UNIVERSITI TEKNOLOGI MARA

CHEMICAL CONSTITUENTS FROM THE LEAVES AND STEM BARKS OF *MACARANGA HYPOLEUCA* (RCHB.F. & ZOLL.) MÜLL.ARG

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MSc

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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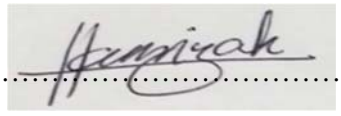
Signature of Student	:	 ……..
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ABSTRACT

The stem barks and leaves of *Macaranga hypoleuca* (Rchb.f. & Zoll.) Müll.Arg from the family Euphorbiaceae were investigated for their phytochemical and biological properties. The objectives of this study are to isolate chemical compounds from the plant, to elucidate the structure of the isolated compounds, to propose plausible biogenetic pathway of the new compound and to discuss the biosynthetic pathway of the isolated flavonoids, and to evaluate DPPH radical scavenging activity of crude extracts and purified flavonoids. Several chromatographic techniques were used to separate the compounds including vacuum liquid chromatography (VLC), column chromatography (CC), radial chromatography (RC), and high performance liquid chromatography (HPLC). Malayhypoleucin A (new compound-**HS1**) and scopoletin (**HS2**) were purified from the stem barks of *M. hypoleuca*, while five flavanones, known as 5,4'-dihydroxy-7-methoxyflavanone (**HL1**), 7-*O*-methyleriodictyol (**HL2**), 8-prenylnaringenin (**HL3**), 6-(3-hydroxy-3-methyl)naringenin (**HL4**), and tomentosanol D (**HL5**), two flavonols, quercetin (**HL6**) and kaempferol (**HL7**), and one phenolic compound known as 3,4-dihydroxybenzoic acid (**HL8**) were isolated from the leaves of *M. hypoleuca*. The structure of the compounds was elucidated based on several spectroscopic methods such as mass spectroscopy (MS), 1D and 2D NMR data, UV-Vis, ATR-IR and comparison with the reported data. Biosynthesis of malayhypoleucin A (new compound) was proposed from the acetate pathway, while flavonoids were derived from shikimate and phenylpropanoid pathways. Crude extracts (hexane, ethyl acetate and acetone), and five flavonoids, **HL1**, **HL3**, **HL5**, **HL6**, and **HL7** were evaluated for DPPH radical scavenging activity. Hexane and ethyl acetate extracts, along with **HL6** and **HL7** showed strong activity with percent inhibition more than 90% at 100 µg/ml. Hexane extract and **HL5** displayed moderate activity with percent inhibition of 60.5% and 50.3% respectively at 100 µg/ml, while **HL1** and **HL3** have weak activity with percent inhibition of 20% and 25% at 100 µg/ml.

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TABLE OF CONTENT