

**ISOLATION AND MOLECULAR IDENTIFICATION OF SOIL-BORNE  
BACTERIA POTENTIAL FOR CELLULOSE  
DEGRADATION**

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An Undergraduate Thesis Submitted to the Faculty of the Department of Environmental  
Science, College of Arts and Sciences, Central Luzon State University,  
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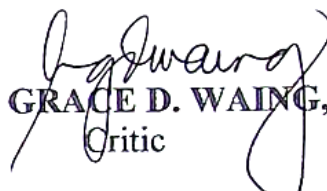
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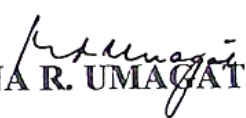
  
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# ISOLATION AND MOLECULAR IDENTIFICATION OF SOIL-BORNE BACTERIA POTENTIAL FOR CELLULOSE DEGRADATION <sup>1</sup>

JONAVELLE C. FERNANDEZ

## ABSTRACT

**Background:** The study aimed to isolate and identify soil-borne bacteria from composite soil samples in three selected areas of Central Luzon State University with cellulose degradation potential. **Methods:** Isolation of bacteria was conducted using serial dilution and plating technique. The isolates were plated in CMC agar to screen its potential for cellulose degradation. The candidate isolates were then purified and subjected for molecular identification using the 16S Ribosomal RNA gene region. **Results:** There were three (3) bacterial species that were initially screened to have potential to degrade cellulose based on CMC assay. Colony PCR using 16S universal primer followed by sequencing and BLAST analysis identified the confirmed isolate with cellulose degradation potential as *Stenotrophomonas pavanii*, literature suggest that this species has found important for many biotechnological processes such as its ability produce enzymes including nucleases, lipases, chitinases, cellulases and proteases. **Conclusions:** In this study, bacterial species was closely related to *Stenotrophomonas pavanii* (KX778120.1). *In situ* experiments are needed to perform in the future to validate the importance and usefulness of these bacteria in the remediation of environment polluted with organic substances.

**Keywords:** molecular identification, polymerase chain reaction, cellulose

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