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Amino acid coated gold and silver nanoparticles and their interaction with phagocytes

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Silver and gold nanoparticles have been reported to exhibit low toxicity, high surface area, tuneable stability and wide amenability for functionalization. When a nanoparticle encounters biological tissues, it interacts with biomolecules, and this process defines the fate of the nanoparticle in the organism. The functionalization of nanoparticles with amino acids may increase the nanoparticle affinity to biological molecules, and thus they may not be recognised by macrophages as foreign particles. Due to the advantages of the amino acid mediated synthesis of nanoparticles, amino acids are preferred over the use of conventional reducing agents for the synthesis of nanoparticles. Amino acid mediated synthesis offers advantages of fabricating nanoparticles of different compositions in a single step without using any additional toxic chemicals or stabilisers. In this study tryptophan and tyrosine coated gold and silver nanoparticles were synthesised and characterised for biocompatibility. In the present work we will highlight our ongoing work on understanding of the interaction of sub toxic concentrations of these nanoparticles with serum proteins and blood macrophages.

Biography

A Alharthi is currently an active member of Nanobiotechnology Research Laboratory and a PhD candidate at RMIT University, Australia. She completed her Master's degree in Biotechnology from the same University in 2012. During her undergraduate studies at Al-Taif University, Saudi Arabia she had an opportunity to work as a Project Trainee at Cairo University, Egypt. Her current research interests involve Metal Nanoparticle Synthesis, Advanced Characterisations and Electron Microscopy.

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