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**Therapeutic action mechanism of zingerone against CCl<sub>4</sub> induced liver mitochondrial toxicity in Swiss Albino mice****Mohammad Firoz Alam, Mohammed M Safhi, Tarique Anwer, F Islam, Siva Kumar and Gyas Khan**  
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Mitochondria are well known for energy source in hepatocytes and play an important role in extensive oxidative metabolism and normal function of the liver. Another important role of mitochondria is it helps in signalling pathways that mediate hepatocyte injury, because impaired mitochondrial function contribute to several chronic liver diseases such as alcohol induced liver diseases, non-alcoholic fatty liver diseases, viral hepatitis, cholestasis and Wilson's diseases etc. Impairment of the electron transport chain or oxidative phosphorylation causes to decrease oxidative metabolism, decrease ATP synthesis, and also reduce hepatocyte tolerance towards free radical insults. Several drugs, toxins and herbs have been reported to cause liver injury and drugs itself account for 20-40% of all instances of rapid development of hepatic injury. Swiss Albino mice were divided into 5 groups; group 1 was control. Group 2 received CCl<sub>4</sub> as (1.5 mg/kg) in oil i.p, twice a week for 15 days. Groups 3 and 4 were pre-treated with zingerone 50 and 100 mg/kg b.wt respectively once daily for 15 days. Group 5 was treated with 100 mg zingerone only. The animals were sacrificed on day 16 and livers were taken out to isolate the mitochondria. Results indicated that the content of lipid peroxidation (LPO) was increased significantly and the content of glutathione and activities of antioxidant enzymes; glutathione peroxidase (GPx) glutathione reductase (GR), glutathione-S-transferase (GST), superoxide dismutase (SOD) and catalase (CAT) were decreased significantly in the liver mitochondria of CCl<sub>4</sub> treated group as compared to the liver mitochondria of control group. This impairment of mitochondrial changes was protected significantly and dose dependently with the treatment of zingerone in Group 3 and Group 4. Thus the present study indicates that the zingerone which is a part of our daily diet may be used as the best therapeutic potential tool for the prevention of liver injury.

**Biography**

Mohammad Firoz Alam is working as an Assistant Professor (Toxicology) in the Department of Pharmacology and Toxicology, College of Pharmacy, Jazan University, Jazan since 2010. He has specialisation in Neurotoxicology. Presently, he is engaged in toxicity evaluation of drugs and chemicals on animal models (rat/mice) and its protection management by using phytomedicine or drug. He has more than 11 years of experience in teaching and research at different universities. He is experienced in planning, development and execution of high impact research. He has 5 approved projects from Jazan University. He has successfully finished two projects and three are under progress. He has published 21 articles in peer reviewed journals with ISI Thomson Reuter. He has supervised six Pharm D students in Scientific Research Deanship Student Projects, Jazan University, Jazan, KSA.

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