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Generation of recombinant bioluminescent *Serratia marcescens* for evaluation of bacterial adhesion to soft contact lenses

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A positive glycocalyx producer *Serratia marcescens* was transformed with pUCP18-GFP plasmid that was constructed by ligation of the shuttle vector pUCP18, *SphI/SmaI* treated, with green fluorescence protein gene. The expression of this gene in the recombinant *Serratia marcescens* pUCP18-GFP did not effect on its glycocalyx production and adherence to the surfaces of soft contact lenses. Light emission was measured as a function of the number of adherent cells. It was closely paralleled the number of viable cells, giving a detectable signal from 1.6×10^2 cells. The light produced by bioluminescent strains stable at 37 oC for more than 2 hours without significant change. A comparative analysis of the primary adhesion of the constructed bioluminescent strains to soft contact lenses was performed with light emission measurement and a mild-sonication-cell culture recovery procedure. The obtained data showed similar pattern of adhesion, however, the results of light emission measurement indicated greater density of cells (1.5-1.9 fold) on the surface of contact lenses. The efficiency of bioluminescence assay was confirmed by evaluating the anti-adherent activity of sub-MIC of Ciprofloxacin. The results revealed that no significant difference between the results obtained by light emission measurement and mild-sonication-cell culture recovery technique. Accordingly, the bioluminescent *E. coli* pUCP18-GFP was found to be a versatile tool for applying a simple, rapid and sensitive method (bioluminescence assay) in the bacterial adhesion studies.

Biography

Hani Zakaria Asfour has completed his PhD at the age of 32 years in United Stat of America from College of Art and Science of North Texas University at Denton. His Ph.D. Research focused on Pyrimidine Metabolism in Bacteria with special focus on the Regulatory Enzyme, Aspartate Transcarbamylase (ATCase). He is An Associate Professor of Microbiology at the Department of Medical Microbiology and Parasitology, Faculty of Medicine, King Abdulaziz University. He is the Dean of Pharmacy School at King Abdulaziz University. He has published more than 28 papers in reputed journals and got funds for more than 5 projects.

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