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Biosynthesized silver nanoparticles: Decoding their mechanism of action in *S. aureus* and *E. coli*

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The generation of oxidative stress in bacteria in the presence of silver nanoparticles (AgNPs) is already widely known. If the cell cannot respond to oxidative injury produced by increased species reactive oxygen (ROS), the oxidation of macromolecules such as proteins, lipids and DNA occurs, leading to the death of the bacterium. In previous results, we observed as biosynthesized AgNPs that had antibacterial activity, generated an increase of ROS and RNI in *Staphylococcus aureus, Escherichia coli* and *Pseudomonas aeruginosa*, being responsible for their toxicity and bacterial death. According to the above, we set out to delve into the mechanism of action of AgNPs, by determining markers of oxidative stress, such as protein oxidation, lipids, DNA and changes in membrane potential in two reference strains *S. aureus* ATCC 29213 and *E. coli* ATCC 25922. We found that the increase in the levels of ROS is associated with the oxidation of different macromolecules important for the normal functioning of the cell, so that oxidative stress would be one of the mechanisms by which the AgNPs would exert their toxicity in these two strains of great clinical relevance. In this way, we are making a great contribution on the toxicity produced by AgNPs.

Biography

Quinteros M A is pursuing her PhD from National Scientific and Technical Research Council (CONICET). She has done her graduation in Pharmaceutical Chemistry in the year 2009. Her research interests include the study of oxidative stress generated by biosynthesized metallic nanoparticles with antimicrobial activity and its relationship with the bacterial resistance.

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