

## **Silver nanoparticles: preparation, characterization, cytotoxicity, and its impact on cotton fabrics**

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### **Abstract:**

In this study, silver nanoparticles (AgNPs) were synthesized from silver nitrate by using glucose and Poly vinyl alcohol (PVA) as reducing and capping agent at the same time. Their particle size ranges from 15-35 nm. Ultraviolet –visible spectrophotometry (UV-vis.) and transmission electron microscope (TEM) analysis were used to characterize the synthesized AgNPs. Cotton Fabrics was treated with silver nanoparticles to be used for medical purposes. The fabrics were treated with AgNPs with three concentrations 10, 20 and 50 ug/ml to determine the best effective treated fabric structure from Atomic absorption and ultra violet protection factor (UBF) to be applied to cytotoxicity test in vitro. Cytotoxicity of the prepared silver nanoparticles were evaluated using cell viability assay from MMT and IC<sub>50</sub> values and these results confirm that we can use AgNPs safely in contact medical treatment with skin.

**Keywords:** silver nanoparticles, cytotoxicity, antibacterial, green chemistry, medical textiles.