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Identification of Grimelysin-Like Metalloprotease Gene in the Genome of Bacterium Providencia stuartii

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Abstract

© 2016, Springer Science+Business Media New York.Providencia stuartii is an opportunistic pathogen often seen in patients with severe burns or long-term indwelling urinary catheters. Nowadays, the clinical significance of opportunistic microorganisms is growing and the study of their pathogenesis mechanisms is necessary. Microbial proteases are recognized as important virulence factors of diverse bacterial pathogens. We have shown that P. stuartii's bacterial extracts have the ability to cleave actin. It is well known that metalloprotease grimelysin from Serratia grimesii is characterized by high specificity towards actin. Using the BLAST program, we identified a gene of hypothetical metalloprotease in the genome of the annotated strain P. stuartii MRSN 2154. We have constructed gene-specific primers and sequenced a homologous metalloprotease gene from clinical isolate P. stuartii NK. The amino acid sequence of this gene has the 42 % identity with grimelysin metalloprotease. In this study, we have done a comparative analysis of this novel protease from the clinical isolate of P. stuartii NK with the grimelysin from S. grimesii A2.

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Keywords

Actinase activity, BLAST alignment, Enterobacteriaceae, Grimelysin, Metalloprotease gene, Providencia stuartii, Sequence

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