

SYNTHESIS OF GOLD NANO PARTICLES USING POLY ACRYLIC ACID AS REDUCING AGENT - CHARACTERIZATION AND IN VITRO STUDY OF ANTICANCER CERVIX (HELA) ACTIVITY

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ABSTRACT

Chemical reduction method for the synthesis of metallic nanoparticles has been playing effectual role in the development of nanotechnology and was contributed in improving other related synthesis methods. Recently, many chemical methods are being conducted based on the use of various chemicals as reducing agents to synthesis gold nanoparticles (AuNPs). In this study, gold nanoparticles (AuNPs) is synthesized applying a new method, which is inverse to the general (Turkevich's Method) and so it is called (Reverse Method). This method involves reduction of Au⁺³ ions by poly acrylic acid as reducing and stabilizing agent. Au⁺³ ions are present in the form of chloroauric acid (HAuCl₄.3H₂O). The appearance of a ruby-red color solution by the addition chloroauric acid to poly acrylic acid solution is a clear indication to the formation of (AuNPs) due to Surface Plasmon Resonance (SPR). AuNPs is characterized by different techniques, such as UV-Vis absorption spectroscopy, depicting an absorbance band at 524 nm. Measurements of size and shape of particles are conducted using AFM and TEM techniques. The shapes appeared as variable and wear mostly spherical and their sizes were in the range (14-25) nm. Zeta potential showed that AuNPs nanoparticles were stable and their application on cervix (Hela) cancer cells gave fine results.

KEYWORDS: Inverse Method, Gold Nanoparticles, Poly Acrylic Acid, Atomic Force Microscopy, Transmission Electron Microscopy, Cervix (Hela) Cancer Cells