

EFFECT OF SQUINT ON THE SPINDLING
ACTIVITIES OF ANIONIC POLYMERIZATION IN
Almondorona sp. CULTURES

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**EFFECT OF SALINITY ON SPECIFIC ACTIVITIES OF ANTIOXIDATIVE
ENZYMES IN *Homalomena sp.* CULTURES**

By

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TABLE OF CONTENT

	PAGE
ACKNOWLEDGEMENT	iii
LIST OF FIGURES	vi
LIST OF PLATES	vii
LIST OF TABLES	viii
LIST OF ABBREVIATIONS	ix
ABSTRACT	x
ABSTRAK	xi
CHAPTER 1 INTRODUCTION	1
1.1 Introduction	1
1.2 Objective	3
CHAPTER 2 LITERITURE REVIEW	4
2.1 Family of <i>Araceae</i>	4
2.1.1 <i>Homalomena species</i>	5
2.2 Oxidative stress tolerance in plant	7
2.2.1 Generation of toxic reactive oxygen species and associated regulatory mechanisms	7
2.3 Antioxidant system in plants	11
2.3.1 Ascorbate Peroxidase (APx)	11
2.3.2 Catalases (CAT)	14
2.3.3 Peroxidases (POD)	14
2.4 Salinity effects on aquatic plant	15
2.4.1 Effects of salinity on antioxidative enzymes and antioxidants	16

CHAPTER 3 MATERIALS AND METHODS	18
3.1 Plant materials	18
3.2 Preparation of culture media	18
3.3 NaCl treatment	18
3.4 Determination of specific activities of antioxidative enzymes	20
3.4.1 Ascorbate peroxidase (Apx) specific activity	20
3.4.2 Catalase (CAT) specific activity	20
3.4.3 Guaiacol peroxidase (POD) specific activity	21
3.4.4 Soluble protein content	22
3.4.5 Statistical analysis	22
CHAPTER 4 RESULT	23
4.1 Ascorbate peroxidase specific activity	23
4.2 Catalase specific activity	23
4.3 Peroxidase specific activity	24
CHAPTER 5 DISCUSSIONS	28
CHAPTER 6 CONCLUSION	31
REFERENCES	32
APPENDICES	39
CURICULUM VITAE	57

LIST OF FIGURES

Figures		Page
1.	Pictures of <i>Homalomena sp.</i>	6
2.	Sites of superoxide radical formation in mitochondrial electron transfer system.	10
3.	Asada–Halliwell pathway of hydrogen peroxide scavenging and ascorbic acid regeneration involving various antioxidant enzymes.	13
4.	The changes in ascorbate peroxidase specific activities of <i>Homalomena sp.</i> cultures treated with different concentrations of NaCl.	25
5.	The changes in catalase specific activities of <i>Homalomena sp.</i> cultures treated with different concentrations of NaCl.	26
6.	The changes in peroxidase specific activities of <i>Homalomena sp.</i> cultures treated with different concentration of NaCl.	27
7.	Protein standard curve for ascorbate peroxidase assay	41
8.	Protein standard curve for catalase assay	41
9.	Protein standard curve for peroxidase assay	42

LIST OF PLATES

Plate		Page
1.	(a) <i>In vitro</i> plant of <i>Homalomena sp.</i> cultures	19
	(b) Two months proliferation of plants	19
	(c) The plants materials were transferred onto fresh treatment medium	19
	(d) Leaves were taken in the determination of the specific enzyme activities.	19

LIST OF TABLES

Table		Page
1.	Changes in ascorbate peroxidase (APx) specific activities.	55
2.	Changes in catalase (CAT) specific activities.	55
3.	Changes in peroxidase (POD) specific activities.	56

LIST OF ABBREVIATIONS

AOS	active oxygen species
APx	ascorbate peroxidase
BSA	Bovine Serum Albumin
CAT	catalase
DNA	deoxyribonucleic acid
GR	glutathione reductase
H ₂ O ₂	hydrogen peroxide
Mg/L	miligram per liter
MS	Murashige and Skoog
NaCl	sodium chloride
OH [·]	hydroxyl radical
O ₂ ^{·-}	superoxide radical
¹ O ₂	singlet oxygen
POD	peroxidase
ROS	reactive oxygen species
SOD	superoxide dismutase
g/L	gram per liter
ml	millimeter
mM	milimolar
rpm	revolution per minute
μl	microliter

ABSTRACT

Salinity stress can cause the formation of reactive oxygen species (ROS) which disrupt the metabolic processes in plants. The plant possess enzymatic antioxidant and non-enzymatic antioxidant defence mechanism to prevent the formation of ROS. The objective of this experiment was to investigate the effect of different concentrations of NaCl on the specific activities of antioxidative enzymes in *Homalomena sp.* cultures. *Homalomena* cultures were treated with 0, 25, 50 and 100mM of NaCl for 28 days in Murashige and Skoog (MS) solid medium. Ascorbate peroxidase (APx), catalase (CAT) and peroxidase (POD) specific activities were measured on the 0, 1, 2, 7, 14 and 28 days of treatment periods. NaCl treatment reduced APx specific activity to different extent especially at 24 hours of treatment. Longer treatment periods significantly lowered the APx specific activities. CAT and POD specific activities initially increased in treated leaves up to 7 days and decreased significantly at the later stages of treatment periods. These results suggest that salinity treatment stimulates oxidative stress in *Homalomena sp.* cultures by initially inducing the POD and CAT specific activities associated with the decreased in APx specific activities especially at the later stage of treatment periods.

KESAN SALINITI PADA AKTIVITI SPESIFIK ENZIM ANTIOKSIDATIF PADA KULTUR *Homalomena spesies*

ABSTRAK

Tegasan saliniti menyebabkan penghasilan spesies oksigen reaktif (ROS) yang mengganggu proses metabolik dalam tumbuhan. Tumbuhan mempunyai mekanisme pertahanan antioksidan enzimatik dan bukan enzimatik untuk menghalang penghasilan ROS. Tujuan kajian ini dijalankan adalah untuk melihat kesan pelbagai kepekatan NaCl terhadap aktiviti spesifik enzim antioksidatif dalam kultur *Homalomena sp.* Kultur *Homalomena sp.* dirawat dengan 0, 25, 50 dan 100mM NaCl untuk 28 hari dalam media pepejal Murashige and Skoog (MS). Aktiviti spesifik enzim askorbat peroksida (APx), katalase (CAT) dan peroksida (POD) telah diukur pada 0, 1, 2, 7, 14 dan 28 hari rawatan. Rawatan NaCl mengurangkan aktiviti spesifik enzim APx terutamanya 24 jam selepas rawatan. Peningkatan tempoh rawatan mengurangkan aktiviti spesifik enzim APx. Aktiviti spesifik enzim POD dan CAT pada mulanya meningkat dalam kultur rawatan sehingga hari ke tujuh dan menurun secara signifikan pada akhir tempoh rawatan. Keputusan kajian menunjukkan rawatan saliniti merangsang tegasan oksidatif dalam kultur *Homalomena sp.* dengan meningkatkan aktiviti spesifik enzim POD dan CAT semasa permulaan rawatan dan penurunan aktiviti spesifik enzim APx terutamanya pada akhir tempoh rawatan.