Cairo University
Faculty of Veterinary Medicine
Department of Pathology

Pathological And Clinicopathological Studies On Nano Technology As A Tool for Treatment of Diethylnitrosamine-induced Hepatic Affections in Albino Rats

Thesis
Presented by

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(B.V.Sc. 2008- M.V.Sc. 2012)
For Ph.D. in Veterinary Medical Science, Veterinary Pathology
(General, Special and Postmortem)

Under Supervision of

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Abstract

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This study was designed to perform the ability of gold nanoparticles (GNPs) to improve the hepatotherapeutic effect of cisplatin against diethylnitrosamine (DENA)-induced Hepatocarcinogenicity with minimal side effect. 13nm sized GNPs were prepared by citrate reduction method and conjugated by cisplatin, and then the prepared particles were characterized by using U.V. spectrophotometer, TEM and Zetasizer nano. The experiment was carried out on 120 male albino Wister rats (average b.wt 70-100g). The animals were divided into 2 groups, group (A) kept as negative control and group (B) received DENA and CCL4. Each group was subdivided into 7 subgroups according to different methods of treatments. Concerning group (B) the 1st group received DENA and CCL4 then kept as positive control. The 2nd and 3rd group received DENA and CCL4 then treated by cisplatin for short and long period respectively. The 4th and 5th group received DENA and CCL4 then treated by GNPs for short and long period respectively. The 6th and 7th group received DENA and CCL4 then treated by GNPs-cisplatin conjugates for short and long period respectively. Group (A) treated with the same methods as in positive control groups. Then recording the clinical signs, body and tissue weights, clinical biochemical parameters (ALT, AST, ALP, T.Bil., D.Bil. and GGT), liver oxidative stress markers (MDA, GSH and CAT) as well as gross lesions, histopathological lesions of liver and kidneys and immunohistochemical staining of liver tissues were done. GNPs residues were determined in different organs by using ICP-MS to study the biodistribution of GNPs. The results of this study revealed the antioxidant and hepatotherapeutic effect of nontoxic GNPs against DENA-induced hepatocarcinogenicity and also confirmed the detoxification of cisplatin by GNPs.
Key words: *Gold nanoparticles- cisplatin- diethylnitrosamine- carbon tetrachloride- oxidative stress.*

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