

Inhibition of Bacterial Quorum Sensing by Ibuprofen in *Chromobacterium violaceum* CV026

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Overuse and misuse of antibiotics in recent years has introduced a selection pressure resulting in a rise in prevalence of drug-resistant ‘superbugs’. Consequently, there is a need to develop new antimicrobials that act on novel bacterial targets and that are less susceptible to resistance. Quorum sensing (QS) has been proposed as a viable mechanism to target for inhibition as it is responsible for the regulation of some virulence genes. The purpose of this research was to determine if ibuprofen has an inhibitory effect on quorum sensing in the bacterium *Chromobacterium violaceum* CV026. Inhibitory activity was measured by quantifying violacein production using a microplate reader. Bacteria were grown in sidearm flasks supplemented with exogenous HSL and treated with various ibuprofen concentrations. Ibuprofen treatments were found to have significantly lower violacein production than control flasks ($p < 0.05$), which was indicative of quorum sensing inhibition. Treatment with the highest concentration of ibuprofen (0.8 g/L) was found to inhibit violacein production by 89.5% at 50 hours. Violacein production was found to be maximized under aerated conditions, and the known QS inhibitor salicylic acid was found to have levels of inhibition ($p < 0.05$) comparable to ibuprofen. Results suggest that QS is a viable mechanism to target for treatment of bacterial infections, but further research must be conducted to analyze the efficacy of ibuprofen as a QS inhibitor.