[R2330] Effect of farnesol on planktonic versus biofilm cells of ***Staphylococcus epidermidis***

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Objectives: *Staphylococcus epidermidis* is the most frequent cause of nosocomial sepsis and catheter-related infections, in which biofilm formation is considered to be the main virulence mechanism. Quorum-sensing system have been recognised as important regulators of virulence in many bacteria. The goal of this study was investigate the effect of farnesol, a quorum-sensing molecule, on planktonic and biofilm cells of four *S. epidermidis* strains and compare farnesol susceptibility of planktonic with biofilm cells.
Methods: Four strains of *S. epidermidis* were grown planktonically and as biofilms to determine the effect of farnesol. To biofilm study, farnesol was added before biofilm formation and after 24 hours of biofilm formation. To study the effect of farnesol on planktonic cells, the utility of a rapid colorimetric method that is based on the reduction of Alamar Blue to measure cell viability was tested as well as standard bacterial enumeration techniques. The growth inhibition effect of farnesol on biofilm cells of *S. epidermidis* was assessed using XTT assay that measures cellular metabolic activity and Crystal Violet that measure total biomass of biofilm.
Results: It was observed that farnesol has inhibitory effect as on planktonic cells as on biofilm cells. Modest concentrations of farnesol were sufficient to exhibit an antibacterial effect on planktonic cells and on biofilm cells (before biofilm formation). When farnesol was added after 24 h of biofilm formation, it was observed a small reduction of total biomass and metabolic cellular activity with the increase of concentration of farnesol.
Conclusion: The inhibitory effect of farnesol was more pronounced on planktonic and biofilm cells (before biofilm formation) than when farnesol was added after 24 h biofilm formation. Biofilm structure impairs the action of farnesol. The results indicate a potential application for farnesol as a novel therapeutic agent for the prevention of biofilm-related infections.

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