

UNIVERSITI TEKNOLOGI MARA

**PHYTOCHEMICAL STUDIES OF
THE STEM BARKS OF *MALLOTUS*
LEUCODERMIS HOOK F**

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Thesis submitted in fulfillment
of the requirements for the degree of
Master of Science
(Chemistry)

Faculty of Applied Sciences

November 2019

ABSTRACT

Mallotus leucodermis, commonly known as ‘balek angin bopeng’, was traditionally used to alleviate skin problem. Despite its wide application in traditional medicine, no chemical report was found on its bioactive compounds. *Mallotus* species is known to contain bioactive compounds made up of various class of compounds such as flavonoids, terpenoids, benzopyrans, phenolic compounds and phloroglucinol derivatives. Therefore, the stem barks of *M. leucodermis* has been investigated for its phytochemical and biological activities. The aims of this study are to isolate the chemical constituents from the plant, to propose biosynthetic pathway of the new isolated compound and to evaluate the DPPH radical scavenging and cytotoxicity activities for some of the isolated compounds. This phytochemical study involves the isolation, purification, characterization and biological testing of active compounds. Common chromatographic techniques such as column chromatography (CC), vacuum liquid chromatography (VLC), radial chromatography (RC) and preparative thin layer chromatography (PTLC) were used to isolate pure compounds while, the structural elucidation of pure compounds were characterized using common spectroscopic methods (1D, 2D-NMR, UV, IR and MS). Two new compounds malayisobergenin (**150**) and malayacetophenone (**151**) along with eight known compounds; bergenin (**107**), epicatechin (**152**), hexadecyl ferulate (**153**), lupeol acetate (**54**), stigmasterol (**119**), β -sitosterol (**116**), germanicol 3-acetate (**154**), β -amyrin acetate (**155**) and α -amyrin acetate (**156**) were successfully isolated from this study. Malayacetophenone (**151**) was proposed *via* combination of shikimate and mevalonate pathways. The skeleton of acetophenone was formed from the degradation of β -hydroxyphenylpropionic acid *via* shikimate pathway while, 3-propylcyclohexane was derived from the mevalonate pathway. In the DPPH assay, epicatechin (**152**) and crude extract showed strong radical scavenging activity with IC_{50} values of 6.50 μ M and 3.25 μ g/ml, respectively. In the cytotoxicity, malayisobergenin (**150**) together with β -sitosterol (**116**) and stigmasterol (**119**) were demonstrated no cytotoxicity activity against human colorectal carcinoma, HCT116 cancer cell line. The outcomes of this study may contribute to phytochemical database of *Mallotus* species and the new discovery of bioactive compounds in medicinal plant research.

ACKNOWLEDGEMENT

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the name of Allah, The Most Gracious, The Most Merciful. All the praises and thanks be to Allah ‘Azza wa Jalla. Alhamdulillah, thank you Allah for giving me chances and opportunity to finish my M.Sc study.

Firstly, I would like to express my gratitude to my supervisor, Dr. Humera Naz, and my co-supervisor, Assoc. Prof. Dr. Norizan Ahmat, for the continuous support of my M.Sc study. They helped me a lot during my lab work and writing this thesis. Without their patience, guidance and supervision, this research can not be successfully completed.

My sincere thanks also goes to my colleagues, Pak Agus, Ola, Kak Nik, Kak Nisa, Kak Ros, Kak Wan, Kak Aisyah, Isna, Hamizah, and Mizan, for helping me a lot and sharing their experiences and knowledges with me throughout my research. Also, a million thanks to Encik Ahmad Kambali and Encik Kadim for their helps during my lab work.

Last but not least, to those who very special, my mother who always pray for my success and my family who always been there in my time of need. Thank you so much. Also, to my husband Muhammad Noor Hisham, who gave continuous moral and financial supports. To my lovely daughter, Aisyah Saafia, thank you for being one of my inspiration and motivation for me to complete my study. Thanks to everyone who has supported me and contributed during my MSc study. May Allah bless them for their kindness.

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