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MEETING ABSTRACT

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The influence of *N*-acetylcysteine on the cytotoxicity of single-walled carbon nanotubes in human lung carcinoma cells

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Background: Single-walled carbon nanotubes (SWCNTs) have been reported to induce cytotoxicity in different cell lines. Although the mechanisms underlying cytotoxicity are not fully understood, accumulation of reactive oxygen species (ROS) and oxidative damage is considered to be a likely contributing factor.
Methods: Human lung carcinoma cells, A549, and human fetal lung fibroblasts, MRC-5, were used to assess the cytotoxicity of SWCNT in the presence and absence of a redox status regulator, *N*-acetyl-cysteine (NAC), via the MTT assay.
Results: At ≤ 250 µg/ml, SWCNT induced a nearly three-fold greater loss of viability in A594 *vs.* MRC-5 cells. SWCNT cytotoxicity at higher concentrations was similar for both cell lines, while NAC alone was non-toxic. The cytotoxicity to A549 cells of SWCNT (250 µg/ml) in combination with NAC was significantly decreased at the lowest NAC concentration (1.5 g/ml), and was similar to NAC treatment alone at that concentration. Higher concentrations of NAC in combination with SWCNT (250 µg/ml) resulted in increased cytotoxicity in both A549 and MRC-5 cells.
Discussion: A549 malignant lung cells are more susceptible to low concentrations of SWCNT *vs.* normal lung cells, and low concentrations of *N*-acetylcysteine appear to be cytoprotective, possibly due to its antioxidant properties.
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