

P167. ASSESSMENT OF INDIVIDUAL AND COMBINED CYTOTOXIC EFFECTS OF ZINC OXIDE AND COPPER OXIDE NANOPARTICLES IN L929 CELL CULTURES

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In the present study, cytotoxic effects of zinc oxide (ZnO) and copper oxide (CuO) nanoparticles (NPs) were determined by neutral red (NR) uptake assay following exposure of L929 cell cultures to various concentrations of these NPs either alone or as a mixture for 96 hours. Survival profiles of cell cultures were found similar with ZnO and CuO NPs when the cells exposed to these NPs alone: The decrease in cell survival were found dose-dependent. Nearly 50% decreases were observed in the cell survival following exposure of cells to ≥ 5 $\mu\text{g/ml}$ concentrations of ZnO, and ≥ 0.5 $\mu\text{g/ml}$ concentrations of CuO NPs. However, when the cells exposed to mixture of these two NPs in various concentrations, ~50% decrease in cell survival was noted at higher concentrations (≥ 100 $\mu\text{g/ml}$). Diethylenetriaminepentaacetic acid (DTPA), N-acetyl cysteine (NAC) or taurine (Tau) pretreatment of cell cultures were found to be marked protection against cytotoxicity of 100 $\mu\text{g/ml}$ ZnO and CuO NPs or mixtures of both NPs in 96 h incubation. Reactive oxygen species (ROS) producing effects of these NPs were also observed with their three different concentrations (100, 400, 800 $\mu\text{g/ml}$, either alone or as a mixture) using a fluorescent probe 2',7'-dichlorofluorescein-diacetate. The data obtained in this study suggest that cytotoxic and ROS producing effects of these NPs are more pronounced when they are used alone. Further studies are needed to determine underlying mechanism of these effects.

This study was supported by Hacettepe University Research Foundation (014 D12 301 001-830).

TEM images were obtained in Central Laboratory of Middle East Technical University (METU) in Ankara, Turkey.

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