

The antimicrobial activity of silver nanoparticles against *E. coli*

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The antimicrobial activity of silver nanoparticles against *E. coli* was investigated as a model for Gram-negative bacteria. We have investigated bacteriological tests performed in liquid systems supplemented with different concentrations of nanosized silver nanoparticles with spherical or triangular shape. Triangular silver nanoparticles prepared by converting large quantities of spherical silver nanoparticles were shown to be an effective bactericide. Ultraviolet-visible spectroscopy and transmission electron microscopy (TEM) were used to study the biocidal action of these nanoscale materials. The results confirmed that the treated *E. coli* cells were damaged while the silver nanoparticles were found to accumulate in the bacterial membrane. A membrane with such a morphology exhibits a significant increase in permeability, resulting in death of the cell. These nontoxic nanomaterials, which can be prepared in a simple and cost-effective manner, may be suitable for the formulation of new types of bactericidal materials.

References

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