

EFFECT OF SALINITY ON α -TOCOPHEROL, ASCORBIC
ACID AND CAROTENOID CONTENTS OF
Homalomena sp. CULTURES


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EFFECT OF SALINITY ON α -TOCOPHEROL, ASCORBIC ACID AND
CAROTENOID CONTENTS OF *Homalomena sp.* CULTURES

By

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **EFFECT OF SALINITY ON α -TOCOPHEROL, ASCORBIC ACID AND CAROTENOID CONTENTS OF *Homalomena sp.* CULTURES** oleh **NUR AISHAH BT ARIFFIN**, no. matrik: **UK10692** 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.

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TABLE OF CONTENTS

	PAGES
ACKNOWLEDGEMENT	ii
LIST OF FIGURES	v
LIST OF ABBREVIATIONS	vi
LIST OF APPENDICES	vii
ABSTRACT	ix
ABSTRAK	x
CHAPTER 1 INTRODUCTION	1
1.1 Study Background	1
1.2 Importance of Study	2
1.3 Objective	2
CHAPTER 2 LITERATURE REVIEW	3
2.1 <i>Homalomena sp.</i>	3
2.2 Salt Tolerance and Salinity Effect on Plants	5
2.3 Oxidative Stress and Reactive Oxygen Species (ROS) Production	6
2.4 Oxidative Damage to Plants	7
2.5 Defense Mechanism	8
2.5.1 α -Tocopherol	9
2.5.2 Ascorbic Acid	10
2.5.3 Carotenoid	11
CHAPTER 3 MATERIAL AND METHOD	13
3.1 Plant Materials	13
3.2 Preparation of Culture Medium	13
3.3 Preparation of Treatment Medium	13
3.4 Determination of Antioxidant	13
3.4.1 Determination of α -Tocopherol	13
3.4.2 Determination of Ascorbic Acid	14
3.4.3 Determination of Carotenoid	15
3.5 Statistical Analysis	15
CHAPTER 4 RESULTS	16

4.1	α -Tocopherol Concentration	16
4.2	Ascorbic Acid Concentration	16
4.3	Carotenoid Concentration	17
CHAPTER 5	DISCUSSION	21
CHAPTER 6	CONCLUSION AND RECOMMENDATION	25
REFERENCES		26
APPENDICES		31
CURRICULUM VITAE		50

LIST OF FIGURES

Figure		Pages
2.1	The <i>Homalomena sp.</i> cultures	3
4.1	Effects of different concentration of NaCl on α -tocopherol concentration ($\mu\text{g/g}$ fwt) in <i>Homalomena sp.</i> cultures (Data are means \pm standard deviation, n=3)	18
4.2	Effects of different concentration of NaCl on ascorbic acid concentration ($\mu\text{g/g}$ fwt) in <i>Homalomena sp.</i> cultures (Data are means \pm standard deviation, n=3)	19
4.3	Effects of different concentration of NaCl on carotenoid concentration (mg/g fwt) in <i>Homalomena sp.</i> cultures (Data are means \pm standard deviation, n=3)	20

LIST OF ABBREVIATION

%	percentage
B.C.	Before Century
Cl ⁻	Chloride anion
Cu	Cuprum
Fe	Ferum
g/L	gram per litre
mM	milli Molar
Na ⁺	Sodium kation
NaCl	Sodium Chloride
nm	nanometer
°C	degree Celsius
rpm	revolution per minute
v/v	volume per volume
w/v	weight per volume
µg/g fwt	microgram per gram fresh weight
µl	microlitre

