

From Tunisian ethnomedicine : Uroprotective activity of *Aloe vera* plant extract against Cyclophosphamide and Buthionine sulfoximine induced toxicities

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Abstract

Cyclophosphamide (CP) and buthionine-SR-sulfoximine (BSO) are commonly used anti-cancer drugs which cause toxicity by their reactive metabolites. The present study was undertaken to investigate the effects of pre-treatment with an *Aloe vera* plant extract on the urotoxicity induced by acute doses of CP and BSO using a Swiss albino mice model. The modulation of toxicity was evaluated by measuring lipid peroxidation (LPO) and antioxidants in the urinary bladder of the animals. The findings revealed that *Aloe vera* induced remarkable protective effects in terms of both LPO and enzymatic antioxidant activities. The CP-treated mice were noted to undergo significant decreases in the activities of glutathione S-transferase (GST), glutathione reductase (GR), glutathione peroxidase (GP), and catalase (CAT) when compared to the controls. The levels of reduced glutathione (GSH) also decreased with an increase in LPO in the CP-treated animals and BSO treatment exerted an additive toxic effect in the CP-treated animals. Pre-treatment with the *Aloe vera* herbal extract restored all enzymatic activities back to normal, thus confirming its overall protective effect against the toxic effects of CP and BSO. The restoration of GSH through treatment with *Aloe vera* may play an important role in the reversal of CP-induced apoptosis and free radical mediated LPO in urinary bladder. Due to its widespread availability in nature and relative lack of toxicity, the *Aloe vera* plant extract presented in the current study could be considered a potential strong candidate for future applications as an adjuvant to cancer chemotherapies.