

ISOLATION OF CHEMICAL COMPOUNDS FROM
ZIZYPHUS MONTANA TRUNK BARKS

REPORT OF DATA

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Isolation of chemical compounds from *Zizyphus mauritiana* trunks.



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

By

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**Research Report submitted in partial fulfillment of
the requirements for the degree of
Bachelor of Science (Chemical Sciences)**

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:
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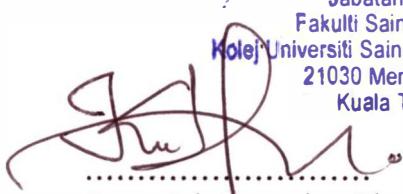
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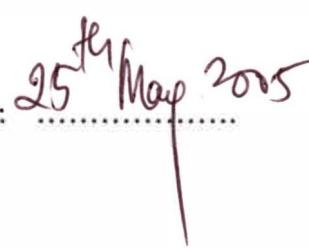
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TABLE OF CONTENTS

	Page
APPROVAL FORM	ii
ACNOMLEDGEMENTS	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ABBREVIATIONS	ix
ABSTRACT	x
ABSTRAK	xi
 CHAPTER	
1.0 INTRODUCTION	1
1.1 Rhamnaceae	1
1.2 Cyclopeptide alkaloids	2
1.3 Objectives	4
2.0 LITERATURE REVIEW	5
2.1 Genus <i>Zizyphus</i>	5
2.2 Use and Commercial Importance of <i>Zizyphus</i>	7
2.2.1 Food (Flavouring and Beverages)	7
2.2.2 Medicinal Properties	8
2.3 Previous works on <i>Zizyphus</i>	9
2.3.1 Phytochemical study on the genera of <i>Zizyphus</i>	9
2.3.2 Biological Activity	14
2.4 Species <i>Zizyphus mauritiana</i> Lam	19
2.4.1 Previous Phytochemical Works on <i>Zizyphus mauritiana</i> Lam	21
3.0 METHODOLOGY	24
3.1 Techniques and Instruments	24
3.1.1 Thin layer chromatography (TLC)	24
3.1.2 Column chromatography (CC)	26
3.1.3 Infrared (IR) spectrophotometer	26
3.1.4 Ultraviolet (UV) spectrophotometer	27
3.1.5 Nuclear magnetic resonance (NMR) spectrometer	27
3.2 Experimental Methods	28
3.2.1 Plant materials	28
3.2.2 Extraction process	28

3.2.3	Solvent partitioning	29
3.2.4	Separation and purification	30
3.2.5	DPPH free radical scavenging assay	35
3.2.6	Antimicrobial activity	35
3.2.7	Compounds characterization	36
3.2.8	Melting point	37
4.0	RESULTS AND DISCUSSION	38
4.1	Methanol extraction	38
4.2	Chloroform extraction	38
4.3	Separation and purification	39
4.3.1	Thin layer chromatography	39
4.3.2	Column chromatography	41
4.3.3	Purification of ZM 1 by repeated column chromatography	41
4.3.4	Purification of ZM 2 by chromatotron	42
4.3.5	Physical and chemical properties of ZM 1 and ZM 2	42
4.4	DPPH free radical scavenging assay	43
4.5	Antimicrobial activity	44
4.6	Compounds characterization	44
4.6.1	Characterization of ZM 1	45
4.6.2	Characterization of ZM 2	50
4.7	Melting point	60
5.0	CONCLUSION	61
5.1	Conclusion	61
5.2	Recommendations for future study	63
REFERENCES		64
CURRICULUM VITAE		69

LIST OF TABLES

Table		Page
3.1	Solvent system used for chromatography techniques	32
3.2	The combinations fraction from column chromatography	33
4.1	R _f value for each components of CAE in different solvent system	40
4.2	The physical and chemical properties of ZM 1 and ZM 2	43
4.3	Inhibition zone for antimicrobial activity	44
4.4	UV interpretations for ZM 1	49
4.5	UV interpretations for ZM 2	54
4.6	The assignment of proton nuclear magnetic resonance (¹ H NMR)	59

LIST OF FIGURES

Figure		Page
1.1	General structure of cyclopeptide alkaloids	3
2.1	Leaves and fruits of <i>Zizyphus</i>	6
2.2	Compounds isolated from <i>Zizyphus oenoplia</i>	10
2.3	Compounds isolated from <i>Zizyphus sativa</i>	11
2.4	Compound isolated from <i>Zizyphus jujuba</i>	11
2.5	Compound isolated from <i>Zizyphus mucronata</i>	12
2.6	Triterpene esters isolated from <i>Zizyphus jujuba</i>	12
2.7	Compound isolated from <i>Zizyphus lotus</i>	14
2.8	Structure of pandamine	16
2.9	Structure of sanjoinine-A	17
2.10	Structure of frangulanine	17
2.11	Structure of betulinic acid	18
2.12	Structure of condaline-A	18
2.13	<i>Zizyphus mauritiana</i> Lam	19
2.14	Compounds isolated from <i>Zizyphus mauritiana</i> Lam	22
3.1	Extraction, separation and structure determination process for <i>Zizyphus mauritiana</i> Lam	25
3.2	The scheme of extraction process	29

3.3	The solvent system for chromatography technique	31
4.1	TLC chromatograms of crude alkaloid extract in different solvent system	40
4.2	IR spectrum of ZM 1	48
4.3	UV spectrum of ZM 1	49
4.4	IR spectrum of ZM 2	53
4.5	UV spectrum of ZM 2	54
4.6	¹ H NMR spectrum of ZM 2	55

LIST OF ABBREVIATIONS

CC	-	Column Chromatography
CHCl ₃	-	Chloroform
¹³ 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
¹ 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 obtained 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 (^1H 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 ^1H 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 (^1H 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 ^1H 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 $302^\circ\text{C} - 304.4^\circ\text{C}$.