In Vitro, Mice neurotoxicity of PEGylated Nano-graphene oxide.

Abstract

An important and superior part (cerebrum) of central nervous system mainly consists of nerve cells. Those play a crucial role in body functioning. This research was conducted to examine the neurotoxicity of PEGylated nano-graphene oxide (PEG-NGO). Sheets of graphene oxide (GO) were synthesised by an improved Hummer's method. We obtained nano-graphene oxide (NGO) by ultrasonic cracking of GO sheets. Biocompatibility of the NGO was increased by polyethylene glycol loading. Cerebrum cells were treated with various concentrations of PEG-NGO for 24 hours. Trypan blue exclusion and MTT assays were used to determine % cell viability and to calculate IC_{50} while cytotoxicity was observed by LDH assay. Moreover, cellular uptake was observed by transmission electron microscopy (TEM). Results revealed no significant toxicity for low concentration (~42±0.1 µg/ml). In conclusion, our findings are supportive to use a low concentration of the PEG-NGO with practical applications.

Keywords: Nanomedicine, Neurotoxicity, PEGylated graphene oxide.

Graphical abstract

