

MORPHOLOGICAL, BIOCHEMICAL, AND MOLECULAR IDENTIFICATION OF SPONGE ASSOCIATED BACTERIA AND ITS ENZYMATIC ACTIVITY

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ABSTRAK

KAYLA FELISHA PUSPITASARI. Identifikasi Morfologi, Biokimia, dan Molekuler dari Bakteri yang Berasosiasi dengan Spons dan Aktivitas Enzimatis. Dibimbing oleh MEUTIA SAMIRA ISMET dan RHESI KRISTIANA.

Spons laut merupakan sumber dan inang yang mengesankan bagi genera aktinomisetes yang baru dan tidak umum, dan penargetan genera ini di masa depan dapat mengarah pada penemuan senyawa baru. Oleh karena itu, penelitian mengenai potensi aktinomisetes yang berasosiasi dengan spons laut sangat diperlukan. Penelitian ini bertujuan untuk mengisolasi bakteri yang berasosiasi dengan spons, mengidentifikasi bakteri aktinomisetes dari spons laut dengan morfologi, uji molekuler biokimia, dan skrining lebih lanjut untuk mengetahui potensi enzimatisnya. Berdasarkan hasil dari dua medium yang berbeda, jumlah koloni bakteri yang diisolasi dengan medium ISP-2 lebih rendah dibandingkan dengan medium AIA. Hasil dari uji enzimatis menunjukkan bahwa isolat bakteri RI.AI.146 memiliki karakteristik aktinomisetes dan memiliki potensi untuk menghasilkan enzim dan menghidrolisis selulosa dan amilase. Berdasarkan identifikasi molekuler, isolat RI.AI.146 memiliki kemiripan yang tinggi dengan *Bacillus cereus*, sedangkan berdasarkan uji morfologi dan biokimia, isolat ini memiliki karakteristik bakteri dengan genus *Streptomyces*.

Kata kunci: aktivitas enzimatis, aktinomiset, identifikasi molekuler, spons laut, uji biokimia

ABSTRACT

KAYLA FELISHA PUSPITASARI. Morphological, Biochemical, and Molecular Identification of Sponge-Associated Bacteria and Its Enzymatic Activity. Supervised by MEUTIA SAMIRA ISMET and RHESI KRISTIANA.

Marine sponges are a valuable and an impressive host for new and uncommon actinomycete genera, and targeting these genera in the future could lead to the discovery of novel compounds. Therefore, research into the potential of actinomycetes associated with marine sponges is necessary to determine the potential of sponge-associated bacteria. This research aims to isolate actinomycetes sponge-associated bacteria, identify actinomycetes bacteria from marine sponges with morphological, molecular, biochemical assays, and further screen for their enzymatic potential. The result shows the number of bacterial colonies isolated with ISP-2 medium was lower compared to AIA medium. The result from the enzymatic assays reveals that the bacterial isolate RI.AI.146 has the potential to produce enzymes and hydrolase cellulose and amylase. Based on molecular identification, the isolate RI.AI.146 has high similarity with *Bacillus cereus*, whereas based on morphological and biochemical tests, the isolate has characteristics of *Streptomyces* sp.

Keywords: actinomycetes, biochemical test, enzymatic activity, marine sponge, molecular identification



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MORPHOLOGICAL, BIOCHEMICAL, AND MOLECULAR IDENTIFICATION OF SPONGE ASSOCIATED BACTERIA AND ITS ENZYMATIC ACTIVITY

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Undergraduate final task submitted to
The Marine Science and Technology
In partial fulfillment of the requirements
for the degree of Bachelor's

**DEPARTMENT OF MARINE SCIENCE AND TECHNOLOGY
FACULTY OF FISHERIES AND MARINE SCIENCES
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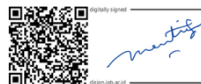
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PREFACE

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Hopefully, this scientific work will be useful for those in need and for the advancement of science.

Bogor, July 2025

Kayla Felisha Puspitasari

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