

**CHEMICAL CONSTITUENTS OF *CALOPHYLLUM INOPHYLLUM*  
AND *CRATOXYLUM GLAUCUM* (GUTTIFERAE)**

**By**

**AUDREY KUA SIEW MAY**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in  
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fulfilment of the requirement for the degree of Master of Science

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**Chairman : Associate Professor Gwendoline Ee Cheng Lian, PhD**

**Faculty : Science**

Extensive studies on the plants, *Calophyllum inophyllum* and *Cratoxylum glaucum* have resulted in the isolation of ten compounds. All these compounds were isolated by means of chromatographic methods and their structures derived on the basis of spectroscopic evidence, mainly 1D and 2D nuclear magnetic resonance spectroscopy.

Chemical investigations on the root bark extracts of *Calophyllum inophyllum* has yielded two new xanthenes, inophyllin A and inophyllin B, three known xanthenes, brasilixanthone B, tovopyrifolin C, caloxanthone B, one triterpene, friedelin and one triterpenoid,  $\beta$ -sitosterol. *Cratoxylum glaucum* afforded two triterpenes, friedelin and stigmasterol, two known anthraquinones, 1,8-dihydroxy-3-methoxy-6-methyl-anthraquinone and vismiaquinone and a known xanthone, dimethylmangostin.

Cytotoxic assay was performed using CEM-SS Cell Line. All the crude extracts of *Calophyllum inophyllum* and *Cratoxylum glaucum* showed no activity.

Antimicrobial assay was carried out towards four pathogenic bacteria, Methicillin Resistant *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Staphylococcus typhimurium* and *Bacillus subtilis*. Most of the crude extracts tested against these microbes gave no activity.

Larvicidal test was carried out towards the larvae of *Aedes aegypti*. The larvae were not susceptible to all of the crude extracts and pure compounds of *Calophyllum inophyllum* and *Cratoxylum glaucum*.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia  
sebagai memenuhi keperluan untuk ijazah Master Sains

**KANDUNGAN KIMIA DARIPADA *CALOPHYLLUM INOPHYLLUM*  
DAN *CRATOXYLUM GLAUCUM* (GUTTIFERAE)**

Oleh

**AUDREY KUA SIEW MAY**

**Januari 2006**

**Pengerusi : Profesor Madya Gwendoline Ee Cheng Lian, PhD**

**Fakulti : Sains**

Kajian terperinci ke atas pokok-pokok *Calophyllum inophyllum* dan *Cratoxylum glaucum* telah menghasilkan sepuluh sebatian semulajadi. Semua sebatian ini telah dipisahkan dengan menggunakan kaedah kromatografi dan struktur masing-masing telah diterbitkan berdasarkan bukti-bukti spektroskopi, terutamanya melalui penggunaan spektroskopi jenis resonans magnet nucleus, RMN 1D dan 2D.

Kajian secara kimia ke atas ekstrak mentah bagi kulit akar pokok *Calophyllum inophyllum* telah menghasilkan sebatian-sebatian semulajadi, iaitu penemuan dua sebatian baru, inofilin A and inofilin B, Selain itu, beberapa sebatian seperti brasilixanton B, tovopirifolin C, caloxanton B, friedelin and stigmasterol berjaya dihasilkan. Bagi pokok *Cratoxylum glaucum*, ia menghasilkan friedelin,  $\beta$ -sitosterol, 1,8-dihidroksi-3-metoksi-6-metil-antraquinon, vismiaquinon dan dimetilmangostin.

Ujian sitotoksik dijalankan dengan menggunakan sel CEM-SS. Kesemua ekstrak yang diperolehi daripada pokok-pokok *Calophyllum inophyllum* dan *Cratoxylum glaucum* tidak menunjukkan aktiviti.

Ujian antimikrob telah dijalankan dengan menggunakan bakteria-bakteria jenis Methicillin Resistant *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Staphylococcus typhimurium* dan *Bacillus subtilis*. Kebanyakan ekstrak yang diuji tidak menunjukkan keaktifan terhadap bakteria-bakteria tersebut.

Ujian larva telah dijalankan dengan menggunakan larva jenis *Aedes aegypti*. Dalam ujian ini, ekstrak bagi kesemua pelarut dan juga sebatian tulen daripada *Calophyllum inophyllum* dan *Cratoxylum glaucum* telah diuji dan tidak menunjukkan aktiviti.

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I certify that an Examination Committee has met on 19<sup>th</sup> January 2006 to conduct the final examination of Audrey Kua Siew May on her Master of Science thesis entitled “Chemical Constituents of *Calophyllum inophyllum* and *Cratoxylum glaucum* (Guttiferae)” in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

**Asmah Haji Yahaya, PhD**

Associate Professor  
Faculty of Science  
Universiti Putra Malaysia  
(Chairman)

**Md. Taufiq @ Yap Yun Hin, PhD**

Associate Professor  
Faculty of Graduate Studies  
Universiti Putra Malaysia  
(Internal Examiner)

**Aspollah Hj. Md. Sukari, PhD**

Associate Professor  
Faculty of Science  
Universiti Putra Malaysia  
(Internal Examiner)

**Hasnah Sirat, PhD**

Professor  
Faculty of Science  
Universiti Teknologi Malaysia  
(External Examiner)

---

**HASANAH MOHD. GHAZALI, PhD**

Professor/Deputy Dean  
School of Graduate Studies  
Universiti Putra Malaysia

Date:

This thesis submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee are as follows:

**GWENDOLINE EE CHENG LIAN, PhD**

Associate Professor  
Department of Chemistry  
Faculty of Science  
Universiti Putra Malaysia  
(Chairman)

**MAWARDI RAHMANI, PhD**

Professor  
Department of Chemistry  
Faculty of Science  
Universiti Putra Malaysia  
(Member)

---

**AINI IDERIS, PhD**

Professor/Dean  
School of Graduate Studies  
Universiti Putra Malaysia

Date:



## **DECLARATION**

I hereby declare that the thesis is based on my original work except for quotations and citations, which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.

