

Deleterious effects of metallic nanoparticles in in-vitro models

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Abstract

Nanoscience is one of the novel fields in science that is highly developing in the last decade. It has found its application in many distinct areas ranging from industry, agriculture, environment monitoring and human health. Great interest has been shown for metallic nanoparticles that have been extensively used especially in biomedicine as antibacterial agents, in anticancer therapy, for bio-imaging and biosensors. The efficiency of nanoparticles in these areas has been demonstrated in several studies, putting them in the center of cancer treatment strategies as well as drug delivery systems, as the most investigated areas related to human health. It is however, important to emphasize that the rapidly increased use of nanoparticles is associated with a potential toxicological effect in organisms. Several studies have shown that metallic nanoparticles can induce oxidative stress related mitochondrial membrane abnormalities that can lead to activation of apoptotic pathways and cell death. Even though it is not completely understood, there are many in vitro and in vivo approaches showing a genotoxic effect of metallic nanoparticles. In this study we explore the metallic nanoparticle induced genotoxicity in in vitro models, their deleterious effects and the severity of these damages.

References

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