

Impact of Gold and Silver Nanoparticles on Terrestrial Flora and Microorganisms

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Abstract : Despite the rapid nanotechnology progress and recognition, its potential impact in ecosystems and health of humans is still not fully known. In this paper, the study of ecotoxicological dangers of nanomaterials is presented. By chemical reduction method, silver (AgNPs) and gold (AuNPs) nanoparticles were synthesized, characterized and used in experiments to examine their impact on microorganisms (*Escherichia coli*, *Staphylococcus aureus* and *Candida albicans*) and terrestrial flora (*Phaseolus vulgaris* and *Lepidium sativum*). The results collected during experiments with terrestrial flora show tendentious growth stimulations caused by gold nanoparticles. In contrast to these results, silver nanoparticle solutions inhibited growth of beans and garden cress, compared to control samples. The results obtained from experiments with microorganisms show similarities with ones collected from experiments with terrestrial plants. Samples treated with AuNPs of size 13 nm showed stimulation in the growth of the colonies compared with 3,5 nm size nanoparticles.

Keywords : nanomaterials, ecotoxicology, nanoparticles, ecosystems

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