**AUDREY KUA SIEW MAY**

Date:

## TABLE OF CONTENTS

		<b>Page</b>
<b>ABSTRACT</b>		ii
<b>ABSTRAK</b>		iv
<b>ACKNOWLEDGEMENTS</b>		vi
<b>APPROVAL</b>		vii
<b>DECLARATION</b>		ix
<b>LIST OF TABLES</b>		xiii
<b>LIST OF FIGURES</b>		xv
<b>LIST OF ABBREVIATIONS</b>		xxii
<b>CHAPTER</b>		
		<b>Page</b>
1	INTRODUCTION	1
	1.1 General introduction	1
	1.2 Botany of plants studied	5
	1.2.1 The family Guttiferae	5
	1.2.2 The genus <i>Calophyllum</i>	6
	1.2.3 The genus <i>Cratoxylum</i>	7
	1.2.4 The species <i>Calophyllum inophyllum</i>	8
	1.2.5 The species <i>Cratoxylum glaucum</i>	10
	1.3 Objectives of Study	11
2	LITERATURE REVIEW	12
	2.1 Chemistry of <i>Cratoxylum</i> Species	12
	2.1.1 Previous Work on Xanthones in <i>Cratoxylum</i> Species	12
	2.1.2 Previous Work on Triterpenoids in <i>Cratoxylum</i> Species	19
	2.2 Chemistry of <i>Calophyllum</i> Species	20
	2.2.1 Previous Work on xanthones in <i>Calophyllum</i> Species	20
	2.2.2 Previous Work on coumarins in <i>Calophyllum</i> Species	29
	2.2.3 Previous Work on flavonoids in <i>Calophyllum</i> Species	34
	2.2.4 Previous Work on chromene acids in <i>Calophyllum</i> Species	38
	2.2.5 Previous Work on biological activities in <i>Calophyllum</i> Species	39
	2.3 Proposed selection of plant materials	46
3	EXPERIMENTAL	47

3.1	Plant Material	47
3.2	Instruments	47
	3.2.1 Infrared Spectroscopy (IR)	47
	3.2.2 Mass Spectra (MS)	47
	3.2.3 High Performance Liquid Chromatography (HPLC)	48
	3.2.4 Melting Point	48
	3.2.5 Nuclear Magnetic Resonance (NMR)	48
	3.2.6 Ultra Violet (UV)	48
3.3	Chromatographic Methods	49
	3.3.1 Column Chromatography	49
	3.3.2 Thin Layer Chromatography (TLC)	50
	3.3.3 Preparative Layer Chromatography	50
3.4	Dyeing Reagents for TLC	51
	3.4.1 Vanillin-Sulfuric Acid Solution	51
	3.4.2 Iron (III) Chloride Solution	51
	3.4.3 Copper (II) Sulfate-Sodium Citrate	52
3.5	Extraction and isolation of compounds from <i>Cratoxylum glaucum</i> and <i>Calophyllum inophyllum</i>	52
	3.5.1 <i>Cratoxylum glaucum</i>	52
	3.5.1.1 Isolation of Friedelin (25)	53
	3.5.1.2 Isolation of Stigmasterol (117)	55
	3.5.1.3 Isolation of 1,8-dihydroxy-3-methyl-6-methoxy-anthraquinone (118)	56
	3.5.1.4 Isolation of Vismiaquinone (119)	58
	3.5.1.5 Isolation of Dimethylmangostin (120)	59
	3.5.2 <i>Calophyllum inophyllum</i>	61
	3.5.2.1 Isolation of Friedelin (25)	62
	3.5.2.2 Isolation of $\beta$ -Sitosterol (121)	62
	3.5.2.3 Isolation of Inophyllin B (122)	64
	3.5.2.4 Isolation of Inophyllin A (123)	65
	3.5.2.5 Isolation of Brasilixanthone B (124)	67
	3.5.2.6 Isolation of Tovopyrifolin C (125)	69
	3.5.2.7 Isolation of Caloxanthone B (126)	70
3.6	Cytotoxic Assay	72
3.7	Antimicrobial Activity	73
3.8	Larvicidal Assay	75
4	RESULTS AND DISCUSSION	76
	4.1 Isolation of Chemical Constituents from <i>Cratoxylum glaucum</i>	76

4.1.1	Characterization of Friedelin (25)	78
4.1.2	Characterization of Stigmasterol (117)	86
4.1.3	Characterization of 1,8-dihydroxy-3-methoxy-6-methyl-anthraquinone (118)	93
4.1.4	Characterization of Vismiaquinone (119)	105
4.1.5	Characterization of Dimethylmangostin (120)	118
4.2	Isolation of Chemical Constituents from <i>Calophyllum inophyllum</i>	131
4.2.1	Characterization of $\beta$ -Sitosterol (121)	133
4.2.2	Characterization of Inophyllin B (122)	140
4.2.3	Characterization of Inophyllin A (123)	159
4.2.4	Characterization of Brasilixanthone B (124)	177
4.2.5	Characterization of Tovopyrifolin C (125)	191
4.2.6	Characterization of Caloxanthone B (126)	207
4.3	Bioassay Results	222
4.3.1	Larvicidal Activity	222
4.3.2	Antimicrobial Activity	222
4.3.3	Cytotoxic Activity	223
5	CONCLUSIONS	224
	REFERENCES	226
	APPENDIX	234
	BIODATA OF THE AUTHOR	241