

THE GRAPHENE OXIDE SPECIES INDUCE A DIFFERENT BIOLOGICAL RESPONSE IN SN4741 PARKINSON CELL LINE.

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Text: Introduction: Graphene Oxide (GO) has recently emerged as a reliable material to create scaffolds for the neural tissue because of its biocompatibility, electroconductive and physicochemical properties. Graphene is a 2-dimensional material consisting of rings of carbon atoms with an excellent electrical conductivity originating in the sp² hybridized carbons network. Nevertheless, there is not a consensus which kind of graphene oxide is most useful of benefit. Aim: In this study we evaluate the capacity of GO and its derivatives, partially reduced graphene oxide (PRGO) and fully reduced graphene oxide (FRGO), to support differentiation and maturation of a dopaminergic cell line-SN4741. Cell viability and cytotoxicity dose-response assays showed good survival. However, the phenotype and genotype of the cells were differentially regulated by the diverse forms of graphene.

Materials: GO, PRGO, FRGO material were prepared by Abalonyx AS (Oslo, Norway) from natural graphite powder following Hummers and Offeman 1958. SN4741 cells were exposure until 2 weeks. The analysis of the morphological changes of SN4741 cells growing in normal conditions as described by Son et al., 1999. LIVE/DEAD® Viability/Cytotoxicity Assay Kit (Invitrogen) was used for biocompatibility assay. Immunostaining assay: Primary antibodies were used: rabbit anti-tyrosine hydroxylase (TH); mouse anti-Tuj-1 (beta-III tubulin 1); RNA extraction and RT-PCR to cDNA obtained was carried out using RNase Kit (Quiagen). The following primer sequences were used: Pitx3, Lmx1a and Lmx1b and Tuj1.

Results: Our results (normalized expression) in comparison with different species shown a significant increase in the expression levels of Tuj1 and transcription factors specific for DA neurons such as Pitx3, Lmx1a, and Lmx1b in PRGO species.

Conclusion: Our study shows a different biological behavior related to phenotype and genotype in GO species in which PRGO species seem to be the best choice for Parkinson disease studies

CERTIFICATE OF PRESENTATION

This is to certify that:

NOELA RODRIGUEZ LOSADA

has participated with the POSTER titled:

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*Chair of the Organizing Committee
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