

IDENTIFICATION AND CHARACTERIZATION OF
GRAM-NEGATIVE BACTERIA FROM SPONGES

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FAKULTI SAINS DAN TEKNOLOGI
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**IDENTIFICATION AND CHARACTERIZATION OF GRAM-NEGATIVE
BACTERIA FROM SPONGES**

By
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the requirements for the award of the degree of
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PENGAKUAN DAN PENGESAHAN LAPORAN PITA I DAN II

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DECLARATION

I hereby declare that this thesis entitled Identification and Characterization of Gram-negative Bacteria from Sponges is the result of my own research except as cited in the references.

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ABSTRAK

Pada masa kini, bakteria yang dihubungkan dengan span telah diketahui. Namun, bagaimana perkaitan diantara bakteria dengan span masih di dalam penyelidikan. Kajian ini dijalankan untuk mengetahui kepelbagaian bakteria yang terdapat pada span dan sejauhmanakah sumbangannya. Objektif kajian ini adalah untuk memencilkan, mengenalpasti dan mencirikan bakteria yang terdapat pada span yang hidup di laut. Bakteria yang berjaya dikultur telah dikelaskan melalui ciri-ciri makromorfologi, mikromorfologi, pewarnaan kapsul dan ujian biokimia. Daripada pemerhatian morfologi dan pewarnaan kapsul, semua bakteria yang telah berjaya dipencilkan adalah Gram-negatif dan terdiri daripada bentuk cocci dan rod. Kebanyakan bakteria menunjukkan tindak balas positif dalam ujian katalase dan oksidase. Selain itu, cuma 21% pencilan menunjukkan tindak balas positif dalam ujian hidrolisis kanji. Bagi ujian SIM, semua bakteria tidak menghasilkan hidrogen sulfida dan indol. Hampir semua bakteria tidak motil. Manakala bagi ujian TSI, cuma 3% pencilan menghasilkan gas dan 40% merupakan bakteria bukan penapai. 2% pencilan menunjukkan tindak balas negatif terhadap ujian VP. Hasil kajian ini menunjukkan bahawa *Pseudomonas* sp. dan *Neisseria* sp. adalah bakteria yang paling banyak bersimbiosis dengan span, diikuti oleh *Aeromonas* sp. *Aeromonas* sp. telah dikelaskan sehingga peringkat spesis iaitu *Aeromonas veronii* dan *Aeromonas salmonicida*. Data daripada kajian ini dapat digunakan dalam kajian akan datang mengenai kepelbagaian bakteria pada span.

ABSTRACT

To date, bacteria associated with sponges are still under investigation. This study was conducted to know the variability of microbial consortia associated with marine sponges and how far the association involves. The aims of this study are to isolate, identify and characterize the bacteria associate with marine sponges. Bacterial cultures were characterized by Gram-staining, macromorphology, micromorphology and biochemical tests. The result obtained from morphological observation and Gram-staining shows that all the bacteria are Gram-negative with cocci and rod shape. Most of the bacteria shows positive reaction in both catalase and oxidase tests respectively. Other than that, only 21% of the isolated bacteria showed positive result for starch hydrolysis test. All of the bacteria were not produce hydrogen sulfide and indole and most of the bacterial are non-motile in Sulfur, Indole and Motility (SIM) test. Only 3% of isolated bacteria produced bubble in Triple Sugar Ion (TSI) test and 40% are non-fermenter bacteria. In Voges-Proskauer test, only 2% of isolated bacteria showed negative result. The results of this study indicated that *Pseudomonas* sp. and *Neisseria* sp. are the dominant bacteria associated with sponges followed by *Aeromonas* sp. *Aeromonas* sp. can be classified until the species level which are *Aeromonas veronii* and *Aeromonas salmonicida*. Result of this study might be useful for data compilation for future studies on diversity of marine bacteria associated with sponges.