Tiny Titans: A Comparative Study of the Antimicrobial Effects of Silver Nanoparticles and Silver Nitrate Against MRSA and MSSA

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The purpose of this project is to see if silver nanoparticles and/or silver nitrate can cause zones of inhibition in MSSA-23 and MRSA-9. Based of the results and a literature review, determine which antimicrobial testing agent treats MSSA-23 and MRSA-9 the best and to find if the silver nanoparticles can rescue CCO and Hek001 cells from death due to bacteria. First inoculate the bacteria. Next plate bacteria. After plate bacteria, create one well in each plate at the center of the dish. Add the antimicrobial testing agent. Repeat these steps for both strains of bacteria. For cell work begin by growing the cells. After cells have grown confluent seed cells in well plates. Add bacteria to wells after cells have grown to desired growth along with control and antimicrobial agent in their desired wells. Observe the data. This project concluded the silver nanoparticles work better at 10-3ug/ml over the silver nitrate. Likewise silver nanoparticles were only bactericidal against MRSA. In the cell work the silver nanoparticles prevent cells from becoming infect by bacteria, but at higher concentrations the silver nanoparticles are so toxic to the cells that they kill the cells and the bacteria feed on the remains of the cells. Likewise there is minimal to no cytotoxic or genotoxic effect if the silver nanoparticles on the cells at lower concentrations and at higher concentrations there are moderate to severe cytotoxic and genotoxic effects.

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