THE EFFECT OF [illegible] ON IN VITRO CULTURE OF

Cryptocoryne affinis

[illegible]

[illegible]

[illegible]

Lihat sebelah

THE EFFECT OF AMMONIUM ON IN VITRO CULTURE OF *Cryptocoryne ciliata*

By

Chalies a/l Canniappan

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JABATAN SAINS BIOLOGI
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PENGAKUAN DAN PENGESAHAN LAPORAN PROJEK
PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: "The Effect of Ammonium on *In Vitro* Culture of *Cryptocoryne ciliata*" oleh Chalies a/l Canniappan, No. Matrik UK5790 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, Kolej Universiti Sains dan Teknologi Malaysia.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF SYMBOLS

cm	centimeter
m	meter
ppm	parts per milion
%	percentage
kPa	kiloPascal
^0C	degree celcius
v/v	volume per volume
rpm	round per minute
nm	nanometer
mg	milligram
ml	milliliter
ug	microgram
ul	microliter
mM	miliMolar
NH_4	Ammonium
NO_3	Nitrate
KNO_3	Potassium Nitrate
HCl	Hydrochloric Acid
NaOH	Natrium Hydroxide

LIST OF APPENDICES

ABSTRACT

A study was conducted mainly to determine the effect of ammonium in the form of ammonium sulphate, $(NH_4)_2SO_4$ on *in vitro* culture of *Cryptocoryne ciliata,* an aquatic plant locally known as 'keladi laut'. The study was done by treating the explants in 4 concentrations of ammonium, which are 1, 2, 3 and 4mM with a control. The growth (fresh and dry weight), reducing sugar, total soluble protein, peroxidase and polyphenoloxidase enzyme activities were determined every 5 days for 30 days. The addition of ammonium into medium has reduced the biomass production in both fresh and dry weight. The content of reducing sugar was also inhibited by the ammonium. The peroxidase and polyphenoloxidase enzyme activities were found to have been promoted by moderate concentration of ammonium which is 2mM. Besides that, high concentration of ammonium, 4mM in the medium has increased the total soluble protein of the explants.

KESAN AMMONIUM KE ATAS PENGKULTURAN IN VITRO

Cryptocoryne ciliata

ABSTRAK

Sebuah kajian telah dilakukan untuk mengkaji kesan ammonium dalam bentuk ammonium sulfat, $(NH_4)_2SO_4$ pada pengkulturan *in vitro Cryptocoryne ciliata*, sejenis tumbuhan akuatik yang dikenali sebagai keladi laut. Kajian ini telah dijalankan dengan merawat eksplan di dalam 4 kepekatan ammonium, iaitu 1, 2, 3 dan 4mM dengan satu rawatan kawalan. Pertumbuhan (berat basah dan berat kering), kandungan gula penurun dan protein terlarut serta aktiviti enzim peroksidase dan poliphenoloksidase telah dikaji setiap 5 hari sehingga 30 hari. Penambahan ammonium ke dalam medium didapati telah menurunkan berat basah dan berat kering eksplan. Kandungan gula penurun telah turut direncatkan oleh ammonium. Aktiviti enzim peroksidase dan poliphenoloksidase telah ditingkatkan oleh kepekatan ammonium yang sederhana, 2mM. Kepekatan ammonium yang tinggi, 4mM didapati telah meningkatkan kandungan protein terlarut di dalam eksplan.