

A STUDY OF THE ACTION OF SILVER NANOPARTICLES ON GRAM POSITIVE AND NEGATIVE BACTERIA

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ABSTRACT

Silver nanoparticles in aqueous solutions are known to be biologically active due to the multifaceted mechanism by which they act on microbes. [1,2] In the present study a suspension of silver nanoparticles was characterized spectroscopically, as well as with techniques such as Transmission Electron Microscopy TEM, Dynamic Light Scattering DLS and zeta potential and they were found to have a diameter of approximately 7 nm and to be negatively charged. The study of the antibacterial activity of silver nanoparticles was achieved by a series of experiments in vitro with different species of bacteria, Gram positive (*Staphylococcus*, *Listeria*) Gram negative (*E.coli*, *Salmonella*) pathogenic and non-pathogenic. The minimum inhibitory concentration of silver nanoparticles was determined to be ≤ 50 ppm (MIC ≤ 50 ppm), where in less than 20 hours sterilization conditions was obtained. On the basis of these results the silver nanoparticles are at the next stage incorporated in medical devices in order to provide sustained antibacterial protection.

KEYWORDS: Silver Nanoparticles, antibacterial action, Gram +, Gram-.

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