Antibiofilm Activity of Peptide Guavanin14 Against *Klebsiella pneumoniae*

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Introduction: Bacterial resistance to antimicrobial agents limits the infectious disease treatment. In this context, *Klebsiella pneumoniae* has been responsible for hospital infections increasing rates. This bacteria may present resistance at planktonic ad/or biofilm cells. Previous data has shown that natural peptides such as Pg-AMP1, isolated from *Psidium guajava,* seems to be an alternative to control bacterial infections. Although natural peptides are promising, their long sequence-length increases production costs. In this view, *in silico* optimized peptides, by using genetic algorithms provide shorter peptide sequences with potential for infection control. **Objectives:** Here we aims to evaluate and characterize the antimicrobial and antibiofilm potential of the synthetic peptide guavanin14. **Material and Methods:** Guavanin14 was synthetized by solid phase (Fmoc) and further analyzed on a MALDI-ToF. The antimicrobial susceptibility tests for *K. pneumoniae* were conducted in 96-well microplates, using microtiter assays for planktonic cells (MIC) and biofilms (MBIC). *Ab initio* molecular modeling simulations were also performed by using QUARK. **Results and Discussion:** MALDI-ToF results revealed a major ion of 2534.5 Da, corresponding to guavanin14. The minimum biofilm inhibitory concentration (MBIC) of guavanin14 against *K. pneumoniae* was 8 $\mu g.mL^{-1}$, which was 8-fold lower than its minimum inhibitory concentration (64 > $g.mL^{-1}$) toward planktonic cells. Guavanin14 is an amphipathic peptide with net charge of + 5 and hydrophobic moment of 0.573. Structurally, it was predicted that guavanin14 presents high helical contents, with only 15% of coil regions suggesting a membrane disruption mechanism of action. **Conclusions:** In summary guavanin14 here utilized may provide templates for a new group of antimicrobials treat *K. pneumoniae* biofilm.

Keywords: Biofilm, Pg-AMP1, Synthetic peptide.

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