UNIVERSITI TEKNOLOGI MARA

PHYTOCHEMICAL STUDIES AND BIOACTIVITIES OF *XYLOPIA FERRUGINEA* HOOK. (ANNONACEAE) AND *SHOREA MAXWELLIANA* KING. (DIPTEROCARPACEAE)

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Thesis submitted in fulfilment of the requirements
for the degree of
Master of Science

Faculty of Applied Sciences

April 2012

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 result 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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ABSTRACT

In the present work, phytochemical studies were conducted on two species from different family. The studied plant samples were the stem bark and leaves of *Xylopia ferruginea;* and the stem bark of *Shorea maxwelliana.* Phytochemical investigation on the crude alkaloidal extracts of the stem bark and leaves of this plant yielded five oxoaporphinoid alkaloids and three flavonols, characterised as *O*-methylmoschatoline, lysicamine, liriodenine, atherospermidine, oxostephanine, quercetin, kaempferol and afzelin. Phytochemical investigation carried out on the stem bark of *Shorea maxwelliana* King has yielded five oligostilbenoids identified as α-viniferin, maximol A, vaticanol A, suffruticosol A and vaticanol G. Structure elucidation and characterization of isolated compounds were done based on 1D, 2D NMR, IR, UV, MS, optical rotation, melting point and in good agreement with those previously reported for these compounds. In addition, the antibacterial activity of major isolated compounds was tested against seven bacteria. Our findings showed that *O*-methylmoschatoline is the most active compound as it inhibited the growth of all tested bacteria and the highest inhibition were shown in *S. aureus* (20 mm) and *S. epidermis* (23 mm). Vaticanol G showed moderate and slight activity against *S. aureus* and *E. coli*, while maximol A exhibited slight activity against *E. coli* and *P. aeroginosa.* Maximol A, suffruticosol A, vaticanol A and vaticanol G possessed active cyctotoxic activity against HL60 cell line with IC_{50} values range of 10.1 - 220 μM. Only maximol A was active against A549 and MCF-7 cell lines, with both IC_{50} value of 220 and 99.2 μM.

ACKNOWLEDGEMENT

'In the name of Allah, Most Gracious, Most Merciful'

'Alhamdulillah' and thank to Allah S.W.T. for giving me the strength and blessing in order to complete my Master's degree. A great token of appreciation should be given to my dearest supervisor Assoc. Prof. Dr. Norizan Ahmat, my co-supervisor Assoc. Prof. Dr. Rohaya Ahmat for their guidance, advice, encouragement and support throughout this research project. I also would like to thank the member of the Natural Product Research Group of UiTM, especially Prof. Dr. Nor Hadiani Ismail and Puan Faridahhanim Mohd. Jaafar for sharing their wonderful knowledge and assisted me in application and understanding of various spectroscopic methods especially NMR. I am grateful to my friends and colleagues for being supportive and lending their helping hands. This credits goes to Nurunajah, Asmah Alias,. Che Puteh, Fatimah, Pak Agus, Kak Wan, Khadijah, Syaza, Hazana, Aina, Ishak. Further appreciation dedicated as well to the persons who have taught and done the biological activities especially Adila from the Faculty of Pharmacy (cytotoxic assay); Haslini, Aina (antibacterial activity); Kak Puteh, Kak Asmah (radical scavenging assay); Puan Maizatul and Shafiq from IOS (neurotoxicity). This credit also goes to my beloved and supportive father Nik Abdullah Zawawi, my loving and caring mother Che Tom, and also to my big happy family for their sacrifices and encouragement throughout this study. Finally, I would like to acknowledge the Faculty of Applied Science, UiTM for funding this research through FRGS and National Science Fundation (NSF) for financial and monthly allowance throughout my studies.

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