Faculty of Women
For Arts, Science and Education

Physiological and Molecular Studies on the 24-Epibrassinolide Mechanism(s) in Ameliorating Effects of Salted *Phaseolus vulgaris* L. *cv.* Brunco Tissues

A thesis

Submitted for the Degree of Doctor of Philosophy in Science

Plant Physiology-Plant tissue culture

BY

Rabha Mohammed Abd-Alsid Mansur
M.Sc. in Plant Physiology - Omar Al-Mukhtar University - Libya (2006)

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بسم الله الرحمن الرحيم

﴿إِنْ أُرِيدُ إِلاَّ الإِصْلاحَ مَا اسْتَطَعْتُ
وَمَا تَوْفِيقِي إِلاَّ بِاللَّهِ
عَلَيْهِ تَوَكَّلْتُ وَإِلَيْهِ أُنِيبُ﴾

صدق الله العظيم

سورة هود (آية ٨٨)

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Dedication

I dedicate this work to

My ***great mother****,*

My ***father's soul****,*

My lovely husband ***Nory****,*

My daughter ***Donia****,*

My handsome son's ***yones*** *and* ***Ahmed****.*

Contents

List of Abbreviations

Abbrev.	The name
PTC	Plant tissue culture
PGR	plant growth regulator
BRs	Brassinosteroids
BL	Brassinolide
24- Epi	24- Epibrassinolide
28-homoBL	28-homobrassinolide
2, 4- D	2, 4- d ichlorophenoxy acetic acid
Kin	Kinetin
TDZ	Thidiazuron
IAA	Indole acetic acid
NAA	1-Naphthalene acetic acid
GA_3	Gibberellic acid
CK	Cytokinin
ABA	Abscisic acid
JA	Jasmonic acid
IAAO	Indole acetic acid oxidase
C, E, M, S and R	Callus, Embryos, Maturation, Shooting and Rooting media
ASC-GSH	Ascorbate-glutathione (ASC-GSH) cycle
SDS-PAGE	Sodium dodocyl sulfate polyacryl amide gel electrophoresis
Native-PAGE	Native polyacryl amide gel electrophoresis
RAPD	Randomly amplified polymorphic DNA
PCR	polymerase chain reaction
SOD	Superoxide dismutase
CAT	Catalase
APX	Ascorbate peroxidase
GR	Glutathione reductase
AAO	Ascorbic acid oxidase
POD	Peroxidase
PPO	Polyphenol oxidase
NR	Nitrate reductase
DMSO	Dimethyl sulfoxide
PCA	Perchloric acid