

Título: MITIGATION OF QUORUM SENSING IN GAMMAPROTEOBACTERIA OCEANIC SEDIMENT AND WATERS

Authors: Veronica Rossetto¹, André Oliveira de Souza Lima, Marcus Adonai Castro da Silva¹

Institution: UNIVALI¹ – Universidade do Vale do Itajaí, Center of Technological Sciences of the Land and Sea, (Uruguai St., 458, Downtown, Zip Code 88302-202, Itajaí – SC)

Quorum sensing (QS) is a communication method of communication used to regulate collective bacterial behavior. When there is high cell density in a bacterial colony, auto-inducing molecules (AHL) are released into the environment, once these molecules pass a threshold, they permit the detection of cell mass and, in response, target genes are regulated. Since QS is responsible for the control of many physiological functions, such as the expression of virulence genes, it has been suggested that the inhibition of QS (QSI) can be used as a strategy to prevent bacterial pathogenicity. In search of QS inhibitors, this project evaluated sixty-four marine bacteria, isolated from the South Atlantic Ocean. The bacteria were screened with overlay tests using the indicating agents (IAs) of QSI, being *Chromobacterium violaceum* applied on IA (1) and *Serratia marcescens* applied on IA (2). The positive result is acknowledged by the formation of inhibition halos. The evaluated microorganisms are from nine genus. Of the one hundred twenty-eight tests done, twenty-three of them presented inhibition halos, being fourteen strains tested with IA (1) and nine strains tested with IA (2). Between the bacteria tested with IA (1), the genera *Marinobacter*, *Pseudomonas* e *Stenotrophomonas* stand out with 100% of activity followed by *Halomonas* with 20% of activity of the total of specimens of its genus. On the other hand, between the strains tested with IA (2), the genus *Marinobacter* again achieved 100% of activity, while *Salinicola* presented 50%, followed by *Idiomarina* with 33% of activity and finally an unidentified group of bacteria presented 25% of activity. We noticed six bacteria with inhibition halos in both AIs: 2x *Halomonas* sp.; *M. excellens*; *M. flavimaris* and 2x *Salinicola salarius*. The microorganism that presented the biggest inhibition halo was *H. hydrothermalis*. Previous studies report that the genera *Halomonas* and *Salinicola* have QSI molecules that are analogous to AHL. It has been reported that *Marinobacter* spp is capable of inhibiting the production of violacein (dependent on QS from *C. violaceum*), by means of the formation of biofilm and virulent factors of *S. marcescens*, suggesting the production of many chemical inhibitors. This present study has found QSI potentials, however it is now necessary to study the process of and production of antagonist QS molecules so that new medications can be developed.

Key words: Quorum sensing; Biomolecules; Gammaproteobacteria.