STUDY ON GENETIC VARIABILITY OF HARD CLAM (*Meretrix meretrix*) USING RAPD - PCR TECHNIQUE

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By

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PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **Study on Genetic Variability of Hard Clam *(Meretrix-meretrix)* Using RAPD - PCR Technique** oleh **Hasbullah Bin Daud** No. Matrik **UK 6577** 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
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	Minute

ABSTRACT

The random amplified polymorphic DNA (RAPD) technique was used to examine the genetic variability and relationship among individuals within and between population of hard clam (*Meretrix-meretrix*) from Setiu Wetland, Setiu, Terengganu. The genomic DNA was extracted from the adductor tissue muscle of hard clam by using Wizard Genomic Purification Kit from Promega. Twenty oligonucleotide primers (Operon 10-mers 1st Base) were screened and three primers were selected to amplify DNA from 12 samples of *Meretrix-meretrix* from two different location. Similarity index for Pulau Che Him were varied from 0.727 to 0.913 with average 0.8±0.05. While similarity index for Pulau Semut varied from 0.706 to 0.914 with average 0.783±0.06. Level for genetic distance for both population varied from 0.086 to 0.255. A total of 61 RAPD fragment with 37 polymorphic fragment (61%) with size range from 300 to 3000bp were scored from both population. For Pulau Che Him, the proportion of polymorphism was 59% while for Pulau Semut, the proportion of polymorphism was 63%. Population from Pulau Semut was detected higher in polymorphic compared to Pulau Che Him.

ABSTRAK

KAJIAN TENTANG KEPELBAGAIAN GENETIK PADA *Meretrix-meretrix* DENGAN MENGGUNAKAN TEKNIK AMPLIFIKASI RAWAK DNA POLIMORFIK (RAPD)-TINDAKBALAS RANTAIAN POLIMERASE (PCR)

Amplifikasi Rawak DNA Polimorfik (RAPD) merupakan teknik yang digunakan untuk melihat kepelbagaian genetik dan hubungan diantara individu dalam dan di antara populasi *Meretrix-meretrix* daripada Setiu Wetland, Setiu, Terengganu. Genomik DNA telah diekstrak daripada tisu otot dengan menggunakan Wizard Genomic Purification Kit daripada Promega. Dua puluh primer oligonukleotida (Operon 10-mers 1st Base) diuji dan tiga primer telah dipilih untuk mengamplifikasi DNA daripada 12 individu dalam dua populasi yang berlainan. Indeks kesamaan bagi Pulau Che Him adalah 0.727 hingga 0.913 dengan purata 0.8±0.05, manakala indeks kesamaan bagi Pulau Semut adalah 0.706 hingga 0.914 dengan purata 0.783±0.06. Paras jarak perbezaan genetic pada kedua-dua populasi adalah berbeza daripada 0.086 kepada 0.255. Sejumlah 61 jalur RAPD dan 37 daripadanya adalah jalur polimorfik (61%) dengan jarak saiz daripada 300 hingga 3000bp yang telah dinilai daripada dua populasi. Peratus polimorfik bagi Pulau Che Him adalah 59% manakala peratus polimorfik bagi Pulau Semut adalah 63%.