BIOLOGICAL POTENTIAL OF AN ACTIVE COMPOUND FROM THE SECONDARY METABOLITES OF MARINE BACTERIA: EXPLORING PROMISING BACTERICIDAL ACTIVITIES

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ABSTRACT

This research study validates the potential role of an active compound, octanoic acid (M1), eluted from the secondary metabolites of the marine bacterial isolate *Acinetobacter baumannii*. The ^{1}H and C^{13}-NMR spectra of the eluted octanoic acid correlated with the previously reported saturated short-chain fatty acid, octanoic acid. The active compound exhibited maximum inhibitory effect against *Klebsiella pneumoniae* using an agar well diffusion assay. The antibiofilm effect of M1 was highest against methicillin-resistant *Staphylococcus aureus*. The eluted active compound was also tested for its anti-quorum-sensing activity against the selected pathogens, leading to substantial suppression of quorum-sensing molecules. Molecular docking of the active compound against the targets of *Mycobacterium tuberculosis* confirms its anti-infective property with potent binding affinity and interacting residues. This study prompts an alternative therapeutic approach to combat the growing problem of antibiotic resistance and infectious diseases.

Keywords: Antibacterial activity,