

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

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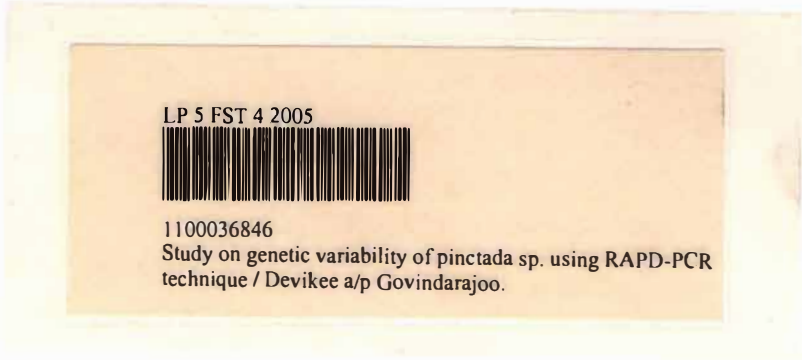
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21030 KUALA TERENGGANU

<b>1100036846</b>		

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**PERPUSTAKAAN KUSTEM**

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

By

Devikee A/P Govindarajoo

Research Report submitted in partial fulfillment of  
the requirements for the degree of  
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JABATAN SAINS BIOLOGI  
FAKULTI SAINS DAN TEKNOLOGI  
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

PENGAKUAN DAN PENGESAHAN LAPORAN  
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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:  
Study on Genetic Variability of *Pinctada* sp. using RAPD-PCR Technique

oleh Devikee A/P Govindarajoo no. matrik: UK6449 telah  
diperiksa dan semua pembedaan yang disarankan telah dilakukan. Laporan ini dikemukakan  
kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan  
Bachelor Sains Gunaan ( Pemuliharaan & Pengurusan Biodiversiti)  
memperolehi Ijazah  
Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

Disahkan oleh:

Penyelia Utama

**WAN BAYANI WAN OMAR**

Nama:

**PENSYARAH**

Cop Rasmi:

**Jabatan Sains Biologi  
Fakulti Sains & Teknologi**

**Kolej Universiti Sains dan Teknologi Malaysia  
21030 Kuala Terengganu, Terengganu**

Tarikh:

6/4/2005

Penyelia Kedua (jika ada)

Nama:

**Dr. Zaheda Binti Kassim**  
**Pensyarah**

Cop Rasmi:

**Jabatan Sains Samudera  
Fakulti Sains dan Teknologi  
Kolej Universiti Sains dan Teknologi Malaysia  
21030 Kuala Terengganu**

Tarikh:

1/7/05

Ketua Jabatan Sains Biologi

Nama:

**PROF. MADYA DR. NAKISAH BT. MAT AMIN**  
**Ketua**

Cop Rasmi:

**Jabatan Sains Biologi  
Fakulti Sains dan Teknologi  
Kolej Universiti Sains dan Teknologi Malaysia  
(KUSTEM)  
21030 Kuala Terengganu.**

Tarikh:

6/4/2005

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## LIST OF ABBREVIATIONS

%	Percentage
°C	Degree Celcius
1X	One time
A	Adenine
bp	base pair
C	Cytosine
DNA	Deoxyribonucleic Acid
EDTA	Ethylenediamine tetra-acetic acid
EtBr	Ethidium Bromide
g	Gram
G	Guanine
kb	Kilobase
L	Litre
M	Molar
μg	Microgram
μL	Microlitre
μM	Micromolar
mM	Milimolar
ng	Nanogram
OD	Optical Density
rpm	Revolution per minute

TBE

Tris-Borate-EDTA

TE

Tris-EDTA

U

Unit

UV

Ultra violet

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## ABSTRACT

The random amplified polymorphic DNA (RAPD) technique was used to examine the genetic variability and to assess the degree of polymorphism between populations of oyster (*Pinctada* sp.) from Pulau Semut and Pulau Dua. This technique which makes use of polymerase chain reaction (PCR) technology which amplifies a set of randomly distributed loci in a genome. RAPD reaction mixture consist of DNA template, oligonucleotide primer, Taq DNA polymerase, deoxynucleotide triphosphates (dNTPs) and magnesium chloride ( $MgCl_2$ ) which amount a total volume of 25 $\mu$ l. Twenty primer were screened and three primers were selected to generate RAPD patterns of genomic DNA for 12 samples of *Pinctada* sp. The genomic DNA was extracted from the oyster tissues by using Wizard<sup>TM</sup> Genomic DNA Purification Kit (Promega). A total of 68 RAPD fragments (RAPDs) with 53 polymorphic fragments (77.94%) with the size ranging from 200 to 1750 base pairs (bp) were scored from the population. Genetic distance level between populations varied from 0.15 to 0.49.

# KAJIAN KEPELBAGAIAN GENETIK TIRAM (*Pinctada* sp.) DENGAN MENGGUNAKAN TEKNIK RAPD-PCR

## ABSTRAK

Teknik polimorfisme DNA rawak teramplifikasi (RAPD) telah digunakan untuk mengkaji kepelbagaian dan darjah polimorfisme antara populasi-populasi tiram (*Pinctada* sp.) dari Pulau Semut dan Pulau Dua. Teknik ini menggunakan teknologi polymerase chain reaction (PCR) untuk mengamplifikasi jalur-jalur DNA berbeza saiz yang bertabur secara rawak dari keseluruhan genom. Teknik RAPD mengandungi campuran yang terdiri daripada primer (pencetus), templat DNA, Taq DNA polymerase, deoksiribonukleotida trifosfat (dNTPs) dan magnesium chloride ( $MgCl_2$ ) yang terjumlah kepada isipadu 25 $\mu$ l. Pengekstrakan DNA daripada tisu tiram dilakukan dengan menggunakan kaedah Wizard<sup>TM</sup> Genomic DNA Purification Kit (Promega). Dua puluh pencetus telah diuji dan tiga pencetus telah dipilih untuk mengamplifikasi DNA daripada 12 sampel yang mewakili dua populasi tiram. Sejumlah 68 jalur segmen RAPD (RAPDs) dengan 53 jalur polimorfik (77.94%) yang julat saiznya antara 200 hingga 1750bp telah dikesan dalam populasi. Paras jarak perbezaan genetic di antara populasi berbeza dengan julat antara 0.15 hingga 0.49.