

## Patho-biochemical studies on hepatotoxicity of exposure to aspirin and diazinon in male rats: The protective role of selenium

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The wide application of organophosphorus insecticides (OPs) in public health and agricultural programs was accompanied by potentially hazardous impact on humans, animals, plants and environment (water, air, soil and food) and causes severe acute and chronic poisoning. Also, drugs or pharmaceutical products, which are used to cure diseases, are also xenobiotics with both therapeutic/toxic potentials. It is evident from the literature, which is very limited, that drug/insecticide interactions can result in altered response/toxicity, which is of clinical relevance. In developing countries, the purchase of large quantities of commonly used drugs (e.g. acetylsalicylic acid or aspirin) does not require a medical prescription. Accordingly, the aim of the present study was designed to investigate the possible effects of acetylsalicylic acid (ASA) and diazinon (DIA) insecticide on liver of rats and the protective effect of selenium (Se). Rats were divided into eight groups of six each: control, ASA, DIA, ASA+DIA, Se, ASA+Se, DIA+Se and ASA+DIA+Se. Body weight and total protein concentration were statistically ( $P \leq 0.05$ ) decreased, while relative liver weight was statistically ( $P \leq 0.05$ ) increased in ASA+DIAs-treated group. The activities of serum aspartate aminotransferase (AST), alanine transaminase (ALT), lactate dehydrogenase (LDH) and lipid peroxidation level were statistically ( $P \leq 0.05$ ) increased, while the activity of cholinesterase (ChE) was decreased in rats exposed to DIA and DIA+ASA. In addition, administration of DIA, ASA and their combination resulted in damage of liver structures and increase in the immunoreactivity of caspase-3 expression in the cytoplasm of the hepatocytes as compared to the control group. Combination therapy with Se significantly ( $p \leq 0.05$ ) restored these alterations to within the normal limits and prevents disruptions of liver structures. The present study suggested that salicylic acid and diazinon induced liver injury would be triggered by lipid peroxidation, liver enzymes, histopathology and immunoreactivity of caspase-3. Salicylates should be avoided since many of the adverse effects associated with these drugs are similar to the complications of chronic liver disease especially of agricultural workers in developing countries, where there is the handling of drugs without medical prescription.

### Biography

Abdel-Tawab H. Mossa has received his Ph.D. on Pesticide Chemistry and Toxicology from Alex University. Currently, he is working as associate Professor in Environmental Toxicology Research Unit (ETRU), Pesticide Chemistry Department, National Research Centre, Egypt. Dr. Mossa has more than 30 research papers published in national and international scientific journals. He is editor of 8 international journals and reviewer in more than 15 peer reviewed international journals. He is a member of Egyptian Society of Toxicology and the Arab Society of Medicine.

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