

## **EXPLORING THE ANTIBACTERIAL POTENTIAL OF MARINE ACTINOBACTERIA ISOLATED AT DIFFERENT SEDIMENT DEPTHS IN WESTERN VISAYAS ISLAND**

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### **ABSTRACT**

The resistance of opportunistic pathogens to available antibacterial drugs has emerged as a public health threat in a global scale at a terrifying rate, leading to a continuous demand for new antibiotics. Soil dwelling actinobacteria have been known as source of antibiotics. Currently, exploring actinobacteria from marine sediment, particularly the less studied deep marine sediments unravels the mechanisms of adaptation to extreme conditions and may represent untapped reservoirs of unique secondary metabolites and sources of novel natural products with potential antibacterial activities. Thus, this study aimed to evaluate the antibacterial activities of actinobacteria isolated at various depths of marine sediments from Western Visayas island. At ~100 feet depth, marine sediment samples were collected by SCUBA using a sediment core sampler. The marine sediments were categorized into surface, subsurface, middle, sub-bottom, and bottom sediments based on the increasing depth of sediments in the core. In total, 180 actinobacteria isolates were recovered from marine sediments using selective marine minimal media. These isolates were initially screened for antibacterial activities by resazurin reduction assay against Gram-positive bacteria (*Staphylococcus aureus* ATCC 25923 and *Staphylococcus aureus* ATCC BAA-44) and Gram-negative bacteria (*Escherichia coli* ATCC 25922, *Klebsiella pneumoniae* Biotech 1754, *Pseudomonas aeruginosa* ATCC 27853 and *Enterobacter aerogenes* ATCC 13048). Thirty-four isolates showed bioactivity out of 180 isolates (39%) initially screened for antibacterial activity. The highest bioactivity were exhibited by isolates recovered from the bottom sediments (~91-110 cm below the seafloor).