P17: Study the activity of cetylpyriridinium cmpicilin on resistant and sensitive Escherichia coli

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Introduction: Ionic Liquids (ILs) are organic salts with melting point below 100 ºC. Their possible combinations anion/cation render them more suitable for several biological applications.

Objectives: Understand the activity of cetylpyriridinium ampicillin on sensitive and resistant *Escherichia coli.*

Materials and Methods: The studies were made using microdilution, colorimetric and fluorescence methods to understand how the ILs act on bacteria. The strains studied were sensitive *E. coli* ATCC 25922 and ampicillicin resistant bacteria *E. coli* bla Tem 180.

Results and Discussion: The result suggests that unlike sodium ampicillin, on sensitive bacteria, cetylpyridinium ampicillin starts to inhibit growth since 0h. Sodium ampicillin only starts to inhibit the growth between 4-6h. On resistant bacteria the cetylpyridiniun ampicillin has similar results since growth inhibition is observed at 0h. Also the fluorescence analysis, with the fluorescein diacetate, showed a decrease in fluorescence across time in the presence of the IL. This result indicates a decrease in bacteria viability and that cetylpyridinium ampicillin may interfere with the membrane permeability, esterase activity and/or pH.

Conclusion: The result suggests that the use of an hydrophobic organic cation (cetylpyridinium), may provoke important membrane alterations or other cellular changes in bacteria. These results contribute to elucidating the underlying mechanism.

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