

BIOSYNTHESIS OF SILVER NANOPARTICLES USING PLANT EXTRACTS : AN UPDATE

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In the recent period, different types of nanoparticles (NPs) have been proposed to improve antioxidant, but also antimicrobial properties of various natural compounds. Much attention has been dedicated to synthesis of NPs using biogenic enzymatic processes. The biosynthesis of NPs has been claimed to be superior to chemical synthesis, especially because of the opportunity of producing more environment-friendly and less toxic products. Among the numerous types of NPs, bioreduction-produced silver NPs from ionic silver-containing solutions are receiving much attention.

In this work, we present an update on our investigation on biosynthesis of silver NPs (AgNPs), thus presenting a method of reduction of silver nitrate solution, using a plant decoct from black pepper fruit (*Piper nigrum*, L). Namely, we present biosynthesis of AgNPs from 1 mmol/L AgNO₃ solution, by bioreduction that was provided from the complex composition of pepper fruit extract, obtained by decoction. The formation of the silver NPs was monitored by UV/VIS spectrophotometry and this technique was used for determination of the optimal incubation time for the bioreduction. Here we present the method introduced and the techniques for characterization of the AgNPs that have been performed so far. In addition, we present several ideas of further examination and application of the obtained product, especially in the direction of assessment of their antioxidant properties.