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New bisamide compounds from the bark of *Aglaia eximia* (Meliaceae)

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ABSTRACT

Two new bisamide compounds, eximiamide A (**1**) and eximiamide B (**2**) were isolated from the bark of *Aglaia eximia* (Meliaceae). The chemical structures of the new compound were elucidated on the basis of spectroscopic data. All of the compounds were evaluated for their cytotoxic effects against P-388 murine leukemia cells. Compounds **1** and **2** exhibited cytotoxic activity against P-388 murine leukemia cells with IC_{50} values of 7.6 and 8.5 μg/mL, respectively.

1. Introduction

The genus *Aglaia* (Meliaceae) comprises more than 100 species and mainly distributed in tropical and subtropical regions (Pannell, 1992; Inada et al., 2001). Previous phytochemical studies of *Aglaia* genus have revealed the presence of a variety of compounds with interesting biological activities including several rocaglate derivatives (Wu et al., 1997; Kim et al., 2005; Su et al., 2006 Chaidir et al., 1999), bisamides (Saifah et al., 1999; Duong et al., 2007), triterpenoids (Harneti et al., 2012 Xie et al., 2007), steroids (Awang et al., 2012; Harneti et al., 2014), limonoids (Fuzzati et al., 1996), sesquiterpenes (Joycharat et al., 2010), lignans (Wang et al., 2002, 2004) and flavonoids (Nugroho et al., 1999).

Recently, several bisamide derived from putrescine, has been found from this genus (Chin et al., 2010). Among these bisamides, a group of compounds found in several *Aglaia* species have been reported as exhibiting cytotoxic activity (Kim et al., 2006). As part of our continuing search for anticancer candidate compounds from *Aglaia eximia*, we isolated and described a new stigmastane steroid, 3,4-epoxy-(22*R*,25)-tetrahydrofuran-stigmast-5-en from the bark of *A. eximia* (Harneti et al., 2014). In the further screening for cytotoxic compounds from polar fraction of *A. eximia*, we found that the methanol extract of the bark of *A. eximia* exhibited a cytotoxic activity against P-388 murine leukimia cells with an IC_{50} of 40 μg/mL. We report herein the isolation and structure elucidation of two new bisamide compounds, eximiamide A (**1**) and eximiamide B (**2**), together with their cytotoxic activity against P-388 murine leukimia cells.

2. Results and discussion

Bark of *A. eximia* were grounded and successively extracted with *n*-hexane, ethyl acetate and methanol at room temperature. The methanol extract was chromatographed over a vacuum-liquid chromatographed (VLC) column packed with silica gel 60 by gradient elution. The VLC fractions were repeatedly subjected to normal and reverse-phase column chromatography and preparative TLC on silica gel GF_{254} to afford two cytotoxic compounds **1**–**2** (Fig. 1).

Compound **1** was obtained as yellow oil, $[\alpha]_{20}^{D}$ −10.5 (*c*, 0.1, MeOH), the molecular formula of **1** was established to be $C_{27}H_{52}N_6O_{11}$ from HR-TOFMS spectrum which showed a $[M-H]^+$ pseudo molecular ion peak *m*/*z* 637.7206 (calcd. for $C_{27}H_{52}N_6O_{11}$ *m*/*z* 636.7354), together with NMR data (Table 1), thus requiring five degree of unsaturation. The UV spectrum showed absorption peak at λ_{max} nm (log ε): 262 (5.25), suggesting the presence of an α,β-unsaturated ketone group. The IR spectrum showed absorption peaks due to hydroxyl (3400 cm^{-1}), NH asymmetric (2935 cm^{-1}), amide carbonyl (1681 cm^{-1}), NH bending

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