Comparison of Antimicrobial Effects of Alumina-Silica-Titania Nanocomposite with Silver (In Vitro)

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Background & Objectives: Nanoparticles and Nano-composites play an important role in the life sciences. In this study the antimicrobial activity of some kind of Nano composite alumina- silica- titania with silver Nano-particles in different concentrations was studied.

Methods: Five Methods including of Minimum Inhibitory Concentration, well diffusion Methods, disk diffusion Methods, shaker and effective toxicity of cell, to evaluate the antimicrobial activity of five different concentrations of nanoparticles, on the two bacteria, Escherichia coli, Bacillus subtilis and fungus Candida albicans, was evaluated.

Results: Results showed that, even at the highest concentration of alumina composite nanoparticles have been used, and the dispersion, the ability to kill microorganisms is studied, and the silver particles in the lowest concentration of microorganisms were fatal. Behalf, the toxicity characteristics of epithelial cells show that, unlike the silver Nano-particles, alumina Nano composite for good biological compatibility can be used in medical science.

Conclusion: The present study confirms this fact that antibacterial effects of silver nanoparticles is broad and effective but Nano-composite alumina inhibited limited range of microorganisms such as E. coli.

Keywords: Silver; Antimicrobial activity; Alumina-Silica-Titania