

ISOLATION OF CHEMICAL COMPOUNDS FROM  
*ZIZIPHUS MAURITIANA* TRUNK BARKS

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ISOLATION OF CHEMICAL COMPOUNDS FROM *ZIZYPHUS MAURITIANA* LAM  
TRUNK BARKS

By

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## LIST OF ABBREVIATIONS

CC	-	Column Chromatography
CHCl <sub>3</sub>	-	Chloroform
<sup>13</sup> C NMR	-	Carbon-13 nuclear magnetic resonance
DPPH	-	Diperylparapicrylhidrazine
EIMS	-	Electron impact mass spectrometry
FT-IR	-	Fourier Transform Infrared Spectrometer
HPLC	-	High Performance Liquid Chromatography
<sup>1</sup> H NMR	-	Proton nuclear magnetic resonance
IR	-	Infrared
MS	-	Mass Spectrometry
MeOH	-	Methanol
NMR	-	Nuclear magnetic Resonance
TLC	-	Thin Layer Chromatography
UV	-	Ultraviolet
UV-Vis	-	Ultraviolet and visible Spectrophotometer

## ABSTRACT

*Zizyphus mauritiana* Lam or normally known as bedara is from Rhamnaceae family. This study was done to determine the existence of chemical compounds in *Zizyphus mauritiana* Lam trunk barks. Extraction of *Zizyphus mauritiana* Lam trunks bark was successfully conducted using methanol as solvent extraction. Then, methanol extract was used for solvent partitioning to obtain crude chloroform extract. In this study, crude chloroform extract (CAE) was used for separation and purification by using thin layer chromatography, column chromatography and cyclograph centrifugal chromatography or chromatotron. Two compounds (ZM 1 and ZM 2) were isolated from CAE. Fourier Transform Infrared (FT-IR) spectrometer, ultraviolet and visible (UV-Vis) spectrophotometer and proton nuclear magnetic resonance ( $^1\text{H}$  NMR) were used for structural analysis. Based on the IR and UV-Vis spectrums, ZM 1 was suggested as an alkyl and amine group containing a short conjugation of double bond with a carbonyl group while ZM 2 was suggested as an alkyl and amine group containing a short conjugated system with amide group. From  $^1\text{H}$  NMR, ZM 2 was best related to steroidal alkaloid possess carbonyl function an. Thus, two pure compounds were obtained from the (CAE) which were labelled as ZM 1 and ZM 2 (white and needle like crystal). ZM 1 and ZM 2 possess free scavenging activity for DPPH free radical scavenging assay test and for antimicrobial activity, only ZM 2 undergo for the test and it also gave a positive result. The melting point for ZM 2 was 302 °C - 304.4 °C.

## PENENTUAN SEBATIAN KIMIA DALAM KULIT BATANG *ZIZYPHUS MAURITIANA* LAM

### ABSTRAK

*Zizyphus mauritiana* Lam atau pokok bedara merupakan spesies pokok yang tergolong di dalam famili Rhamnaceae. Kajian ini dilakukan adalah untuk menentukan kehadiran komposisi kimia yang terdapat di dalam kulit batang kayu *Zizyphus mauritiana* Lam. Proses pengekstrakan telah dilakukan dengan menggunakan pelarut metanol. Seterusnya, pemisahan larutan dijalankan untuk menghasilkan ekstrak kloroform. Di dalam kajian ini, ekstrak kloroform digunakan untuk proses pemisahan dan penulenan dengan menggunakan teknik kromatografi lapisan nipis, kromatografi turus dan kromatotron. Dua komposisi tulen (ZM 1 dan ZM 2) telah berjaya dipisahkan daripada ekstrak kloroform. Komponen-komponen kimia yang berjaya dipisahkan dianalisis dengan menggunakan teknik spektroskopi infra merah (IM), ultra lembayung dan cahaya nampak (UL-Nampak) dan proton resonan magnetik nuklear ( $^1\text{H}$  NMR). Daripada spektrum IM dan UL-Nampak, komposisi ZM 1 mengandungi kumpulan alkil dan amina dengan sistem konjugasi pendek berserta kumpulan karbonil manakala ZM 2 mempunyai kumpulan alkil dan amina dengan sistem konjugasi pendek berserta kumpulan amida. Analisis  $^1\text{H}$  NMR menunjukkan ZM 2 adalah alkaloid jenis steroid dengan kumpulan karbonil dan alkena. ZM 1 dan ZM 2 adalah komposisi tulen (kristal putih berbentuk jarum). Kedua-duanya positif ke atas DPPH dan ZM 2 juga positif antimikrobial. Takat lebur ZM 2 ialah  $302^\circ\text{C} - 304.4^\circ\text{C}$ .