LIST OF APPENDICES

Appendices A	Standard Curve	Pages
Figure 1	Standard Curve for α -Tocopherol	32
Figure 2	Standard Curve for Ascorbic Acid	32
Appendices B	Tables of Antioxidant Concentration	33
Table 1	Effects of different concentrations of NaCl on α -tocopherol concentration ($\mu\text{g/g}$ fwt) in <i>Homalomena sp.</i> cultures (Data are means \pm standard deviation, n=3)	33
Table 2	Effects of different concentrations of NaCl on ascorbic acid concentration ($\mu\text{g/g}$ fwt) in <i>Homalomena sp.</i> cultures (Data are means \pm standard deviation, n=3)	33
Table 3	Effects of different concentrations of NaCl on carotenoid concentration ($\mu\text{g/g}$ fwt) in <i>Homalomena sp.</i> cultures (Data are means \pm standard deviation, n=3)	33
Appendix C	Table Composition of Five Commonly Used Tissue Culture Media in Milligrams per Liter and Molar Concentrations.	34
Appendices D	Oneway ANOVA and Tukey Test for Antioxidant Concentration	35
1	Oneway ANOVA and Tukey Test for α -Tocopherol Concentration	35
2	Oneway ANOVA and Tukey Test for Ascorbic acid Concentration	40
3	Oneway ANOVA and Tukey Test for Carotenoid Concentration	45

ABSTRACT

Salinity is one of environmental stress that could lead to plant damage. The *Homalomena sp.* has a wide function such as traditional medicine and pesticide. Due to the contribution of this species to some of medical importance, this study was carried out to investigate the antioxidative response of *Homalomena sp.* under stress condition. The objectives of this experiment were to investigate the effect of different concentrations of NaCl on α -tocopherol, ascorbic acid and carotenoid concentration in *Homalomena sp.* cultures, an aquatic plant (freshwater plant). *Homalomena sp.* cultures were treated with 0, 25, 50 and 100 mM of NaCl for 28 days in Murashige and Skoog Solid Medium. α -Tocopherol, ascorbic acid and carotenoid concentrations were measured every 0, 1, 2, 7 14 and 28 days of treatment periods. Result showed that, the α -tocopherol concentration in cultures treated with 50mM NaCl significantly ($p<0.05$) increased after 2 days of treatment and decreased ($p<0.05$) afterwards. The ascorbic acid and carotenoid concentration however showed a significant ($p<0.05$) decreased after the exposure to salt treatment. Higher NaCl concentrations significantly ($p<0.05$) decreased the ascorbic acid and carotenoid concentrations of *Homalomena sp.* Results revealed that oxidative stress induced by NaCl treatment stimulates the α -tocopherol concentrations in association with the reduction of ascorbic acid and carotenoid concentration of *Homalomena sp.* cultures.

**KESAN SALINITI KE ATAS KANDUNGAN α -TOKOFEROL, ASKORBIK
ASID DAN KAROTENOID KULTUR *Homalomena sp.***

ABSTRAK

Saliniti merupakan salah satu tegasan persekitaran yang boleh menyebabkan kerosakan pada tumbuhan. *Homalomena sp.* mempunyai fungsi yang meluas seperti ubatan tradisional dan racun serangga. Sesuai dengan sumbangan spesies ini kepada kepentingan perubatan, kajian ini telah dijalankan untuk mengkaji tindakbalas oksidatif *Homalomena sp.* dalam keadaan tegasan. Objektif kajian ini adalah untuk mengkaji kesan kepekatan NaCl yang berbeza ke atas kandungan α -tokoferol, askorbik asid dan karotenoid pada kultur *Homalomena sp.* sejenis tumbuhan akuatik (air tawar). *Homalomena sp.* dirawat dengan 0, 25, 50 dan 100 mM NaCl selama 28 hari di dalam media pepejal Murashige dan Skoog. Kepekatan α -tokoferol, askorbik asid dan karotenoid diukur setiap 0, 1, 2, 7, 14 dan 28 hari rawatan. Keputusan menunjukkan kandungan α -tokoferol di dalam kultur yang dirawat dengan 50mM NaCl meningkat dengan ketara ($p < 0.05$) selepas 2 hari rawatan, dan seterusnya berkurangan ($p < 0.05$). Walau bagaimanapun, kepekatan askorbik asid dan karotenoid menunjukkan pengurangan yang ketara ($p < 0.05$) selepas rawatan dengan NaCl. Kepekatan NaCl yang tinggi mengurangkan kepekatan askorbik asid dan karotenoid pada *Homalomena sp.* Keputusan menunjukkan tegasan oksidatif yang dicetuskan oleh NaCl merangsang peningkatan kepekatan α -tokoferol dan mengurangkan kepekatan askorbik asid dan karotenoid pada kultur *Homalomena sp.*