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Allium cepa root tip bioassay to avaliate calcium ferrite citotoxic and genotoxic response

Vanessa C Stein, Thais T V Caetano, Lucas Fonseca, Alessandra M Pedrosa, Marilene José dos Santos and Luiz Fernando Soares Federal University of São João Del-Rei, Brazil

A llium cepa (onion) root tip bioassay is considered as a simple and reliable test and according to the International Program on Chemical Safety (IPCS) is an efficient monitor of chemicals and other substances in the environment and it's mostly using to access chemical compound's genotoxic potential that are known for its high proliferative rate. Clear mitotic phases, stable chromosomes number, fast response to genotoxic materials and the rare occurrences of spontaneous chromosomal damages are the features that make *A. cepa* an excellent plant system for studying the toxicity of nanoparticles. Nanotechnologic development resulted in many direct applications of magnetic nanoparticles for biology and medical sciences field. Iron oxides are preferred for new medical methods of diagnosis and therapy due to their biocompatibility and magnetic properties. Being characterized by its high opacity and heat resistance, we carried out experimental investigations with calcium ferrite microparticles (CaFe₂O₄ MP) aiming to identify chromosomal aberration, which could be transmitted to the next plant generation as genetic mutation. It is extremely essential to assess the hazards associated with these MP before they are used for biological applications. To analyze the mitotic index, the root tips were collected six days after the first day of counting test and prep through smashing, fixed in Carnoy (3:1, ethanol: glacial acetic acid) for two hours, hydrolyzed in HCl 5N for 15 minutes at room temperature and washed in distilled water and then stained with acetic orcein 5%. The data didn't show any statistical difference between the treated groups with CaFe₂O₄ MPs and the control group did not show any cytotoxic or genotoxic towards the cells, implying that the CaFe₂O₄ MPs are a good study target to be held as promising treatment in its use on the environment and many medicine fields.

vanessastein@ufsj.edu.br