

**A COMPARISON OF BIOMEDICAL ACTIVITIES
COMPONENTS IN *ULAMS* USING GC-MS**

AISYAH BINTI ISMAIL

**Final Year Project Report Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science (Hons.) Chemistry
in the Faculty of Applied Science
Universiti Teknologi MARA**

JULY 2017

This Final Year Project entitled “**A Comparison of Biomedical Activities Components in Ulams using GC-MS**” was submitted by Aisyah binti Ismail, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Chemistry, in the Faculty of Applied Sciences, and was approved by:

Mazni binti Musa
Supervisor
B. Sc. (Hons.) Chemistry
Faculty of Applied Sciences
University Teknologi MARA
72000 Kuala Pilah
Negeri Sembilan

Nurul Huda bt Abdul Halim
Project Coordinator
B. Sc. (Hons.) Chemistry
Faculty of Applied Sciences
University Teknologi MARA
72000 Kuala Pilah
Negeri Sembilan

Mazni binti Musa
Head of Chemistry Programme
B. Sc. (Hons.) Chemistry
Faculty of Applied Sciences
University Teknologi MARA
72000 Kuala Pilah
Negeri Sembilan

Date : _____

TABLE OF CONTENTS

ACKNOWLEDGEMENT	i
TABLE OF CONTENTS	ii
LIST OF TABLES	iv
LIST OF FIGURES	v
LIST OF ABBREVIATIONS	vi
ABSTRACT	vii
ABSTRAK	viii
CHAPTER 1 INTRODUCTION	
1.1 Background of Study	1
1.2 Problem Statement	4
1.3 Significance of Study	5
1.4 Objectives of Study	6
CHAPTER 2 LITERATURE REVIEW	
2.1 Biomedical Activities	7
2.2 <i>Centella asiatica</i>	10
2.3 <i>Cosmos Caudatus</i>	13
2.4 <i>Oenanthe Javanica</i>	16
2.5 <i>Parkia Speciosa</i>	18
2.6 <i>Piper Sarmentosum</i>	19
2.7 Gas Chromatography Mass Spectroscopy (GC-MS)	22
CHAPTER 3 METHODOLOGY	
3.1 Raw Materials	23
3.2 Apparatus	23
3.3 Chemicals	24
3.4 Extraction of Samples	24
3.5 Phytochemical Screening	26
3.5.1 Preparation of Reagents	26
3.5.1.1 Preparation of Mayer's reagent	26
3.5.1.2 Preparation of Wagner's Reagent	26
3.5.1.3 Preparation of 5% Ferric Chloride Solution	26
3.5.2 Alkaloids Test	27
3.5.3 Flavonoids Test	27
3.5.4 Phenols Test	28

CHAPTER 4 RESULTS AND DISCUSSION	
4.1 Mass of Samples	30
4.2 Phytochemical Screening	31
4.3 GC-MS Results and Analysis	33
4.3.1 <i>Centella asiatica</i>	33
4.3.2 <i>Cosmos caudatus</i>	39
4.3.3 <i>Oenanthe javanica</i>	47
4.3.4 <i>Parkia speciosa</i> (beans)	53
4.3.5 <i>Parkia speciosa</i> (pods)	58
4.3.6 <i>Piper sarmentosum</i>	63
CHAPTER 5 CONCLUSION AND RECOMMENDATION	66
CITED REFERENCES	68
APPENDICES	72
<i>CURRICULUM VITAE</i>	78

ABSTRACT

A COMPARISON OF BIOMEDICAL ACTIVITIES COMPONENTS IN *ULAMS* USING GC-MS

In this study, the biomedical activities components in ulams have been analyzed using GC-MS. The chemical compositions of the plant extracts were studied using Perkin-Elmer GC-MS, to determine which ulam has the highest biomedical activities components. The result shows that, *Cosmos caudatus* has the highest number of biomedical activities compounds with 12 compounds. Followed by, *Oenanthe javanica* (11 compounds), *Parkia speciosa* (beans) has 9 main compounds, *Parkia speciosa* (pods) and *Centella asiatica* has 8 main compounds and *Piper sarmentosum* has 4 major compounds. GC-MS analysis revealed the biomedical activities compounds in *Cosmos caudatus* are cycloheptasiloxane, cyclooctasiloxane, cyclononasiloxane, cyclodecasiloxane, cyclohexasiloxane, hexadecanoic acid, Bis(pentamethylcyclotrisiloxy)tetramethyldisiloxane, 2-Pentadecanone, 6,10,14-trimethyl-, (1R,7S,E)-7-Isopropyl-4,10-dimethylenecyclodec-5-enol, glycylsarcosine, 5H-Cyclopropa[3,4]benz[1,2-e]azulen-5-one,9-(acetyloxy)-3-[(acetyloxy)methyl]-1, 1a, 1b, 4, 4a, 7a, 7b, 8, 9, 9a-decahydro-4a,7b,9a-trihydroxy-1,1,6,8-tetramethyl-, 7-Methylthioheptanenitrile, N-(2-Phenylethyl)undeca-(2Z,4E)-diene-8,10-diyamide, estra-1,3,5(10)-trien-17 β -ol and caryophylla-4(12),8(13)-dien-5 α -ol.