

Capping gold nanoparticles with modified chitosan polymers for biomedical applications

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With the purpose of obtaining stable and non-toxic nanocomposites with potential biomedical applications we coated gold nanoparticles (AuNP) with chitosan (CHI) and CHI grafted with poly(Nisopropilacrylamide) (PNIPAAm) and poly(N,N-dimethylacrylamide) (PDMAAm). We used a grafting reaction carried out by free radical initiation mechanism using potassium persulfate. We characterized the grafted CHI by FT-IR and thermogravimetry, grafting parameters were also calculated. Gold nanoparticles (AuNP) were obtained by reduction of the auric salt with citrate. Nanocomposites were obtained by mixing dropwise polymer solution into a AuNP solution under intense stirring, with variable AuNP:copolymer ratios. These were characterized using UV-Visible spectrophotometry and transmission electronic microscopy (TEM). The effects on cell viability of neuroblastoma SHSY-5Y cells were evaluated performing the MTT assay. CHI and the grafted CHI with PNIPA did not show effects on cell viability while PDMA pr