STUDY ON GENETIC VARIABILITY OF FLOWERY VENUS (*Clerodendrum chinense*) USING RAPD-PCR TECHNIQUE

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STUDY ON GENETIC VARIABILITY OF FLOWERY VENUS (*Clausinella chlorotica*) USING RAPD – PCR TECHNIQUE

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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 Flowery Venus (*Clausinella chlorotica*) using RAPD - PCR technique oleh Rizal Afenddy Bin Anuar No. Matrik UK6457. 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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%	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 main objectives of this study are to assess the degree of polymorphism of *Clausinella chlorotica* by using RAPD-PCR technique and to establish the genetic database on the genetic variability of *C. chlorotica.* 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 *C. chlorotica* from Pulau Che Him and Pulau Semut, Setiu Wetland, Terengganu. The genomic DNA was extracted from the clam tissues by using Kit Wizard™ Genomic DNA Purification (Promega). Twenty oligonucleotide primers were screened and only three primers were selected, OPA 02, OPA 03, and OPA 18 to amplify DNA from twelve samples of *C. chlorotica* from the two populations. A total of 55 RAPD fragments with size ranging between 250- 1750 bp were generated and 39 of them were polymorphic. Genetic distance level between two populations range from 0.05 to 0.7692 and the polymorphism detection in sample from Pulau Che Him was 71.88% and from Pulau Semut was 69.57%. The total of polymorphism fragment from both locations was 70.91%.

KAJIAN MENGENAI KEPELBAGAIAN GENETIK *Clausinella Chlorotica* DENGAN MENGGUNAKAN TEKNIK RAPD – PCR

ABSTRAK

Tujuan penyelidikan ini ialah untuk menentukan darjah polimorfisme bagi siput *Clausinella chlorotica* dengan menggunakan teknik RAPD-PCR dan juga untuk menubuhkan pangkalan data kepelbagaian genetik bagi siput ini. Dalam kajian ini, polimorfisne DNA rawak teramplikasi (RAPD) bersama dengan tindak balas berantai polimorfisme (PCR) telah digunakan bagi menentukan kepelbagaian dan pertalian genetik di antara individu-individu di dalam dan di antara populasi-populasi siput *C. chlorotica* dari Pulau Che Him and Pulau Semut, Setiu Wetland, Terangganu. Pengekstrakan DNA daripada tisu siput dijalankan dengan menggunakan kaedah 'Wizard™ Genomic DNA Purification Kit'. Dua puluh pencetus telah diuji dan hanya tiga pencetus iaitu OPA 02, OPA 03 dan OPA 18 telah dipilih untuk mengamplifikasi DNA daripada 12 sampel yang mewakili dua populasi tersebut. Sejumlah 55 jalur segmen RAPD dengan saiz antara 250-1750 bp telah dihasilkan dan 39 daripadanya adalah polimorfik. Jarak perbezaan genetik di antara populasi adakah dari 0.05 ke 0.7692. Peratus jalur polimorfik yang didapati dari sampel bagi Pulau Che Him adalah 71.88% dan dari Pulau Semut adalah 69.57%. Jumlah keseluruhan bagi jalur polimorfik untuk kedua-dua lokasi adalah 70.91%.