

UNIVERSITI TEKNOLOGI MARA

**PHYTOCHEMICAL STUDY
AND BIOACTIVITY
FROM THE STEM BARK OF
SHOREA MACROPTERA DYER**

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Thesis submitted in fulfillment
of the requirement for the degree of
Master of Science

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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 result of my own work, unless otherwise assigned or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non academic institution for any other degree of 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

Shorea macroptera from family Dipterocarpaceae was studied for its phytochemical and biological activities. Eight compounds have been isolated including two compounds in mixture which consists of nine resveratrol oligomers and an isoferulic derivative. The compounds were identified as (*E*)-pentacosyl 3-(3-hydroxy-4-methoxyphenyl) acrylate, ϵ -viniferin, davidiol A, hemsleyanol D, hopeaphenol A, hopeaphenol, isohopeaphenol, stenophyllol B, gnetol and laevifonol. Gnetol is a monomer resveratrol, ϵ -viniferin and laevifonol are dimer resveratrols, davidiol A and stenophyllol B are trimer resveratrols while hemsleyanol D, hopeaphenol A, hopeaphenol and isohopeaphenol are tetramer resveratrols. Structural elucidation was performed with the aid of spectroscopic methods such as ultraviolet (UV), infrared (IR), mass spectrometry (MS), 1D and 2D nuclear magnetic resonance (NMR). *Shorea macroptera* extract and some of the isolated compounds have been tested for antioxidant, antibacterial and also cytotoxic activities. *Shorea macroptera* extract showed good antioxidant and antibacterial activities compared to individual isolated compounds. ϵ -viniferin demonstrated marked cytotoxic activity which strongly inhibited HL-60 cell lines but moderately on HeLa cell lines. Davidiol A showed significant cytotoxic activities. It strongly inhibited HL-60 cell lines but moderately inhibited HeLa cell line. Hemsleyanol D moderately inhibited the growth of HeLa cell line. Hopeaphenol displayed significant free radical scavenging activity. Stenophyllol B was found active in free radical scavenging and cytotoxic activities. Stenophyllol B exhibited moderate free radical activity and moderately inhibited HL-60 cell lines and HeLa cell lines. However, laevifonol was inactive towards all three assay tested.

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