IN VITRO SAFETY PROFILE OF MAGNETIC GRAPHENE OXIDE AGAINST *VERO* CELLS.

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INTRODUCTION: Graphene oxide (GO) is one of the most studied and applied carbon nanomaterials nowadays. These nanomaterial presents prosperities such as elevating superficial areas, mechanical strength, electrical conductivity, optical properties, applicability in biomedicine and medicine fields, and applicability in remotion of aquatic pollutants. GO is a 2D material, highly oxygenated material, derived from graphene and one of the most well-known ways to obtain was through chemical exfoliation of graphite in acid media and strong oxidant agents. Magnetic nanoparticles (MNPs) were extensively employed in the medical field for theragnostic purposes. These nanoparticles can adhere to the surface of GO, also providing magnetic properties. ***OBJECTIVE***: Investigate the cytotoxicity of magnetic graphene oxide against the VERO cell. ***METHODOLOGY***: GO was produced by the modified Hummer's method, exfoliating graphite with sulfuric acid and oxidizing with potassium permanganate. Magnetic GO was produced by the co-precipitation method using Fe^{2+} salt in aqueous-alkaline media. *VERO* cell lines grew in DMEM medium. The cells were preserved at 37 ºC in an incubator with a 5% CO_2 environment. In the tests, cells were seeded at a density of $2x10^5$ cells per well in 96-well plates, with a total volume of 200 µL, previously were treat with different concentrations (12.5-200 µg/mL) and evaluated for cell viability, reactive species of oxygen (ROS) and nitric oxide (NO), after statistical analysis using two-way ANOVA, followed by Tukey test using GraphPad Prism 9 software. ***RESULTS:*** Magnetic graphene oxide does not exhibit significant values of *p* at 24 hours of incubation and the viability decreases proportionally with the increase of concentration. Also, the material does not demonstrate significant value of *p* in production reactive species of oxygen (ROS). Finaly the NO assay does not demonstrate significant values of *p* in any concentration of treatment when compared to NC. ***CONCLUSION:*** This study indicates that magnetic graphene oxide exhibits no cytotoxicity in VERO cells. The material does not diminish cell viability or induce the generation of reactive oxygen species; these findings may encourage further research into the applications of GO in biological contexts. Nevertheless, additional research its required to confirm and mitigate the toxicity at elevated concentrations.

Keywords: Nanotoxicology, Carbon Nanomaterials, Magnetic Nanoparticles.