



Phytotoxicity of Copper & Silver Nanoparticles on Seed Germination and Biochemistry in *Cassia Fistula* and *Clitoria Ternatea*

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Abstract : *The present paper elaborate the consequences of oxidative stress caused by synthesized copper and silver nanoparticles in two different plants viz; Cassia fistula and Clitoria ternatea. The Seeds of these plants were treated with Cu-CuO based nanoparticles and Ag nanoparticles at concentration of 1000 mg/l under normal conditions for 6 hours. The effect of these two Nanoparticles (NPs) on seeds germination and biochemistry has been observed. The results obtained showed significant reduction in growth at 1000 µg/ml NPs. Copper showed more stress to the germinated seedlings (50-60%) than silver (20-30%). The chlorophyll content in the fresh leaves of germinated seedlings showed reduction in both, chlorophyll a and chlorophyll b in NPs treated than control. Exposure to 1000 µg/ml of Cu and Ag nanoparticles*

reported a significant retardation on total content of primary metabolites and enhancement on total content of secondary metabolites. The obtained results and reviews put forward the prospects of research direction of the environmental behavior and the biological toxicity of NPs, hoping to bring new ideas to the further research on NP phytotoxicity.

Keywords: *phytotoxicity, nanoparticles, seed germination, plant growth.*

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Introduction :

In the 21st century, nanotechnology has received much importance due to its capabilities of modulating metals in their nanoparticles. It is a multidisciplinary field, as it combines the knowledge from different disciplines: chemistry, physics, and biology amongst others (Schmid et al, 2006; Schmid, 2010), and it has excellent prospects for exploitation across the medical, pharmaceutical, biotechnology, engineering, manufacturing, telecommunications and information technology markets.