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Research Article

Triterpenes from *Pittosporum resiniferum* Hemsl

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ABSTRACT
Chemical investigation of the dichloromethane extract of the leaves of *Pittosporu resiniferum* Hemsl. yielded a mixture of uvaol (**1**) and erythrodiol (**2**). The structures of **1** and **2** were identified by comparison of their NMR data with literature data.

Keywords: *Pittosporu resiniferum*, Pittosporaceae, uvaol, erythrodiol

INTRODUCTION

Pittosporum resiniferum Hemsl. commonly known as Petroleum nut grows in The Philippines and is endemic in the Cordillera region. This plant has been commonly used as a source of alternative biofuel due to its high heptane, myrcene, dihydroterpene and α-pinene components[1]. GC/MS analysis of the oil of ripe *P. resiniferus* fruit yielded n-heptane (5%), n-nonane (7%), three isomeric monoterpenes (85%) and six minor sesquiterpenes (6%). Two major monoterpenes were isolated by preparative GC and identified as □-pinene (38%) and myrcene (40%), while catalytic hydrogenation of the oil gave pinane and 2,6-dimethyloctane[2]. The volatile oil of the fruit was reported to contain dihydroterpene and heptane. The essential oil makes up 8–10% of the fruit weight—40% myrcene, 38% α-pinene, while n-heptane and n-nonane are minor components[3]. This research is part of our studies on the chemical constituents of trees belonging to the genus *Pittosporum.* We earlier reported the isolation of eudesm-11-*en*-4-α-*O*-β-D-3-senecioyloxy-6-deoxyglucopyranoside, eudesm-11-*en*-4-α-*O*-β-D-3-tigloyloxy-6-deoxy glucopyranoside, and botulin from the leaves of *P. pentandrum*[4]. This study reports that the leaves of *P. resiniferus* yielded a mixture of uvaol (**1**) and erythrodiol (**2**). To the best of our knowledge this is the first report on the isolation of **1** and **2** from *P. resiniferus.*

MATERIALS AND METHODS

General Experimental Procedure

NMR spectra were recorded in $CDCl_3$ on a JEOL JNM ECP-400 spectrometer (Tokyo, Japan) at 400 MHz for ^1H. Column chromatography was performed with silica gel 60 (70-230 mesh). Thin layer chromatography was performed with plastic backed plates coated with silica gel F_{254} and the plates were visualized by spraying with vanillin/H_2SO_4 solution followed by warming.

General Isolation Procedure

A glass column 18 inches in height and 1.0 inch internal diameter was packed with silica gel. The crude extracts were fractionated by silica gel chromatography using increasing proportions of acetone in dichloromethane (10% increment) as eluents. Twenty milliliter fractions were collected. All fractions were monitored by thin layer chromatography. Fractions with revealing spots of the same R_f values were combined and rechromatographed in appropriate solvent systems until TLC pure isolates were obtained. A glass column 12 inches in height and 0.5 inch internal diameter was used for the rechromatography. Five milliliter fractions were collected. Final purifications were conducted using Pasteur pipettes as columns. One milliliter fractions were collected.

Plant Material

The leaves of *Pittosporum resiniferum* Hemsl. was collected from the Deparment of Environment and Natural Resources Compound, La Trinidad, Benguet, Philippines in May 2015. It was authenticated at the Jose Vera Santos Herbarium, Institute of Biology, University of the Philippines, Diliman, Quezon City.

Isolation

The air-dried leaves (0.9 kg) of *P. resiniferum* were cut into small pieces, ground in a blender, soaked in CH_2Cl_2 for 3 days and then filtered. The solvent was evaporated under vacuum to afford a crude extract (30.5g) which was chromatographed using increasing proportions of acetone in CH_2Cl_2 at 10% increment by volume as eluents. The 40% and 50% acetone in CH_2Cl_2 fractions were combined and rechromatographed (3 ×) using 15% EtOAc in

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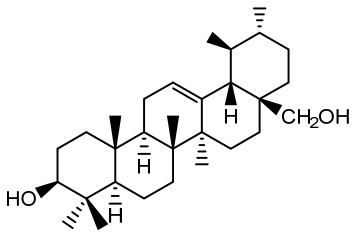

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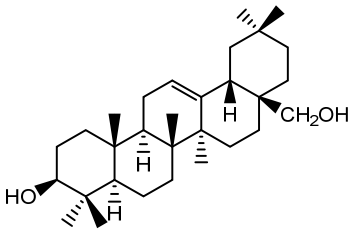

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petroleum ether to afford a mixture of **1** and **2** (3 mg) after washing with petroleum ether.

RESULTS AND DISCUSSION

Silica gel chromatography of the dichloromethane extract of *P. resiniferum* yielded **1** and **2**. The NMR spectra of **1** are in accordance with data reported in the literature for uvaol[5]; and **2** for erythrodiol[6]. Earlier studies on *P. resiniferum* reported on the hydrocarbons, monoterpenes and sesquiterpenes from the essential oils of the fruit of *P. resiniferus.* To our knowledge, this is the first report on the isolation of the triterpenes **1** and **2** from the leaves of *P. resiniferum.*

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