavonoid, *Macaranga gigantea*, Antioxidant

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INTRODUCTION

Macaranga is one of the largest genus of the family Euphorbiaceae, comprising of about 300 species. In addition to in Indonesia, found in parts of Africa, Madagascar, Asia, the east coast of Australia, and the Pacific islands. The *Macaranga* plants are generally in the form of shrubs or trees, and grow in a place that gets a lot of sunlight in secondary forests or forests that have been damaged [1]. The phytochemical studies, this plants producing phenolic compounds, particulary flavonoid and stilbene derivatives. Structural variation of these derivatives occurs as a result of terpenoid substituents on various positions of aromatic rings. The terpenoid substituents identified include isoprenyl (C_5), geranyl (C_{10}), farnesyl (C_{15}) and geranyl-geranyl (C_{20}) [2,3,4,5]. The compound of flavonoid and stilbenoid from *Macaranga* plants exhibit various of bioactivity as antitumor, anticancer, antimalarial, antimicrobial, cyclooxygenase, and antioxidant [6,7,8,9,10,11]. In continuation of our phytochemical work of Indonesian *Macaranga* plants aiming to find new antioxidant compounds from *Macaranga gigantea*. In this paper, we report the isolation of flavonoid compounds, glyasperin A (**1**), broussoflavonol F (**2**), apigenin (**3**) from the methanol extract of the leaves of *Macaranga gigantea*. The antioxidant activity of compounds **1**– **3** against DPPH is also briefly described.

EXPERIMENTAL SECTION

The leaves of *Macaranga gigantea* were collected in July 2012 from Cinta Damai Village, District Banyuasin, South Sumatera, Indonesia. The plant was identified by Mr Ismail Rachman, Herbarium Bogoriense, Center of Biological Research and Development, National Institute of Science, Bogor, Indonesia, and the voucher specimen was deposited in the herbarium. The dried and powdered leaves of *Macaranga gigantea* (1.5 kg) were macerated in methanol at room temprature three times, and the methanol extract was evaporated under reduced pressure to give a