STUDY ON GENETIC VARIABILITY OF *Saccostrea* SP.
USING RAPD-PCR TECHNIQUE

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2005

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

By

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

Department of Biological Sciences
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2005

This project should be cited as:

Syahril, Z. 2005. Study on genetic variability of *Saccostrea* sp. using RAPD – PCR technique. Undergraduate thesis, Bachelor of Science in Biological Sciences, Faculty of Science and Technology, Kolej Universiti Sains dan Teknologi Malaysia, Terengganu. 74p.

JABATAN SAINS BIOLOGI
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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 *Saccostrea* sp. USING RAPD – PCR TECHNIQUE oleh MOHD. SYAHRILHIZRIAN BIN ZAINAL No. Matrik UK 6534 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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ACKNOWLEDGEMENT

First of all, with the completion of this project, I like to express my grateful to God for His blessing that assist me throughout the project.

Secondly, I would like to extend my gratitude and my appreciation to my first supervisor, Miss Wan Bayani binti Wan Omar and my second supervisor, Dr. Zaleha Binti Kassim, whose help, guidance, advice and patience help rendered my progress throughout my project. I am also would like to thank to the library of Universiti Kebangsaan Malaysia, Universiti Putra Malaysia and Universiti Malaya for helping me providing resources of my project. My thanks also go to the all staffs of Department of Biology, KUSTEM, for their assistant in one way or another.

My most thanks must go to my entire friend, Hasbullah, Norin, Roslina, Rizal, Diyah, Anitha and Devikee for their help along the project. I am also grateful to all my housemate and course mate for being so supportive. Last but not least, I would like to thank to my parents and relative for making this reality and success in my life.

Thanks to everyone.

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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
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 genetic variability and relationship among individuals between populations of oysters (*Saccostrea* sp.) from Setiu Wetland, Terengganu Darul Iman were examined using the random amplified polymorphic DNA (RAPD) technique. The genomic DNA was extracted from the oysters tissues using Kit Wizard™ Genomic DNA Purification (Promega). The results produced by the machine produced clear RAPD banding pattern. Twenty oligonucleotide primers were screened and three primers (OPA 15, OPA 19 and OPA 20) were selected to amplify DNA from twelve samples of *Saccostrea* sp. from Pulau Che Him and Pulau Semut, Setiu Wetland, Terengganu Darul Iman. A total of 80 RAPD fragments (RAPDs) with 64 polymorphic fragments (80%) with size ranging from 350 – 3000 bp were scored from the population. The highest level of polymorphisms were detected from Pulau Che Him (82.1 %) followed by Pulau Semut (78.1 %). Genetic distance for both populations ranges from 0.222 to 0.504.

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

ABSTRAK

Kepelbagaian dan perhubungan genetik individu – individu di antara populasi tiram (*Saccostrea* sp.) dari Setiu Wetland, Terengganu, telah dikaji dengan menggunakan kaedah , Amplifikasi Rawak DNA Polimorfik (RAPD). Genomik DNA telah diekstrak daripada tisu dengn menggunakan Kit Wizard™ Genomic DNA Purification (Promega). Hasil keputusan yang diperolehi daripada mesin menghasilkan jalur – jalur RAPD yang jelas. Dua puluh pencetus telah diuji dan tiga daripada pencetus tersebut (OPA 15, OPA 19 dan OPA 20) telah dipilih untuk mengamplifikasikan DNA daripada dua belas sampel yang dipilih daripada Pulau Che Him dan Pulau Semut, Setiu Wetland, Terengganu Darul Iman. Sejumlah 80 jalur RAPD dan 64 jalur RAPD yang polimorfik (80%) yang bersaiz diantara 350 – 3000 bp telah dihasilkan dan dikenalpasti. Tahap polimorfik yang tertinggi dikenalpasti daripada Pulau Che Him (82.1 %) dan diikuti sampel daripada Pulau Semut (78.1 %). Paras jarak perbezaan genetik antara kedua – dua populasi adalah daripada 0.222 sehingga 0.504.