SCREENING FOR OIL DEGRADING MICROBES FROM DEPLOITED MARINE SUBSTRATES

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FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
UNIVERSITI MALAYSIA TERENGGANU
2011

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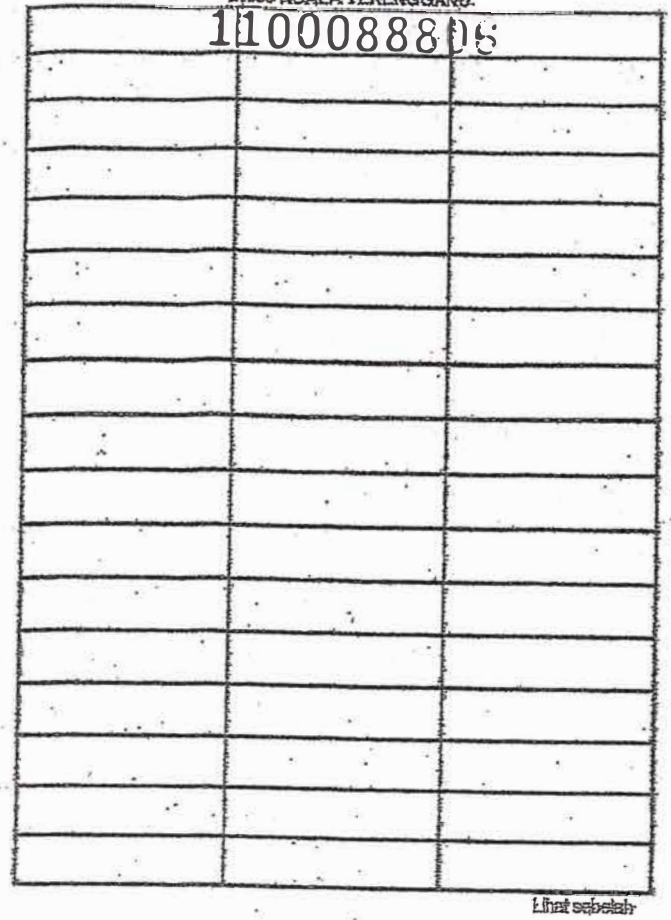

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SCREENING FOR OIL DEGRADING MICROBES FROM DEPLOITED MARINE SUBSTRATES

By
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Research Report submitted in partial fulfillment of the requirement for the degree of Bachelor of Science (Marine Biology)

Department of Marine Science
Faculty of Maritime Studies and Marine Science
UNIVERSITI MALAYSIA TERENGGANU
2011

DEPARTMENT OF MARINE SCIENCE
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UNIVERSITI MALAYSIA TERENGGANU

DECLARATION AND VERIFICATION REPORT

FINAL YEAR RESEARCH PROJECT

It is hereby declared and verified that this research report entitled: Screening for oil degrading microbes from deploited marine substrates.By Low Si En, Matric No. 16874 have been examined and all errors identified have been corrected. This report is submitted to the Department of Marine Science as partial fulfillment towards obtaining the Degreeof Bachelor of Science (Marine Biology), Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu.

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ACKNOWLEDGEMENTS

Foremost, I would like to express my deep and sincere gratitude to my supervisor, Prof Dr. Mohd Effendy B. ABD. Wahid and co-superviser, Mr. Yong Jaw Chuen for the continuous support of my final year project and their friendly help. Their wide knowledge and their logical way of thinking have been of great value for me. Their guidance helped me in all the time of research and writting of this thesis.

Besides this, i would like to extend my thanks to staff of Institute Marine Biology that patient in helping me complete this project especially Encik Thiru. Their expertise and their technique in handling the instrument had helping me a lot while doing my project.

Other than this, i would like to thanks to all my friend that helping me and support me a lot. Last but not the least, i would like to thank to my family which are my parents and my brothers that supporting me spiritually throughout my life.

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ABSTRACT

Bacteria samples were isolated on marine nutrient agar from Bidong water areas by modified isolation method from the Schut *et al*, 1993. These bacterias were preserved in cold container which prevent direct sunlight and brought back to laboratory under sterile condition for screening.

There are five types of bacteria been isolated and characterized before they were tested with lipase assayby mixing with the tested material which are 3 types of oil; unused engine oil, used engine oil and cooking oil. All of the oil have different types of compound and some of the oil also contain additive. Two types of bacteria showed good oil degrading bacteria which exhibited $\geq$ 1mm halo zone in the Spirit Blue Agar. Spirit Blue Agar is for use with Lipase Reagent or other lipid source for detecting and enumerating lipolytic microorganisms. The positive result might due to they are capable of using the aromatic compounds as their sole carbon source and energy. Their biological degradation is accomplished through benzene ring cleave mediated by intracellular enzymatic reaction.

The other 3 bacterias not show positive result might due to they are just attached on the substrate but not get the nourishment from the substrate. The bacteria that been sceened and isolates was identified by using the BBL Crystal Violet System.

PENYARINGAN BACTERIA PENDEGRADASI MINYAK DARI SUMBER LAUT

ABSTRAK

Sampel bacteria dipencilkan dari marine nutrient agar daripada Pulau Bidong dengan mengubah suai kaedah penyaringan bacteria Schut *et al*, 1993. Bacteria di simpan dalam keadaan sejuk, sterile dan mencegah sinaran matahari secara langsung dan dibawa balik ke makmal.

5 bacteria yang telah berjaya disaring dan ciri-cirinya dikaji sebelum dikaji dengan kemampuan mendegradasi minyak melalui lipase assay dengan munggunakan spirit blue agar yang campur the bahan diuji iaitu; minyak engine yang telah digunakan, minyak engin yang belum guna dan minyak masak. Minyak tersebut mempunyai kompoun yang berbeza dan mempunyai pelbagai penambah. Terdapat dua jenis bacteria yang menunjukkan zon halo yang ≥ 1mm dan dikategorikan sebagai bacteria yang bagus untuk degrade minyak. Spirit blue agar adalah digunakan dengan pereaksi lipase atau sumber-sumber lemak yang lain untuk mengesan dan pencacahan mikroorganisma lipolitik. Keputusan positif mungkin disebabkan bacteria tersebut mampu menggunakan sebation aromatik sebagai satu-satunya sumber karbon dan tenaga. Degradasi biologi bacteria tersebut dicapai melalui pembelahan cincin benzen dimediasi oleh reaksi intersalular enzimatik.

Di sebaliknya, keputusan positif mungkin disebabkan mereka hanya menempal pada substrat, tetapi tidak mendapat makanan daripada substrat. Bacteria yang berjaya dinyaring dan dipencil dikenalpasti dengan menggunakan BBL Crystal Violet System.