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Study on genetic variability of Neritina (Dostia) violacea (snail using RAPD-PCR technique / Juhari Nor Badrun.

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STUDY ON GENETIC VARIABILITY OF *NERITINA* (DOSTIA) *VIOLACEA* (SNAIL) USING RAPD – PCR TECHNIQUE

By

Juhari B. Nor Badrun

Research Report submitted in partial fulfillment of
The requirements for the degree of
Bachelor of Science (Biological sciences)

Department of Biological Sciences
Faculty of Science and Technology
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PENGAKUAN DAN PENGESAHAN LAPORAN PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: STUDY ON GENETIC VARIABILITY OF *NERITINA* (DOSTIA) *VIOLACEA* (SNAIL) USING RAPD – PCR TECHNIQUE. Oleh Juhari B. Nor Badrun, No. Matrik UK 8541 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

Perpustakaan
Universiti Malaysia Terengganu (UMT)

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

%	Percentage
°C	Degree Celsius
1X	One Time
A	Adenosine
bp	Base pair
C	Cytosine
cm	Centimeter
dH_20	Distilled water
DNA	Deoxyribonucleic acid
dNTP mix	Deoxyribonucleotides mixture
EDTA	Ethylenediaminetetracetic acid
g	Gram
G	Guanocine
M	Molarity
μg	Microgram
μL	Microlitre
μM	Micromolar
mg	Miligram
mL	Mililitre
mM	Milimolar
min	Minutes
ng	Nanogram

OD	Optical density
PCR	Polymerase Chain Reaction
Pmole	Picomole
Ppt	Part per trillion
RAPD	Random Amplified Polymorphic DNA
rpm	Rotation per minute
sec	Seconds
SD	Standard Deviation
T	Thymine
TBE	Tris-borate-EDTA buffer
TE	10mM Tris Cl, 1 mM EDTA
Tris-HCL	Tris [Hydroxymethyl] aminomethane hydrochloride
UV	Ultra violet
V	Volt
VDS	Video Documentation System
v/v	volume/volume
w/v	weight/volume

ABSTRACT

The random amplified polymorphic DNA (RAPD) technique was used to examine the genetic variability among individuals of *Neritina* (Dostia) *violacea* from Setiu Wetland, Terengganu. Phenol Chloroform method was used to extract the tissue of snail body. Base on screening of RAPD Primers results with twenty oligonucleotide primers (Operon 10-mers 1st Base), three primers were selected to amplify DNA from five individuals of *N.* (Dostia) *violacea* which were OPA 04, OPA 11 and OPA 13. By comparing the similarity of the bands produced by RAPD, it was found that there was variation within these *N.* (Dostia) *violacea* individuals. A total 35 RAPD fragments with 25 polymorphic fragments with size ranging from 200 to 1750bp were scored. The high level of polymorphisms was detected in samples of *N.* (Dostia) *violacea* which was 71.4%. The similarity index among individuals of *N.* (Dostia) *violacea* was ranged from 0.59 to 0.97. The results indicated that RAPD could be effectively used for genetic variability analysis.

KAJIAN KEPELBAGAIAN GENETIK *NERITINA* (DOSTIA) *VIOLACEA* DENGAN MENGGUNAKAN TEKNIK AMPLIFIKASI RAWAK DNA POLIMORFIK (RAPD) – TINDAKAN RANTAI POLIMERASE (PCR)

ABSTRACT

Teknik Amplifikasi Rawak DNA Polimorfik (RAPD) telah digunakan untuk mengkaji kepelbagaian genetic di antara individu-individu *Neritina* (Dostia) *violacea* dari Setiu Wetland, Terengganu. Kaedah pengekstrakan 'Phenol Chloroform' telah digunakan untuk mengekstrak tisu *N.* (Dostia) *violacea.* Berdasarkan keputusan pengskrinan pencetus RAPD menggunakan 20 pencetus oligonukleotida, tiga pencetus telah dipilih untuk mengamplifikasi DNA daripada lima individu *N.* (Dostia) *violacea* iaitu OPA 04, OPA 11 dan OPA 13. Dengan melakukan pembandingan persamaan jalur yang dihasilkan oleh RAPD, didapati bahawa terdapat variasi di antara individu-individu *N.* (Dostia) *violacea.* Sejumlah 35 segmen RAPD dengan 25 segmen polimorfik dengan julat siznya daripada 200 hingga 1750 bp telah dikesan. Paras polimorfik yang tinggi di kesan daripada sampel *N.* (Dostia) *violacea* iaitu 71.4%. Ukuran persamaan di antara individu-individu *N.* (Dostia) *violacea* adalah daripada 0.59 hingga 0.57. Keputusan menunjukkan bahawa RAPD adalah efektif untuk kajian analisis kepelbagaian genetik.