

## **Nickel oxide nanoparticles exert selective toxicity on skin mitochondria and lysosomes isolated from the mouse model of melanoma**

**Jalal Pourahmad, Shabnam Rahimi** , Department of Pharmacology and Toxicology, Faculty of Pharmacy, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Nickel oxide nanoparticles (NiO - NPs) are progressively used for an immense number of new applications in modern industries sectors. Nevertheless, the toxic impact of NiO - NPs has not been clearly elucidated on human melanoma cell lines at the cellular and molecular level. Hence, this study was designed to examine the in vitro cytotoxicity potentials of NiO - NPs on malignant cutaneous melanoma (MCM) mitochondria. Results revealed that NiO - NPs significantly increased reactive oxygen species level, lipid peroxidation, and mitochondrial membrane potential and decreased succinate dehydrogenase activity, glutathione level, and ATP content on skin mitochondria isolated from the mouse model of melanoma compared with the non - cancerous mouse skin mitochondria. Our results revealed that NiO - NPs induced lysosomal membrane labialization on mentioned mitochondria. The current study showed that NiO - NPs could significantly induce selective cytotoxicity on MCM mitochondria. Therefore, this compound may be considered as a promising candidate for further in vivo and clinical studies to reach a new anti - MCM drug.

**KEYWORDS:** cytotoxicity, malignant cutaneous melanoma, nickel oxide nanoparticles, skin mitochondria