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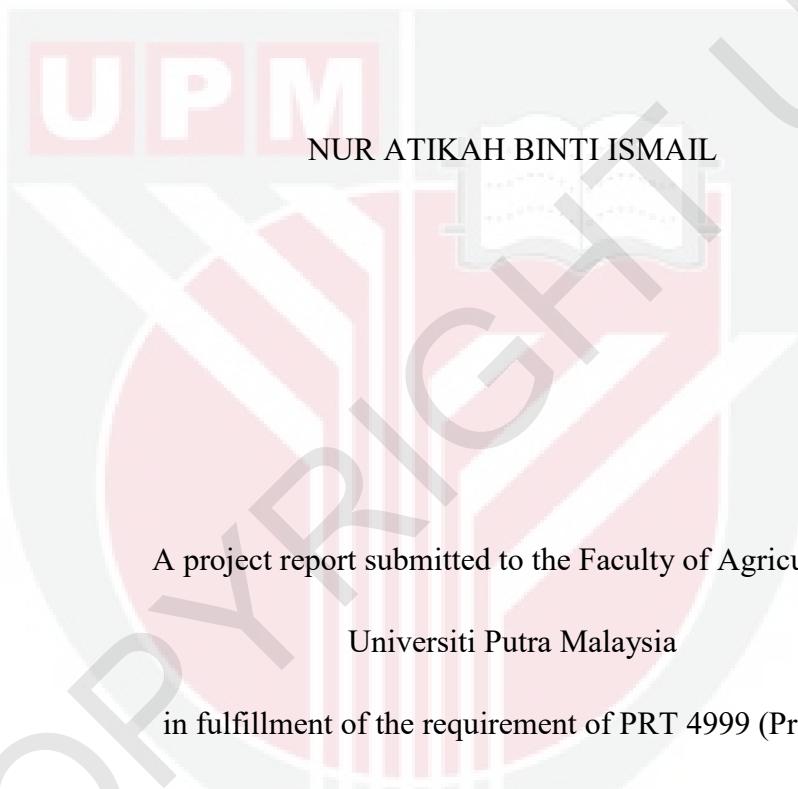
***IN VITRO CATHARANTHUS ROSEUS (L.) G. DON CALLUS
RESPONSES TO CHITOSAN TREATMENTS***

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*IN VITRO CATHARANTHUS ROSEUS (L.) G. DON CALLUS RESPONSES
TO CHITOSAN TREATMENTS*

By:



A project report submitted to the Faculty of Agriculture,

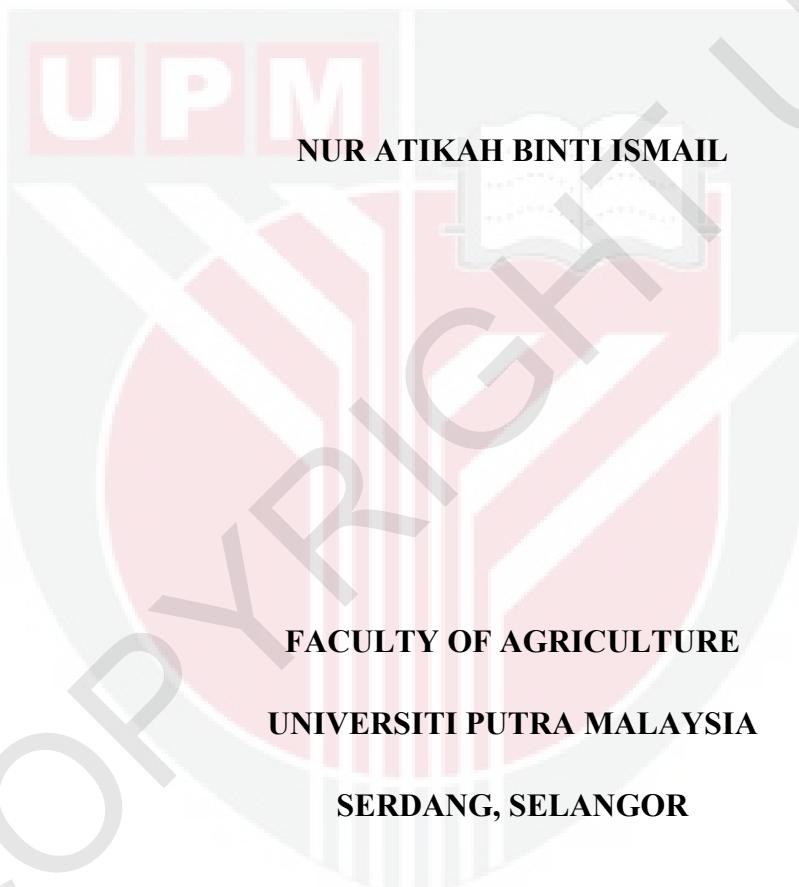
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CERTIFICATION

