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Nano-toxicology of metal nanoparticles in stem cells (*in vitro*)

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Nano-toxicology is a branch of bio-nanoscience, which deals with the study and application of the toxicity of nanomaterials. To facilitate a faster risk assessment procedure for promising nanotechnology products, the use of *in vitro* studies has been suggested. The toxicity of metal nanoparticles (NPs) such as silver (Ag), silica (Si), gold (Au), zinc (Zn), iron (Fe) and so many others has been reported. Silica NPs might harm embryonic stem cells and are capable of inhibition of their differentiation. Ag NPs induced DNA damage, cell death and functional impairment in human mesenchymal stem cells. The neurotoxicity of different sized ZnO NPs in mouse neural stem cells (NSCS) was investigated. Iron oxide NPs (Fe3O4) is leading to stem cells tracking and molecular/cellular tracking. In other study, the toxicity effects of different types of NPs on the mouse spermatogonial stem cell lines as a model (*in vitro*) were evaluated. These effects can inhibit fertility and they may have negative consequences for the development of the offspring. The tests showed that the Ag NPs were the most toxic while molybdenum (Mo2O3) was the least toxic. In other associated studies, different kinds of elements, according to their toxicity or beneficial effects have been considered but in our review just the toxicity impacts of metal NPs has showed. In this abstract review, the definition of Nano-toxicology has described and some of metal NPs that have toxic effects on cell and stem cells has considered. More researches in these cases are recommended.

Biography

Morteza Sagharjoghi Farahani is currently pursuing BSc and researches on stem cell and effects of nanoparticles (NPs) on stem cells.

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