

INSTITUTE OF CHEMISTRY, UNIVERSITY OF TORONTO
120 St. George Street, Toronto, Ontario, Canada M5S 1A5
TEL: (416) 978-2600 FAX: (416) 978-2601

SHIRAZI, BAKHTIAR KHAN

DEPARTMENT OF CHEMISTRY AND FOOD SCIENCE
UNIVERSITY OF TORONTO, 120 St. George Street, Toronto, Ontario, Canada M5S 1A5

1100044343



LP 8 FASM 2 2006



1100044343

Molecular characterization of *Vibrio alginolyticus* from other yellow bacterial colonies on tcbs agar / Shazrina Md Shah.

PERPUSTAKAAN

KOLEJ UNIVERSITI SAINS & TEKNOLOGI MALAYSIA
21030 KUALA TERENGGANU

1100044343

1100044343		

Lihat sebelah

HAK MILIK
PERPUSTAKAAN KUSTEM

**MOLECULAR CHARACTERIZATION OF *Vibrio alginolyticus* FROM
OTHER YELLOW BACTERIAL COLONIES ON TCBS AGAR**

Shazrina Binti Md Shah

**This project report is submitted in partial fulfillment of the requirement of the
degree of Bachelor of Science in Agrotechnology (Aquaculture)**

**FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA**

2006

1100044343

This project report should be cited as:

Shazrina, M.S. 2006. Molecular characterization of *Vibrio alginolyticus* from other yellow bacterial colonies on TCBS agar. Undergraduated thesis, Bachelor of Science in Agrotechnology (Aquaculture), Faculty of Agrotechnology and Food Science, Kolej Universiti Sains dan Teknologi Malaysia, Terengganu. 62p.

No part of this project report may be reproduced by any mechanical, photographic, or electronic process, or in the form of phonographic recording, nor may it be stored in a retrieval system, transmitted, or otherwise copied for public or private use, without written permission from the author and the supervisor(s) of the project.

ACKNOWLEDGEMENTS

Allah in the name of The Most Affectionate, The Merciful.

Alhamdulillah, thanks to Allah S.W.T, for giving me the strength to finish my final year project right on time and the blessings to accomplish and fulfill the work. Firstly, I would like to express my sincere appreciation to my supervisor, Dr. Najiah Musa and also to my co-supervisor, Dr. Ahmad Shamsuddin for their guidances and supervision. Without their cooperation, patience and full support, this project will not survive.

Next, my heartiest gratitude and appreciations goes to Master Science student, Mr. Lee Seong Wei for his valuable guidances and advices. Also to my project partners, who always were being so helpful during the process of completing this project. I am also grateful to Master Science student, Mr. Lukman, for giving the cooperation and permission to use the facilities and the instrumentation lab. I must thank Department of Fisheries and Aquaculture, FASM for providing facilities in completing this project. Appreciation is extended to all my friends, especially to Asni, Aznizah, Shafi and Murni. Also goes to my family members especially to my mum, Harlina Bte Abdullah and daddy, Md Shah Othman for their spiritual support.

Finally, my appreciation goes to all of them that had contributed to this project directly or indirectly. Without you, this project is impossible. Sincerely, thank you.

ABSTRACT

Twenty isolates of suspected *Vibrio alginolyticus* were isolated from raw oysters (*Crassostres iridalea*) originated from Gong Batu, Setiu, Kuala Terengganu. Biochemical and physiological studies indicated that 10 out of 20 isolates were identified as strains of *Vibrio alginolyticus*, while another ten were the strain of other unidentified species. *Vibrio alginolyticus* were further tested using antibiotic susceptibility test. All the isolates (100%) were susceptible to tetracycline and nalidixic acid. A total of 70% of the isolates was sensitive to ampicillin. Most of the isolates (60%) were highly resistant to sulphamethoxazole. Only one (isolate no.12) out of ten isolates of *Vibrio alginolyticus* showed the presence of plasmid with the size of 4.8 MDa. RAPD-PCR technique was used to investigate genetic relationship of *Vibrio alginolyticus*. From the result, the percentage of similarity and the values of genetic distances were ranged from 31% to 100% and from 0.00 to 0.83, respectively. This shows high levels of genetic variability among the five *Vibrio alginolyticus* isolates. This indicates that RAPD-PCR technique can be successfully applied in identifying and differentiating microorganism, inter-species and intra-species from a wide range of geographical distributions.

ABSTRAK

Sejumlah 20 pemencilan yang dijangka merupakan *Vibrio alginolyticus* diperolehi daripada tiram (*Crassostrea iridalea*) yang berasal dari Gong Batu, Setiu, Kuala Terengganu. Kajian biokimia dan fisiologi menunjukkan bahawa 10 daripada 20 pemencilan itu dikenalpasti sebagai *Vibrio alginolyticus* manakala 10 lagi merupakan spesies *Vibrio* yang lain. Ujian ketahanan terhadap antibiotik turut diuji ke atas *Vibrio alginolyticus*. Semua pemencilan (100%) adalah sensitif terhadap tetrasiklin dan asid nalidisik. Sejumlah 70% dari pemencilan sensitif terhadap ampicillin. Pemencilan (60%) didapati mempunyai daya ketahanan terhadap sulphamethoxazole. Daripada keputusan, didapati hanya satu iaitu (isolate no.12), daripada 10 pemencilan menunjukkan kehadiran plasmid bersaiz 4.8 MDa. Teknik RAPD-PCR digunakan untuk mengkaji hubungan genetik *Vibrio alginolyticus*. Dari keputusan, julat peratusan persamaan dan nilai jarak genetik adalah dari 31% sehingga 100% dan dari 0.00 sehingga 0.83. Ini menunjukkan kepelbagaian genetik yang sangat tinggi di antara lima pemencilan *Vibrio alginolyticus* tersebut. Ini turut menunjukkan bahawa teknik RAPD-PCR boleh diaplikasikan dengan jayanya dalam pengenalpastian dan pembezaan mikroorganisma, samada pada peringkat interspesies dan intraspesies dalam suatu taburan geografi yang meluas.