

# The Dose- and Time-Dependent Cytotoxic Effect of Graphene Nanoplatelets: In Vitro and In Vivo Study

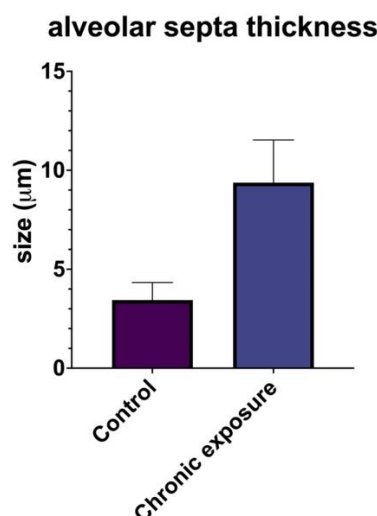
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**Figure S1.** Quantification of GPs influence to lung tissue after chronic exposure (21 days).

**Table S1.** Table S1: In vitro toxicity of the graphene-based nanomaterials.

Tested nanomaterial	Cytotoxic assay	Concentration	Cell culture	Findings	Reference
graphene oxide (GO), reduced GO, graphene quantum dots (GQD), aminated GQD, carboxyl GQD, graphene oxide GQD	MTT, LDH, TUNEL, ROS, live/dead cell staining	12.5, 25, 50, 100, 200 µg/ml	HL-7702 cells, SMMC-7721 cells, BEL-7404 cells, HCT116 cells, PC-12 cells,	Dose and time dependent cytotoxicity (for GO, rGO); other particles showed no obvious cytotoxicity	Li et al. (1)
GO, PEGylated-reduced GO	MTS, LDH, ROS	50, 100, 150, 200, 300 µg/ml	HEK93T cells, MRC-5 cells	GO showed reduction on cell viability; PEG-rGO showed cytotoxicity on the highest concentration, but overall better viability than GO	Demirel et al. (2)
GO	Alamar blue assay, trypan blue, propidium iodide	10, 50, 100 µg/ml	A549 cells	Dose- and time-dependent cytotoxicity	Mbeh et al. (3)

Polylactic acid graphene nanoplatelets	MTT, live/dead viability kit	1, 5, 10 µg/ml	3T3 cells	Dose- and time-dependent cytotoxicity	Pinto et al. (4)
rGO microfibers	live/dead viability kit, cell count kit-8	non-significant	Neural stem cells	Biocompatibility of rGO microfibres; positive effects on cell attachment	Guo et al. (5)

**Table S2.** In vivo toxicity of the graphene-based nanomaterials.

Tested nanomaterial	Exposure	Concentration	animal	Findings	Reference
Graphene	Intratracheal administration	0,12; 0,47; 1,88 mg/m <sup>3</sup> ; 6h/day	Male SD rats	BALF inflammatory parameters, no genotoxicity, no dose-dependent effects on body weight	Kim et al. (6)
Graphene oxide nanoplatelets (GON)	Intraperitoneal injection	50, 150, 500 mg/kg; every 48 hours	Wistar rats	Alveolar thickening, small foci of an inflammatory reaction, hyperemia, hemosiderosis, giant cell formation, accumulation of GON in capsule, neuronal degeneration	Sharifabadi et al. (7)
PEG-nano GO	Peroral administration, intraperitoneal injection	100 mg/kg	BALB/c mice	No effect on survival, body weight, morphology of liver, spleen, kidney, heart, lung	Yang et al. (8)
graphene oxide (GO), reduced GO, graphene quantum dots (GQD), aminated GQD, carboxyl GQD, graphene oxide GQD	Intravenous injection	10 mg/kg	Kunming mice	GO, rGO caused weight loss, increase of white blood cells (inflammatory response), decrease of blood platelets; lungs contain GO and rGO aggregates (occlusion of blood vessels), and alveolar septa thickened; hydropic degeneration of hepatocytes	Li et al. (1)

Graphene nanoplatelets	Intratracheal administration	50 µg/animal	Mice	Inflammation, apoptosis, pulmonary toxicity (pleural lavage)	Schinwald et al. (9)
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