

ANTIOXIDATIVE COMPONENTS OF *Geranium javanicum*  
(SE. 200) AND *Melastoma coccineum* (RUBIK. 181)

MURULINDAYAN BT ALIAS

FAKULTI SAINS DAN TEKNOLOGI  
UNIVERSITI MALAYSIA TERENGGANU  
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Perpustakaan Sultanah Nur Zahirah (UMT)  
Universiti Malaysia Terengganu



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Antioxidative constituents of *Oenanthe javanica* (selom) and  
*Mahinot esculenta* (pucuk ubi) / Nurulhidayah Alias.

PERPUSTAKAAN  
UNIVERSITI MALAYSIA TERENGGANU (UMT)  
21030 KUALA TERENGGANU

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HAK MILIK  
PERPUSTAKAAN UMT

ANTIOXIDATIVE CONSTITUENTS OF *Oenanthe javanica* (SELOM) AND  
*Mahinot esculenta* (PUCUK UBI)

By

NURULHIDAYAH BT ALIAS

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UNIVERSITI MALAYSIA TERENGGANU

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **ANTIOXIDATIVE CONSTITUENTS OF *Oenanthe javanica* (SELOM) AND *Mahinot esculenta* (PUCUK UBI)** oleh **NURULHIDAYAH BT ALIAS**, no. matrik: **UK9450** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains (Sains Biologi), Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

Disahkan oleh: / Verified by:

Penyelia Utama / Main Supervisor

Nama: PUAN NORHAYATI BT YUSUF

Cop Rasmi: **NORHAYATI BINTI YUSUF**

Pensyarah

Jabatan Sains Biologi

Fakulti Sains dan Teknologi

Universiti Malaysia Terengganu

21030 Kuala Terengganu.

Tarikh: 25/4/07

Ketua Jabatan Sains Biologi / Head, Department of Biological Sciences

Nama: DR. AZIZ B. AHMAD

Cop Rasmi:

**DR. AZIZ BIN AHMAD**

Ketua

Jabatan Sains Biologi

Fakulti Sains dan Teknologi

Universiti Malaysia Terengganu

21030 Kuala Terengganu

Tarikh: .....

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## TABLE OF CONTENTS

	<b>PAGE</b>
<b>ACKNOWLEDGEMENT</b>	<b>ii</b>
<b>LIST OF TABLES</b>	<b>v</b>
<b>LIST OF FIGURES</b>	<b>vi</b>
<b>LIST OF ABBREVIATIONS</b>	<b>vii</b>
<b>LIST OF APPENDICES</b>	<b>ix</b>
<b>ABSTRACT</b>	<b>x</b>
<b>ABSTRAK</b>	<b>xi</b>
<b>CHAPTER 1            INTRODUCTION</b>	
1.1    Study Background	1
1.2    Objective of the study	4
<b>CHAPTER 2            LITERATURE REVIEW</b>	
2.1    Free Radicals and Its Role	5
2.1.2    ROS, Oxidative Stress and Oxidative damage	6
2.1.3    Free Radicals and Diseases	9
2.2    Antioxidants and Its Role	9
2.3    Antioxidant Defense System	11
2.3.1    Enzymatic Antioxidant	12
2.3.2    Non-enzymatic Antioxidant	13
2.4 <i>Oenanthe javanica</i>	15
2.5 <i>Mahinot esculenta</i>	17
<b>CHAPTER 3            METHODOLOGY</b>	
3.1    Plant Materials	19
3.2    Determination of $\alpha$ -tocopherol	19
3.2.1    Standard curve preparation	20
3.3    Determination of Ascorbic acid	20
3.3.1    Standard curve preparation	20
3.4    Determination of Carotenoid	20

3.5	Catalase Specific Activity	21
3.6	Ascorbate Peroxidase (APX) Specific Activity	22
3.7	Guaiacol Peroxidase (POD) Specific Activity	22
3.8	Determination of protein Content	23
3.9	Statistical Analysis	23
<b>CHAPTER 4 RESULT</b>		
4.1	Non-enzymatic Antioxidant	24
4.2	Enzymatic Antioxidant	27
<b>CHAPTER 5 DISCUSSION</b>		
5.1	Non-enzymatic Antioxidant	31
5.2	Enzymatic Antioxidant	34
<b>CHAPTER 6 CONCLUSION</b>		36
<b>REFERENCES</b>		37
<b>APPENDICES</b>		46
<b>CURICULLUM VITAE</b>		54



## LIST OF TABLES

TABLE	PAGE
1. Reactive Oxygen and Nitrogen Species	6
2. Constituents of <i>Oenanthe javanica</i> and <i>Mahinot esculenta</i> .	30

Data are means  $\pm$  standard error.

## LIST OF FIGURE

FIGURE		PAGE
1.	Major sources of free radicals in the body and the consequences of oxidative damage	7
2.	Antioxidant defenses against free radical attack	11
3.	Asada Halliwell pathway of hydrogen peroxide scavenging and ascorbic acid generation involving various antioxidant enzymes	13
4.	<i>Oenanthe javanica</i>	15
5.	<i>Mahinot esculenta</i>	17
6.	$\alpha$ -Tocopherol concentration (mg/g.fwt) in <i>Oenanthe javanica</i> and <i>Mahinot esculenta</i>	25
7.	Ascorbic Acid concentration (mg/g.fwt) in <i>Oenanthe javanica</i> and <i>Mahinot esculenta</i>	25
8.	Carotenoid content (mg/g.fwt) in <i>Oenathe javanica</i> and <i>Mahinot esculenta</i>	26
9.	Catalase specific activity (units/mg protein) in <i>Oenanthe javanica</i> and <i>Mahinot esculenta</i>	28
10.	Guaiacol Peroxidase specific activity (units/mg protein) level in <i>Oenanthe javanica</i> and <i>Mahinot esculenta</i>	28
11.	Ascorbate Peroxidase specific activity (units/mg protein) in <i>Oenanthe javanica</i> and <i>Mahinot esculenta</i>	29

