

**SCREENING OF PHYTOCHEMICAL CONSTITUENTS  
AND ANTIOXIDANT ACTIVITY OF *Peperomia pellucida* AND  
*Premna cordifolia* LEAVES EXTRACTS**

**NORSYAZANA BINTI KAMAL ARIFIN**

**BACHELOR OF SCIENCE (Hons.) BIOLOGY  
FACULTY OF APPLIED SCIENCES  
UNIVERSITY TEKNOLOGI MARA**

**JULY 2016**

## ACKNOWLEDGEMENTS

I would like to express my thank you to my supervisor Madam Ainun Jariah binti Manaf for helping me to get through this final semester project where she has put a lot of effort in order my final project would be success. Not forget with a thousand of thank you to my co- supervisor Dr. Neni Kartini Che Mohd Ramli who has taught me a lot about instrumental handling during the ongoing project. I also want to say thank you to En. Shamsuddin Ismail, Penolong Pengurus Ladang Unit Ladang Uitm Pahang who is very supportive and allowed my plants sample collected from UiTM Herbal Park. Lastly, thank you to my beloved parents and sibling that always give me the unlimited support. Thank you also to my team for sharing their idea, thought and solution to my problem.

(NORSYAZANA BINTI KAMAL ARIFIN)

## TABLE OF CONTENTS

	<b>PAGE</b>
<b>ACKNOWLEDGEMENT</b>	iii
<b>TABLE OF CONTENT</b>	v
<b>LIST OF TABLES</b>	vi
<b>LIST OF FIGURES</b>	vii
<b>LIST OF ABBREVIATIONS</b>	viii
<b>ABSTRACTS</b>	ix
<b>ABSTRAK</b>	x
<b>CHAPTER 1: INTRODUCTION</b>	
1.1 Background of Study	1
1.2 Problem Statement	4
1.3 Significant of the Study	4
1.4 Objectives of the Study	5
<b>CHAPTER 2: LITERATURE REVIEW</b>	
2.1 Antioxidants	5
2.1.1 Synthetic antioxidant	8
2.2 Free radical scavenging activities	9
2.3 Phytochemical in plants	10
2.3.1 Phenolic compounds	11
2.3.2 Flavonoids	12
2.3.3 Alkaloids	13
2.3.4 Vitamins	14
2.4 Phytochemical and antioxidant effect on health	14
2.4.1 Benefits of fruits and vegetables	15
2.5 Potential of <i>Peperomia pellucida</i> and <i>Premna cordifolia</i>	17
2.8.1 <i>Peperomia pellucida</i>	17
2.8.2 <i>Premna cordifolia</i>	18
<b>CHAPTER 3: METHODOLOGY</b>	
3.1 Materials	20
3.1.1 Raw materials	20
3.1.2 Chemicals	20
3.1.3 Apparatus	20
3.1.4 Instruments and equipment	20
3.2 Plants material collection and preparation	21

3.3	Sequential extraction of crude leaves extracts	21
3.4	Phytochemical screening test	22
3.4.1	Test for alkaloid	22
3.4.2	Test for saponin	23
3.4.3	Test for terpenoid	23
3.4.4	Test for flavonoid	23
3.4.5	Test for tannin	24
3.4.6	Test for total phenolic	24
3.5	Antioxidants activity (DPPH-free radical scavenging activity)	24
3.6	HPLC-DAD system for quantitative analyses	25

#### **CHAPTER 4: RESULTS AND DISCUSSION**

4.1	Crude leaves extracts yield	27
4.2	Phytochemical Screening Test	29
4.3	Total phenolic content (TPC) of methanolic extracts solution	31
4.4	Antioxidants activity (DPPH- free Radical Scavenging Assay)	33
4.5	HPLC-DAD system for quantitative analyses	35

#### **CHAPTER 5: CONCLUSION AND RECOMMENDATION**

<b>CITED REFERENCES</b>	42
<b>APPENDICES</b>	46
<b>CURICULUM VITAE</b>	47

## ABSTRACT

### SCREENING OF PHYTOCHEMICAL CONSTITUENTS AND ANTIOXIDANT ACTIVITY OF *Peperomia pellucida* AND *Premna cordifolia* LEAVES EXTRACTS

Herbal plants medicine is a relevant and effective part of indigenous healthcare systems which are in practice totally depends on the traditional healers. The herbal plants are an abundance sources in local area around Malaysia that are still unknown and unexploited. The aim of this study is to determine and identify the antioxidant activities and phytochemical constituents inside the *P. pellucida* and *P. cordifolia* crude leaves extracts and also to observe antioxidant activity by using HPLC-DAD system. Three types of crudes extract obtained from dry leaves of *P. pellucida* and *P. cordifolia* through sequential extraction technique using three different polarities of solvents which are hexane, chloroform and methanol. The yield percentage of extract obtained for *P. pellucida* were 6.46%, 1.61% and 2.23% followed the solvent sequences. While for *P. cordifolia*, obtained 0.25%, 10.14% and 4.23% respectively. In vitro phytochemical screening for all crude extracts was tested and positive results shown for terpenoids, flavonoid and phenol. All crude showed negative results for alkaloid, tannin and saponin components. While the total phenolic content tested results positive on both plant. The antioxidant activities of difference crude extracts were determined by using DPPH method. Results found that the inhibition percentage of DPPH in *P. pellucida* was the lowest in hexane solvent at value 18.05%. While the highest value shown in methanol solvent at 82.36%. Meanwhile inhibition percentage of DPPH in *P. cordifolia* was only detected in methanol solvent at value 47.97%. The inhibition percentage value of *P. cordifolia* is lower than *P. pellucida*, thus indicated that *P. pellucida* has the best value of inhibition percentage of DPPH for greater antioxidant activity. Methanol crude leaves extracts of both plants were analyzed through HPLC-DAD profiling to prove their antioxidant activity using ascorbic acids standard. The results found that the retention time of *P. pellucida* and *P. cordifolia* were obtained at 3.207 and 3.320 minute respectively. In conclusion, *P. pellucida* could be used as potential new sources of antioxidants as a substituted to the synthetic antioxidant. As for the *P. cordifolia*, the inhibition percentage of DPPH is lower so, it has less antioxidant effects to the consumer.