

## عنوان مقاله:

Toxicity of multi-wall carbon nano tubes inhalation on the brain of rats

## محل انتشار:

پانزدهمین همایش سراسری سم شناسی ایران (سال: 1398)

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## خلاصه مقاله:

This study was designed to investigate the brain toxicity following the respiratory contact with multi-wall carbon nanotubes (MWCNTs) in male Wistar rats. Rats were exposed to 5 mg/m<sup>3</sup> MWCNT aerosol in different size and purity for 5 hours/day, 5 days/week for 2 weeks in a whole-body exposure chamber. After 2-weeks exposure, mitochondrial isolation were performed from different parts of rat brain (hippocampus, frontal cortex, and cerebellum) and parameters of mitochondrial toxicity including Mitochondrial succinate dehydrogenase (SDH) activity, generation of reactive oxygen species (ROS), mitochondrial membrane potential (MMP) collapse, Mitochondrial swelling, and cytochrome c release, ATP level, mitochondrial GSH and lipid peroxidation, were evaluated. Our results demonstrated that MWCNTs with different characteristics, in size and purity, significantly ( $P < 0.05$ ) decreased SDH activity, GSH, and ATP level, increased mitochondrial ROS production, lipid peroxidation, mitochondrial swelling, MMP collapse, and cytochrome c release in the brain mitochondria. In conclusion, we suggested that MWCNTs with different characteristics, in size and purity, induce damage in varying degrees on the mitochondrial respiratory chain and (increase mitochondrial ROS formation in different parts of rat brain (hippocampus, frontal cortex, and cerebellum).

## کلمات کلیدی:

Multi-Wall Carbon Nanotube; Brain Mitochondria; Inhalation Toxicity

## لینک ثابت مقاله در پایگاه سیویلیکا:

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