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Bioinformatics and Molecular Biological Characterization of a Hypothetical Protein SAV1226 as a Potential Drug Target for Methicillin/Vancomycin-Staphylococcus aureus Infections

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Abstract : Methicillin/multiple-resistant Staphylococcus aureus (MRSA) are infectious bacteria that are resistant to common antibiotics. A previous in silico study in our group has identified a hypothetical protein SAV1226 as one of the potential drug targets. In this study, we reported the bioinformatics characterization, as well as cloning, expression, purification and kinetic assays of hypothetical protein SAV1226 from methicillin/vancomycin-resistant Staphylococcus aureus Mu50 strain. MALDI-TOF/MS analysis revealed a low degree of structural similarity with known proteins. Kinetic assays demonstrated that hypothetical protein SAV1226 is neither a domain of an ATP dependent dihydroxyacetone kinase nor of a phosphotransferase system (PTS) dihydroxyacetone kinase, suggesting that the function of hypothetical protein SAV1226 might be misannotated on public databases such as UniProt and InterProScan 5.

Keywords : Methicillin-resistant Staphylococcus aureus, dihydroxyacetone kinase, essential genes, drug target, phosphoryl group donor
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