

Abstract Submitted  
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**Characterization and Biocompatibility of “Green” Synthesized Silver Nanoparticles** MICHAEL MOULTON, SAMANTHA KUNZELMAN, LAURA BRAYDICH-STOLLE, AFRL/711 HPW, M. NADAGOUDA, R. VARMA, EPA Sustainable Technology Division, SABER HUSSAIN, AFRL/711 HPW, APPLIED BIOTECHNOLOGY BRANCH, AFRL COLLABORATION, SUSTAINABLE TECHNOLOGY DIV., EPA COLLABORATION — With ever increasing emphasis on nanotechnology, silver nanoparticle are being considered for many antimicrobial needs ranging from catheter coatings, to burn wound bandages. Current synthesis methods for creating silver nanoparticles typically call for potentially hazardous chemicals, extreme heat, and produce environmentally dangerous byproducts. As a culture intent on reducing our carbon footprint on the earth, societies’ focus has turned to “green” production capabilities. Therefore, if nanotechnology is to continue to grow at its current rate it is essential that novel “green” synthesis of nanoparticles becomes a reality. Furthermore, with the current and near-future applications of silver nanoparticles in biological systems it is imperative to fully analyze the potential toxic effects of these nanoparticles. In this study we have shown that by reducing silver nitrate in solutions of tea extract or epinephrine of varying concentrations spherical silver nanoparticle are formed. Furthermore, evaluation of mitochondrial function (MTS) and membrane integrity (LDH) in alveolar rat macrophages and human keratinocytes showed that these “green” synthesized silver nanoparticles were nontoxic.

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