



Application of Sucrose Density Gradient Centrifugation for Segregation of Bio-fabricated Gold Nanoparticles using *M. longifolia* Bark Extract

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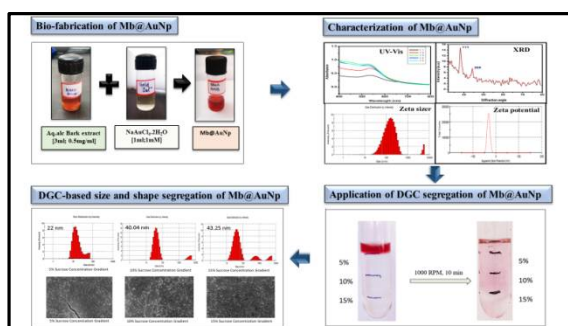
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ABSTRACT

Separation and concomitant segregation of nanoparticles is one of the thrust areas of research pertaining to the application of nanoscience. Significant research efforts have been directed towards alteration in synthesis and post synthesis for the segregation of poly dispersed nanoparticles resulting specially from plant mediated green bio-fabrication of nanoparticles. Therefore, it becomes important to segregate the nanoparticles from polydispersity to homogeneity for special academic interest and various industrial applications. The present piece of work demonstrates the size and shape segregation of poly dispersed plant mediated gold nanoparticles prepared from bark extract of *M. longifolia* using sucrose density gradient centrifugation, as a simple, rapid and cost-effective method. Bio-fabrication of gold nanoparticles exploiting the synergistic redox potential of the secondary metabolites of bark extracts of the plant *M. longifolia* in a single one pot green synthesis. Bio-fabricated gold nanoparticles embedded with plant's secondary metabolites were characterized for optical properties, morphology, diffraction patterns and size. Polydispersed nanoparticles of different size (range 23-700 nm, Z-average 141 nm) were segregated using sucrose density gradient centrifugation method having zeta size (range 6-50 nm, Z-average 22 nm). The present piece of work highlights the role of sucrose density gradient centrifugation method for segregation of poly dispersed plant mediated gold nanoparticles in a simple, fast, robust and cost-effective manner.

Graphical Abstract



Keywords: Density Gradient Centrifugation, Plant mediated gold nanoparticles, *M. longifolia* bark extract.