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Biomedical applications of biodegradable polymers doped with nanoparticles (Co, Ni, Au, Ag, Cu and Ag-Pd)

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This work describes the synthesis of metal colloids using nanoparticles of gold (Au), silver (Ag), copper (Cu) and silver-palladium alloy (Ag-Pd) which was supported in hyaluronic acid (HA) and chitosan (CS). Also, cobalt (Co) and nickel (Ni) were supported in Chitosan. The Solvated Metal Atom Dispersed (SMAD) method using a non-aqueous solvent 2-propanol and hyaluronic acid and chitosan were performed. The characterization techniques, such as Atomic Force Microscopy (AFM) and High-Resolution Transmission Electron Microscopy (HRTEM) were used. The development of microbiological assays to determine the Minimum Inhibitory Concentration (MIC) on solutions and films with nanoparticles under study, ATCC bacterial strains of *Escherichia coli*, *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Pseudomonas aeruginosa*. The toxicological tests were performed by conducting bioassays in Wistar rats of 100 g weight; which were injected intra-peritoneal with different solutions of metallic nanoparticles (four samples prepared). With the results, toxicity was evaluated according to the minimum and maximum values of concentration for cobalt, nickel, gold, copper, silver and silver-palladium. No toxicity was observed, since the levels of alkaline phosphatase, ALT (alanine aminotransferase) and GGT (gamma-glutamyl transpeptidase) were in the normal range.

Biography

Galo Cardenas-Trivino has completed his PhD from Auburn University and Postdoctoral studies from Kansas State University, USA. He has been Director of Center of Advance Polymers, University of Concepción, the Director of Center of Biomaterials at the University of Bio Bio, Chile. He has published more than 163 papers in reputed journals and 10 patents, and has been serving as the President of Chilean Chemical Society.

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