## LIST OF ABBREVIATIONS

%	Percent
$^1\text{O}_2$	Singlet oxygen
APX	Ascorbate Peroxidase
BSA	Bovine Serum Albumin
CAT	Catalase
$\text{Cu}^+$	Copper
DNA	Deoxyribonucleic acid
EDTA	Ethylenediaminetetraacetic acid
$\text{Fe}^{2+}$	Ferum Ion
Fwt	Fresh Weight
g	Gram
GSH	Glutathione
$\text{H}_2\text{O}_2$	Hydrogen peroxide
$\text{HNO}_2$	Nitrous Acid
$\text{HO}\cdot$	Hydrogen radicals
HOCl	Hypochlorous Acid
kJ	Kilojoule
M	Molar
mg	Miligram
mg/g fwt	Miligram per gram fresh weight
min	Minutes
ml	Mililiter
mM	Milimolar
$\text{N}_2\text{O}_3$	Dinitrogen Trioxide
$\text{N}_2\text{O}_4$	Dinitrogen tetraoxide
nm	Nanometer
$\text{NO}_2\cdot$	Nitrogen Dioxide
$\text{NO}\cdot$	Nitric oxide radical
$\text{NO}_2^+$	Nitronium cation
$\text{O}_2$	Oxygen
$\text{O}_2\cdot^-$	Superoxide radicals

O <sub>3</sub>	Ozone
OH·	Hydroxyl radical
ONOO <sup>-</sup>	Peroxynitrite
PDT	3-(2-pyridyl)-5,6-diphenyl-1,2,4 triazine
POD	Peroxidase
RDA	Recommended Daily Allowance
RNS	Reactive nitrogen species
ROO·	Peroxyl radical
ROONO	Alkyl Peroxynitrates
ROS	Reactive oxygen species
SOD	Superoxide Dismutase
SONA	Suggested Optimal Daily Nutritional Allowances
TCA	Trichloroacetic Acid
t	time
Unit/mg protein	Units per milligram protein
USRDA	United States Recommended Daily Allowances
v/v	Volume per volume
w/v	Weight per volume
μg	Microgram
μl	Microliter

## LIST OF APPENDICES

APPENDIX	PAGE
1 $\alpha$ -tocopherol standard curve	46
2     Ascorbic acid standard curve	46
3     Formula for calculate carotenoid contents	47
4     Protein standard curve for Catalase Assay	47
5     Protein standard curve for Guaiacol Peroxidase (POD)	48
6     Protein standard curve for Ascorbate Peroxidase (APX)	48
7     Statically analysis using a t-test for $\alpha$ -tocopherol concentration	49
8     Statically analysis using a Mann-Whitney U test for ascorbic acid Concentration	49
9     Statically analysis using a t-Test for Carotenoid content	50
10    Statically analysis using a t-Test for Catalase specific activities	50
11    Statically analysis using a Mann-Whitney U test for Guaicol Peroxidase (POD) specific activities	50
12    Statically analysis using a t-Test for Ascorbate Peroxidase specific activities	51
13    The Suggested Optimal Daily Nutritional Allowances (SONA)	52

## ABSTRACT

Malays traditional vegetables in Malaysia are consumed because of their taste as well as for their health benefit. Nutritional studies have indicated that many of these vegetables supply the human body with essential dietary antioxidant component. The concentrations of antioxidative constituents ( $\alpha$ -tocopherol, ascorbic acid and carotenoid content as well as catalase (CAT), guaiacol peroxidase (POD) and ascorbate peroxidase (APX) specific activities) were studied in the leaf tissues of *Oenanthe javanica* (selom) and *Mahinot esculenta* (pucuk ubi). Result showed that *Oenanthe javanica* exhibited significantly higher concentration of  $\alpha$ -tocopherol, ascorbic acid as well as ascorbate peroxidase specific activities as compared to *Mahinot esculenta*. However, the carotenoid content, catalase and guaiacol peroxidase specific activities were significantly higher in *Mahinot esculenta* compared to *Oenanthe javanica*.

# KANDUNGAN ANTIOKSIDAN DALAM *Oenanthe javanica* (SELOM) DAN *Mahinot esculenta* (PUCUK UBI)

## ABSTRAK

Sayuran tradisonal melayu di Malaysia di makan bukan hanya kerana rasa tetapi khasiat yang terkandung di dalamnya. Kajian nutrisi yang telah dijalankan mendapati kebanyakan sayuran membekalkan komponen antioksidan yang diperlukan di dalam diet manusia. Kepekatan  $\alpha$ -tokoferol, asid askorbik dan karotenoid juga aktiviti spesifik enzim katalase (CAT), guaiacol peroksidase (POD) dan ascorbat peroksidase (APX) telah dikaji di dalam daun *Oenanthe javanica* (selom) dan *Mahinot esculenta* (pucuk ubi). Kajian, menunjukkan *Oenanthe javanica* mengandungi kepekatan  $\alpha$ -tokoferol, asid askorbik dan juga aktiviti spesifik enzim askorbik peroksidase lebih tinggi berbanding *Mahinot esculenta*. Bagaimana pun kandungan karotenoid, aktiviti spesifik enzim katalase dan guaiacol peroksidase lebih tinggi di dalam *Mahinot esculenta* berbanding *Oenanthe javanica*.