SCREENING FOR ANTIMICROBIAL PROPERTIES IN MARINE BACTERIA ASSOCIATED WITH HARD CORAL MUCUS (*Fungia* sp.) AROUND BIDONG WATERS

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Perpustakaan Sultanah Nur Zahirah (UMT)
Universiti Malaysia Terengganu

PERPUSTAKAAN SULTANAH NUR ZAHIRAH
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SCREENING FOR ANTIMICROBIAL ACTIVITIES IN MARINE BACTERIA ASSOCIATED WITH HARD CORAL MUCUS (*Fungia* sp.) IN BIDONG WATERS

By

Hanushia Palpanavan

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

Department of Marine Science
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JABATAN SAINS MARIN
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PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

Screening for antimicrobial activities in marine bacteria associated with hard coral mucus (*Fungia* sp.) in Bidong waters oleh **Hanushia a/p Palpanavan**, No. Matrik **UK12853** 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

µL	-	micro liter
mL	-	milliliter
g	-	gram
g/L	-	gram per liter
mg	-	milligram
˚C	-	degree Celcius
%	-	percentage

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ABSTRACT

Laboratory studies on the marine bacteria associated with hard coral mucus (*Fungia* sp.) were carried out to investigate its antimicrobial activities in terms of seeking its inhibitory activities against target microbes. The coral mucus-inhabiting bacteria communities were successfully isolated and were grown on Seawater Agar, and diluted as well as concentrated Marine Nutrient Agar. A total number of 26 bacteria samples were managed to survive throughout the period of study. The target bacteria that were obtained form Hospital Sultanah Nur Zahirah includes, *Staphylococcus aureus*, *Streptococcus agalactiae*, *Klebsiella pneumonia*, *Bacillus subtilis*, *Aeromonas hydrophila*, *Escherichia coli*, and yeast, *Saccharomyces cerevisiae* which are considered as pathogenic microbes in humans as well as in other organisms. Screening test was conducted twice; the second screening test was done two weeks after the first test. Both tests revealed growth of bacteria samples against target microbes instead of inhibition zones. Second screening test showed a moderate to strong growth whereas the first screening test showed a low to moderate growth of bacteria samples on the target microbes. The most obvious growth was observed on *Streptococcus agalactiae* and *Aeromonas hydrophila.* Differences in temperature conditions and incubation period of bacteria samples were believed to have yielded unexpected results. The bacteria samples were assumed to be potential probiotic as they are able to outgrow the target microbes instead of killing them by producing antibiotics. Further analysis could not be carried out due to the restrictions of the initial objectives of this study as well as time.

Penyaringan Antimikrobial Daripada Bakteria Marin Dari Mukus Karang Keras (*Fungia* sp.) Di Perairan Pulau Bidong

ABSTRAK

Kajian makmal telah dijalankan ke atas bakteria marin dari mukus karang keras (*Fungia* sp.) untuk mengkaji aktiviti antimikrobial dan juga kebolehan sistem perencatannya terhadap mikrob sasaran. Bakteria dari mukus karang keras telah berjaya dipencilkan dan dikultur di atas agar air laut (SWA) dan agar nutrien marin (MNA). Sebanyak 26 koloni berjaya dipencilkan. Mikrob sasaran yang digunakan terdiri daripada *Staphylococcus aureus*, *Streptococcus agalactiae*, *Klebsiella pneumonia*, *Bacillus subtilis*, *Aeromonas hydrophila*, *Escherichia coli*, dan yis, *Saccharomyces cerevisiae,* yang diperolehi daripada Hospital Sultanah Nur Zaharah, merupakan mikrob pathogenik terhadap manusia dan organisma lain. Ujian penyaringan dilakukan dua kali dimana penyaringan kedua dijalankan 14 hari selepas penyaringan pertama. Kedua – dua ujian itu tidak menunjukkan sebarang zon perencatan tetapi sebaliknya, menunjukkan pertumbuhan bakteria sampel di atas mikrob sasaran. Ujian pertama menunjukkan pertumbuhan bakteria sampel dari kadar rendah sehingga sederhana manakala ujian kedua menunjukkan kadar pertumbuhan sederhana hingga tinggi ke atas mikrob sasaran. Pertumbuhan yang paling ketara boleh dilihat di atas *Streptococcus agalactiae* dan *Aeromonas hydrophila*. Tiada sebarang pertumbuhan bakteria sampel kelihatan di atas *Klebsiella pneumonia.* Keputusan yang diperolehi dipercayai berpunca dari faktor perbezaan suhu dan masa pengeraman bakteria sampel. Bakteria sampel ini dipercayai bakteria probiotik disebabkan kebolehannya untuk merencatkan pertumbuhan mikrob

sasaran tanpa menghasilkan antibiotik. Analisa lanjutan tidak dapat dijalankan kerana ia tidak terangkum dalam objektif asal kajian ini serta had masa yang tidak mencukupi.