This study report entitled “*IN VITRO CATHARANTHUS ROSEUS (L.) G. DON CALLUS RESPONSES TO CHITOSAN TREATMENTS*” is prepared by NurAtikahBinti Ismail and submitted to the Faculty of Agriculture in fulfillment of requirement of PRT 4999 (Project) for the award of degree of Bachelor of Horticultural Science.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
Df	Degree of freedom
<i>et al</i>	And others
g	Gram
mg/L	Milligram per litre
m	Milli
mm	Millimetre
μm	Micrometer
mL/min	Millilitre per minute
MS	Murashige and Skoog
LSD	Least Significant Difference
SAS	Statistical Analysis System
GCMS	Gas chromatography-mass spectrometry

ABSTRACT

The present study investigates the effects of chitosan on callus growth and development of *Catharanthus roseus* under light treatment. In the study, chitosan was supplemented in culture medium. Callus of *C. roseus*, previously initiated on MS medium before the onset of the experiment was cultured. Various levels of chitosan (0, 1, 2, 3, 4, 5 mg/L) were used. The experiment was conducted in a completely randomized design with 3 replications. Study parameters include dry weight of callus and boron level.

Data recorded that the control, 0 mg/L chitosan concentration gave the highest dry weight of callus 0.210 g. Treatment with 1 mg/L chitosan concentration increased boron level in callus of *C. roseus* to 0.097 mg/L. The study suggests that the application of chitosan in culture medium did not give significant increase in dry weight of callus compared to the control. Chitosan treatment did not give significant increase or decrease in boron level of callus.

The study concludes that chitosan had no significant effect on dry weight and boron level in callus of *C. roseus* under light treatment.

ABSTRAK

*Kajian ini menyiasat tentang kesan kitosan pada pertumbuhan kalus dan pembangunan *Catharanthus roseus* dibawah rawatan cahaya. Dalam kajian itu, kitosan telah ditambah dalam medium kultur. Kalus *C.roseus*, yang sebelum ini dimulakan pada medium MS sebelum bermulanya eksperiment ini dikulturkan. Pelbagai tahap kepekatan chitosan (0, 1, 2, 3, 4, 4, mg/L) telah digunakan. Eksperimen ini dijalankan dalam rekabentuk yang benar-benar rawak dengan ulangan. Parameter kajian termasuk berat keringk kalus dan tahap boron.*

*Data direkodkan bahawa kawalan 0 mg/L kepekatan kitosan memberikan berat kering kalus yang tertinggi iaitu 0.210 g. rawatan dengan kepekatan kitosan 1 mg/L meningkatkan boron dalam kalus *C.roseus* iaitu 0.097 mg/L. kajian ini mencadangkan bahawa penggunaan kitosan dalam medium kultur memberi peningkatan yang tidak ketara dalam berat kering kalus berbanding dengan kawalan. Rawatan kitosan tidak memberikan peningkatan atau penurunan yang ketara dalam tahap boron di dalam kalus.*

*Kesimpulannya, kitosan tidak memberikan kesan yang ketara kepada berat kering dan tahap boron di dalam kalus *C.roseus* di bawah rawatan cahaya.*

CHAPTER 1

INTRODUCTION

Catharanthus roseus is an ornamental plant belonging to the family Apocynaceae and has been widely planted in several countries for the ornamental purposes. Besides its use as an ornamental plant, it is an important source of one hundred and thirty valuable alkaloids. These include alkaloids which are routinely used in the treatment of cancer, leukemia, and diabetes. However, the alkaloids are produced in minute amounts making them high in demand and cost. As a consequence numerous efforts to develop alternative strategies for their production have been documented.

The present study examines responses in growth and development of callus of *C. roseus* on chitosan treatments. Callus was previously initiated from culture of leaf explants on Murashige and Skoog medium. Resulting callus was cultured on same medium and supplemented with various levels of chitosan.

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