

Biosynthesis of silver nanoparticles using plant extracts as reducing/capping agents

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Searching for and developing of non-toxic, clean and ecofriendly methods for synthesis of nanoparticles (NPs), intended for medical application, is a scientific topic permanently attracting attention due to the great impact of biomedical applications in tissue engineering, bioanalytical diagnostics, cancer therapy and new drug delivery systems. A variety of physical, chemical or hybrid methods for synthesis of metal NPs exist, but in general, they are toxic, expensive, with low yield and with limitations for use in medicine (e.g. contamination from precursors, etc.).

Thus, the aim of our study was to design “green” method for synthesis of AgNPs compatible for pharmaceutical formulation, by using capping agent from natural source. Plant extracts are rich in enzymes and variety of phytochemicals that can reduce metal (silver) salts. Since many plant species are well-known, and have wide spread traditional use, there is a perspective for new, non-traditional uses because of the already reported antioxidative, antibacterial, antifungal, bioenhancing activity, etc. Plant extracts with antioxidative properties are also suitable to be incorporated into or be deposited on the surface of AgNPs, while at the same time serving as a reagent for NPs synthesis.

We used plant extracts for biosynthesis of AgNPs. The obtained AgNPs have to be thoroughly characterized using different and suitable analytical techniques to reach final formulation which will confirm the possible synergistic effects of AgNPs and antioxidative compounds with plant origin.