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Partial Purification and Model Structure of BPSL2774, a Hypothetical Protein from Burkholderia pseudomallei Predicted to be a Glycosyltransferase (Article)

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Abstract

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Melioidosis is a disease that infects humans and animals, and can be detrimental in humans. Mortality rate from melioidosis septic shock due to infection from Gram negative Burkholderia pseudomallei (B. pseudomallei) in endemic regions of Malaysia and Thailand remains high despite available antimicrobial therapy. Multiple strategies are employed to identify essential genes and drug targets in this bacterium to improve current antimicrobial therapies. This is important as B. pseudomallei is intrinsically resistant to many commonly used antibiotics. In this study, hypothetical genes predicted to be essential for B. pseudomallei by transposon-directed insertion site sequencing (TraDIS) technique were selected. One target gene, BPSL2774 , has been successfully amplified and cloned from genomic DNA of B. pseudomallei strain K96243. Glutathione S-transferase (GST) affinity tag chromatography was performed for partial protein purification . The target protein was successfully expressed in soluble form with satisfactory yield output. Mass spectrometry analysis of 60 kDa Coomassie-stained gel band confirmed the presence of the soluble expressed tagged-target protein , co-purified with Escherichia coli chaperonin proteins, possibly due to their interaction with the target protein . BPSL2774 protein have considerable homology to glycosyltransferase GTB type superfamily and RfaB superfamily. On the basis of this similarity, the three-dimensional structure of BPSL2774 has been modelled and assessed by protein model quality servers. Taking all the results into account, the functional annotation of BPSL2774 protein as a glycosyltransferase is recommended, though future validation from biochemical experiments will be needed to support this. © Universiti Putra Malaysia Press

SciVal Topic Prominence

Topic: Burkholderia pseudomallei | Melioidosis | Burkholderia

Prominence percentile: 94.804

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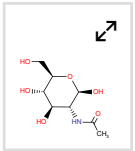
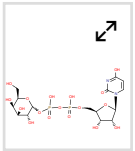

Author keywords

BPSL2774 hypothetical protein | Burkholderia pseudomallei | Glycosyltransferase

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