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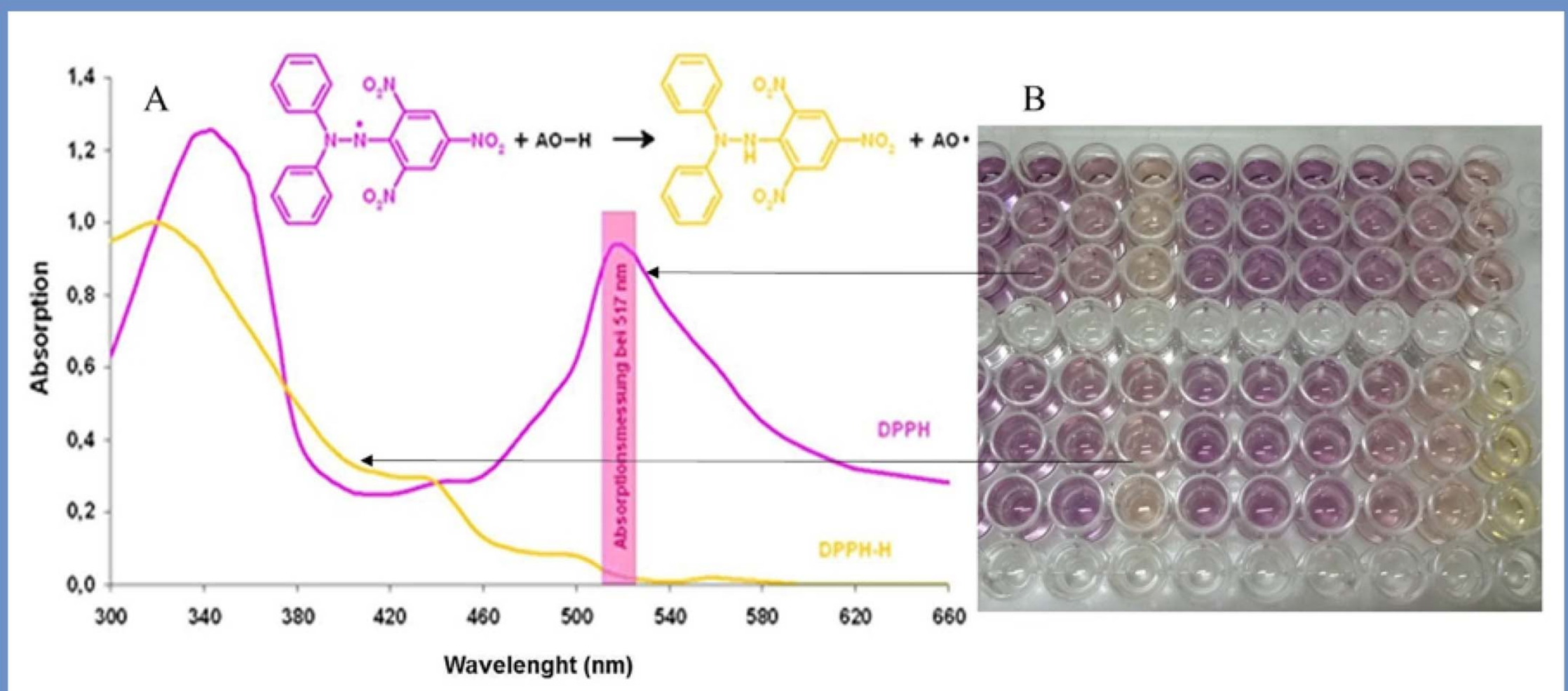

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A Cytotoxic Rocaglate Compound from The Stembark of *Aglaia argentea* (Meliaceae)

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ABSTRACT

The *Aglaia* genus belong to Meliceae family is unique plant species because the presence of rocaglate and rocaglamide which is so far isolated only from *Aglaia* genus, indicate that type of this compound as a chemical marker for the genus of *Aglaia*. This type of compound known to have strong activity, such as insecticide and cytotoxic. This study describe the isolation, structure elucidation, and cytotoxic activity of an isolated rocaglate compound. Dried stembark of *A. argentea* extracted with methanol and partition between *n*-hexane, ethyl acetate, and *n*-butanol, respectively The extracts were tested against P-388 murine leukemia cells and the ethyl acetat showed strongest activity with IC_{50} value of 15.5 μg/mL. The ethyl acetate then was separated and purified with chromatography technique to obtain isolated compound **1**. The chemical structure of isolated compounds were elucidated by spectroscopic methods including one and two-dimensional NMR as well as high-resolution mass spectrometric analysis and identified as a methyl rocaglate. Compound **1** showed strong cytotoxic activity with an IC_{50} value of < 0.1 μg/mL.

Keywords: *Aglaia*, *Aglaia argentea*, cytotoxic activity, methyl rocaglate, , P-388 murine leukemia cells.

INTRODUCTION

Aglaia is the largest genus belong to Meliaceae family contain more than 150 species (Su et al., 2006; Awang et al., 2012) and about 65 species grown in Indonesia (Wood, Silverstain & Nakajima, 1970). This genus is an important component of the tropical rain forest in the Indomalesiana area (Muellner et al., 2010) and mainly distributed in tropical countries including India, Indonesia, Malaysia and parts of the Western Pacific (Pannell, 1992; Inada et al., 2001). On the basis of literature study, phytochemical studies on *Aglaia* species have led to the identification and isolation of main compounds such as sesquiterpenoids (Joycharat, Plodpai, Panthong, Yingyongna-rongkul & Voravuthikunchai, 2010; Liu, et al., 2014), diterpenoids (Cai, Wang, Zhao, Li & Luo, 2010; Yodsaoue et al., 2012), rocaglate derivatives (Ishibashi, Satastook, Isman & Towers, 1993; Wu et al., 1997; Nugroho et al., 1999), lignans (Wang et al., 2004; Sianturi et al., 2016), dammarane-type triterpenoids (Roux et al., 1998; Khalit et al., 1999; Xie, Yang, Chen, & Yue, 2007; Zhang, wang, Gu, & Kong, 2010; Harneti et al., 2012, Farabi et al., 2017) and cycloartane-type triterpenoids (Khalit et al., 1999; Awang et al., 2012).

Members of the *Aglaia* genus have recently received considerable attention due to the presence of a structurally unique group of cyclopentabenzofurans, the so-called rocaglamide derivatives, which occur exclusively in this genus (Ishibashi et al., 1993; Wu et al., 1997; Nugroho et al., 1999). The parent compound rocaglamide and many of its congeners are potent natural insecticides comparable in activity to azadirachtin (Nugroho et al., 1999; Chaidir et al., 1999; 2001) In addition to their insecticidal activity, the rocaglamides exhibit pronounced antiproliferative activity against human cancer cells *in vitro*, comparable to that of vinblastine sulfate (Chaidir et al., 2001; Bohnenstengel et al., 1999), thus making these compounds an even more fascinating group of potently bioactive plant secondary metabolites.

During the course of our continuing search for anticancer candidate compounds from Indonesia *Aglaia* plants, we isolated and described cytotoxic triterpenoids from the bark of *A. smithii* and *A. eximia* (Harneti et al., 2012; 2014) as well as a lignan and bisamides from the bark of *A. eximia* (Sianturi et al., 2015; 2016). In the further screening for cytotoxic compounds from Indonesia *Aglaia*