The Varying Effects of Different Concentrations of Colloidal Silver on Bacteria

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The increase of antibiotic resistance poses a threat to the global population. Many consumers are using products such as colloidal silver as an alternative to treat bacterial infections. The promotion and usage of this solution has risen with consumers not knowing certain risks of such an effective product. The Federal Drug Administration has not certified it though it is known to cause, in excessive amounts, argyria (blue coloration of the skin). By experimenting the variability in effectiveness of colloidal silver as an alternative to antibiotics, a safe minimum concentration can be established. The hypothesis stated that if the bacteria E. coli and P. aeruginosa were exposed to low concentrations of colloidal silver, then bacterial inhibition would be as equally effective as higher concentrations. Four serial dilutions were made and tested on two bacteria: E. coli ATCC 8739 and Pseudomonas aeruginosa. This was done by extracting and pouring 0.1mL of hydrated bacteria into each of the different solutions. Then, solutions were poured into a petri dish and added melted agar to be incubated at 30-35°C for 40 hours. In the results, E. coli expressed two colonies in 0.03ppm compared to the 48 in the control, while P. aeruginosa showed complete inhibition in all concentrations. Based on these results, the hypothesis was correct. This study suggests that since lower concentrations are effective on neutralizing bacteria, users should be more aware of the concentrations they are consuming to preferably ingest lower dosages for a safe alternative to fight antimicrobial diseases.

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