

Biosynthesis Of Selenium Nanoparticles Using Plant Extracts (Green Tea) And Characterization Organic Layer

Neves, M.J.¹; Pereira, A.G¹; Gonçalves, L.S.¹; Gerolis, L.G.L.¹;

1Lab Radiobiologia CDTN/CNEN

Belo Horizonte, MG

Introduction: Biomolecules present in plant extracts can be used to reduce metal ions to nanoparticles. Synthesis mediated by plant extracts is environmentally beneficial. The reducing agents involved include the various water soluble plant metabolites (e.g. alkaloids, phenolic compounds, terpenoids) and co-enzymes. Selenium (Se) nanoparticle (BioSeNPs) has been the particular focus of plant-based syntheses. Green tea (*Camelia sinensis*) has using to produce BioSeNPs. **Objectives:** Production of nanoparticles using plant extracts and characterization of extracellular polymeric substances presence. **Materials and Methods:** BioSeNPs were produced using Green tea in infusion water and selenite sodium. Fourier Transform Infrared (FTIR) spectroscopy and Energy Dispersive Spectroscopy (EDS) confirmed the presence of functional groups characteristic of proteins and carbohydrates on the BioSeNPs. BioSeNPs were characterized by Transmission Electron Microscopy (TEM) and Powder X-ray Diffraction (XRD). **Results and Discussion:** Reduction of selenite sodium with Green tea at high temperature formed gray hexagonal particles. It was the presence of the various functional groups on the BioSeNPs surface in method FTIR and the presence of the chemical elements in method EDS. **Conclusions:** The use of plant extracts for making BioSeNPs is inexpensive, easily scaled up and environmentally benign. This study suggested the presence of organic layer on the BioSeNPs synthesized by plant extracts.

Keywords: BioSeNPs, plant extracts, organic layer.