TITLE: *In silico* ANTI-QUORUM POTENTIAL OF NONSTEROIDAL ANTI-INFLAMMATORY DRUGS TO *Salmonella* Enteritidis SdiA PROTEIN

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ABSTRACT:
The expression of some virulence genes in *Salmonella* is influenced by quorum sensing (QS). *Salmonella* does not produce the QS signaling molecules knowns as acyl homoserine lactones (AHLs). However, this pathogen is able to respond to AHLs synthesized by other bacteria. Considering that many bacterial strains have acquired resistance against conventional antibiotics, several approaches including the use of nonsteroidal anti-inflammatory drugs (NSAIDs) are being investigated to inhibit QS. The aim of this study was to evaluate the binding of NSAIDs in the AHL receptor protein (SdiA) of *Salmonella* Enteritidis by molecular docking, comparing their binding capacity to AHLs and classical the QS inhibitors known as furanones. First, SdiA protein of *Salmonella enterica* serovar Enteritidis PT4 578 (GenBank: AGZ95694.1) was modeled from the Enterohemorrhagic *Escherichia coli* (EHEC) SdiA, protein available in the Protein Data Bank database (PDB: 4Y13) by using CLC Drug Discovery Workbench 3.0.2 software. This was done since the three dimensional structure of SdiA protein from *Salmonella* is not available. The molecular docking of this protein was performed with NSAIDs derivatives of anilinonicotinic acid, and with AHLs and furanones. The highest binding score for the *Salmonella* SdiA protein observed was -70.07, corresponding to N-dodecanoyl-DL-homoserine lactone. Among the NSAIDs evaluated, niflumic acid had the highest binding score (-69.52) followed by flunixin (-63.98). The values presented by these NSAID were greater than the binding score obtained for furanones, which are known quorum quenching substances. In addition, the compounds clonixin and morniflumate were also able to bind to the modeled molecule but with weaker binding scores of -54.73 and -49.19, respectively. The results indicate that these anti-inflammatory drugs were able to bind to the *Salmonella* Enteritidis PT4 578 SdiA protein suggesting their potential as QS inhibitors. Future studies aiming at characterizing the *in vivo* effects of these molecules are necessary to further corroborate our findings.

Keywords: inhibitors, anilinonicotinic acid derivative, *Salmonella*, quorum sensing, quorum quenching.

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