

ISOLATION, IDENTIFICATION AND PURIFICATION OF  
POLYSACCHARIDES DERIVED FROM BACTERIUM ASSOCIATED  
WITH SEA CUCUMBER, *Holothuria edulis*

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DERIVED FROM BACTERIUM ASSOCIATED WITH SEA CUCUMBER, *Holothuria  
edulis*.

By

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PROJEK PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

**Isolation, Identification and Purification of Polysaccharides derived from marine bacterium associated with sea cucumber, *Holothuria edulis* oleh Farhana Bt. Norman, No.Matrik UK12839 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Marin sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains ( Biologi Marin), Fakulti Pengajian Maritim dan Sains Marin, Universiti Malaysia Terengganu.**

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## LIST OF ABBREVIATIONS

mg	-	miligram
g	-	gram
M	-	molarity
ml	-	mililiter
$^{\circ}\text{C}$	-	degree Calcius
cm	-	centimeter
mm	-	millimeter



## ABSTRACT

Isolation of bacteria from different part of sea cucumber, *Holothuria edulis*, body that was collected from Bidong Island was carried out. From the study that has been made, there were 6 different colonies of bacteria was isolated from every part of the *H.edulis* body (skin, surface of the body, internal mucus and cloacae opening). From experiment in the production of polysaccharides, bacteria identified as *Acinetobacter calcoaceticus* was believe to produce high yield of polysaccharides and was chosen for further test. This bacterium is of the type gram-negative. This identification achieve with the combination result from biochemical test and also by using RapID™ ONE System (REMEL, USA). Average of crude polysaccharide which has been produced by *Acinetobacter calcoaceticus* was 235.9mg / L while average of acidic polysaccharide produced was 165.1mg / L. From Paper Chromatography (PC) and High Performance Liquid Chromatography (HPLC) analysis shows that polysaccharides produced by *Acinetobacter calcoaceticus* contain basic sugar compositions which were galactose, glucose, lactose and raffinose.

# KAJIAN PENGHASILAN POLISAKARIDA DARI BAKTERIA MARIN YANG BERGABUNG DENGAN GAMAT

## ABSTRAK

Pemencilan bakteria daripada beberapa bahagian badan timun laut, *Holothuria edulis* yang diambil dari Pulau Bidong telah dijalankan. Bahagian-bahagian yang terlibat adalah kulit, permukaan badan, mukus dalam dan bukaan kloka. Sebanyak 6 koloni bakteria telah berjaya ditulinkan. Melalui ujikaji penghasilan polisakarida, didapati bakteria yang dikenalpasti sebagai *Acinetobacter calcoaceticus* didapati menghasilkan polisakarida tertinggi dan seterusnya dipilih untuk ujikaji seterusnya. Bakteria ini adalah dari jenis gram negatif. Pengenalpastian ini dicapai dengan menggabungkan keputusan dari sifat biokimianya dan juga dengan menggunakan RapID™ ONE System (REMEL, USA). Purata jumlah polisakarida mentah yang telah dihasilkan oleh bakteria *Acinetobacter calcoaceticus* adalah sebanyak 235.9mg/L manakala purata jumlah penghasilan polisakarida asidik tulen pula sebanyak 165.1mg/L. Analisa melalui PC dan juga HPLC menunjukkan bahawa polisakarida yang dihasilkan oleh *Acinetobacter calcoaceticus* mengandungi gula galaktosa, laktosa dan raffinosa.