STUDY ON GENETIC VARIABILITY OF *Merita* sp. USING RAPD-PCR TECHNIQUE

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Lihat sebelah

STUDY ON GENETIC VARIABILITY OF *Nerita* sp. USING RAPD – PCR TECHNIQUE

By

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: STUDY ON GENETIC VARIABILITY OF *Nerita* sp. USING RAPD–PCR TECHNIQUE oleh ROSLINA BINTI MAT YAZID, No. Matrik UK6692 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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LIST OF ABBREVIATIONS

%	Percentage
°C	Degree Celsius
1×	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
T	Thymine
TBE	Tris-borate-EDTA buffer
TE	Tris-EDTA buffer
Tris-HCL	Tris [Hydroxymethyl] aminomethane hydrochloride
UV	Ultra violet
V	Volt
VDS	Video Documentation System
v/v	volume/volume
w/v	weight/volume

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ABSTRACT

The main objectives of this study are to assess the degree of polymorphism of *Nerita* sp. by using RAPD-PCR technique and to establish the genetic database on the genetic variability of *Nerita* sp. The Random Amplified Polymorphic DNA (RAPD) in association with Polymerase Chain Reaction (PCR) was used to examine the genetic variability and relationship among individuals within and between populations of *Nerita* sp. from Pulau Che Him and Pulau Semut, Setiu Wetland, Terengganu. The genomic DNA was extracted from the snail tissues by using Wizard Genomic DNA Purification Kit method. Twenty oligonucleotide primers were screened and only three primers were selected to amplify DNA from twelve samples of *Nerita* sp. from the two populations. A total of 68 RAPD fragments with 55 polymorphic fragments (80.88%) with the size ranging between 200 to 1500 bp were obtained. Genetic variability of *Nerita* sp. from Pulau Che Him population is lower than Pulau Semut population. The polymorphism detected in sample from Pulau Che Him is 78% and from Pulau Semut is 83%. From the dendrogram analysis, samples from Pulau Che Him and Pulau Semut population come from same ancestor and have a closer genetic relationship to each other.

KAJIAN MENGENAI KEPELBAGAIAN GENETIK *Nerita* sp. MENGGUNAKAN TEKNIK RAPD-PCR

ABSTRAK

Tujuan penyelidikan ini ialah untuk menentukan darjah polimorfisme bagi siput *Nerita* sp. menggunakan teknik RAPD-PCR dan untuk menubuhkan pangkalan data kepelbagaian genetik bagi siput ini. Polimorfisme DNA rawak teramplifikasi (RAPD) bersama dengan tindak balas berantai polimerase (PCR) telah digunakan bagi menentukan kepelbagaian dan pertalian genetik di antara individu-individu di dalam dan di antara populasi-populasi siput *Nerita* sp. dari Pulau Che Him dan Pulau Semut, Setiu Wetland, Terengganu. Pengekstrakan DNA daripada tisu siput dijalankan dengan menggunakan kaedah 'Wizard Genomic DNA Purification Kit'. Dua puluh pencetus telah diuji dan hanya tiga pencetus telah dipilih untuk mengamplifikasi DNA daripada dua belas sampel yang mewakili dua populasi siput. Sejumlah 68 fragmen RAPD dengan 55 jalur segmen yang polimorfik (80.88%) dan saiz di antara 200 hingga 1500 bp telah diperolehi. Kepelbagaian genetik *Nerita* sp. dari Pulau Che Him lebih rendah berbanding Pulau Semut. Polimorfisme yang didapati dalam sampel dari Pulau Che Him ialah 78% dan dari Pulau Semut ialah 83%. Daripada analisis dendrogram yang dijalankan, sampel dari populasi Pulau Che Him dan populasi Pulau Semut adalah datang daripada leluhur yang sama dan mempunyai hubungan genetik yang rapat antara satu sama lain.