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بالرسالة صفحات لم ترد بالأصل

A Histological Study on the Acute Effect of Zinc Oxide Nanoparticles Administered by Different Routes on Albino Rat Lung.

Thesis
Submitted for Partial Fulfilment of Master Degree in Histology and Cell Biology

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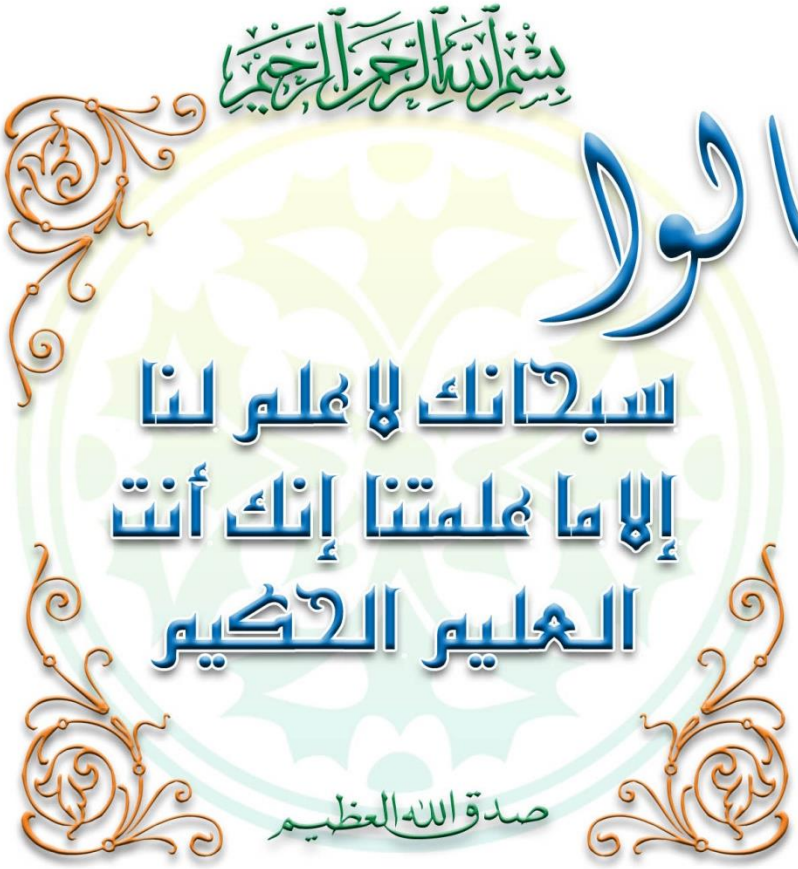

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رسالة
مقدم توطئة للحصول على درجة الماجستير في علم الأنسجة وبيولوجيا الخلية

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List of abbreviation

ALP	Alkaline phosphatase
ALT	Alanine transaminase
ANOVA	Analysis of variant
AST	Aspartate transaminase
BSA	Bovine serum albumin
H&E	Haematoxylin and eosin stain
IFN-γ	Interferon gamma
LDH	Lactate dehydrogenase
MWCNTs	Multi-walled carbon nanotubes
NPs	Nanoparticles
P value	Probability of significance value
QDs	Quantum dots
ROS	Reactive oxygen species
SWCNTs	Single walled carbon nanotubes
TEM	Transmission Electron Microscopes
TGF-β	Transforming growth factor beta
Th	T-helper lymphocytes
TNF-α	Tumor necrosis factor alpha
ZnO NPs	Zinc Oxide nanoparticles

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Abstract

Introduction and aim of the work: Zinc oxide nanoparticles (ZnO NPs) are considered one of the most frequently used nanoparticles. Due to the expanding use of ZnO NPs and rapid growth in nanotechnology, the potential for human exposure has increased tremendously. It is necessary to assess the potential toxicity to avoid their adverse effects on human health before widespread industrial application. Hence, this study aimed to compare the histopathological effects of high and low doses of zinc oxide nanoparticles either administered intranasally or intravenously on lung tissue of adult male albino rats.

Materials & methods: Thirty five Wistar male albino rats were divided randomly into three groups. Group I; served as control group, group II (Intranasal administered group) was subdivided into two subgroups: Subgroup IIA and IIB in which the rats were injected with 4 mg/kg and 30 mg/kg of ZnO NPs respectively. Group III (Intravenous administered group) was subdivided into two subgroups with same doses as group II. Blood samples were collected after 24 hours for LDH measurement. Also, lungs of all rats were dissected out and processed for histological, immunological and ultrastructural studies. Morphometric measurements and statistical analysis were also performed.

Results: ZnO NPs caused significant thickening of interalveolar septa, which were infiltrated with mononuclear cells. Collapsed alveolar spaces, were seen while others were apparently dilated. Extravasated RBCs were noticed n the lumen of few alveoli as well as in some bronchioles. Many dilated blood vessels exhibited focal disruption and focal thickening of their wall together with some mononuclear infiltration. Acidophilic hyaline exudate was seen filling the blood vessels lumina. Collagenous fibers deposited in the interalveolar septa and bronchiolar walls. Apparent