UNIVERSITI TEKNOLOGI MARA

CHEMICAL CONSTITUENTS AND BIOLOGICAL ACTIVITY OF *Vitex rotundifolia*

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ABSTRACT

Vitex rotundifolia L. is a plant belonging to Lamiaceae family consists of 270 species including tree and shrubs. It has been described as a deciduous woody vine plant that grows horizontally in sand dunes, beaches and rocky shoreline. This plant is mainly distributed in the tropical and sub-tropical region and a few species found in the temperate region including China, Taiwan, South Japan, Malaysia, India, Sri Lanka, Mauritius, Australia, Pacific Island and Hawaii. The fruit of this plant has been traditionally used for headaches, colds, migraine, eye pain, night blindness, myalgia and neuralgia. The leaves have also been taken orally for treating headache, traumatic injury and rheumatalgia. Phytochemical study of leaves and stems of *V. rotundifolia* has successfully isolated nine compounds including flavonoids and lignans. All compounds were isolated using conventional chromatography techniques using vacuum liquid chromatography (VLC) and purification using open column chromatography, radial chromatography and preparative thin layer chromatography. Those components were characterized using 1D and 2D NMR, UV, FT-IR and as well as comparison with the literature data. The chemical compound of flavonoids isolated are apigenin, artemetin, casticin, luteolin, ayanin, and chrysosplenol D as well as lignans; 6-hydroxy-4-(4'-hydroxy-3'-methoxyphenyl)-3-hydroxymethyl-7-methoxy-3,4-dihydro-2- naphthaldehyde, 7-hydroxy-4-(3',4'-dimethoxyphenyl)-3 hydroxymethyl-8-methoxy-3,4-dihydro-2-naphthaldehyde and 6-hydroxy-4-(4'hydroxy-3 methoxyphenyl)-3 hydroxymethyl-5-methoxy-3,4-dihydro-2 naphthaldehyde (Vitedoin A). These lignans were isolated from *V. rotundifolia* for the first time. Major isolated compounds were tested on three anti-inflammatory enzymatic assays, which are lipoxygenase inhibitory assay (LOX), xanthine oxidase inhibitory assay (XO) and hyaluronidase inhibitory assay. The crude extracts were tested for screening purpose. Luteolin was found to demonstrate good lipoxygenase (LOX) and xanthine oxidase (XO) inhibitory activities with IC_{50} values of 3.99 µM and 3.00 µM, respectively. Apigenin showed good inhibitory activity on hyaluronidase enzyme.

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