
Protective Effects of *Abelmoschus moschatus* Medik. on Adriamycin Induced Oxidative Damage and Inflammation in the Kidney of Wistar Rats

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Adriamycin is an anthracycline anti-neoplastic drug, in which the use in chemotherapy has been largely limited by its dose related multi-organ toxicities. Oxidative stress and inflammation are the main principles explaining the nephrotoxicity induced by adriamycin. The objective of the study was to investigate the protective effects of selected leaf extracts of *Abelmoschus moschatus* Medik. (family; Malvaceae, common name: Kapukinissa) on adriamycin induced oxidative damage and inflammation in the kidney of Wistar rats. Soxhlet extraction protocol was followed in the preparation of extracts of *A. Moschatus*. The experimental rats (n=6/group) induced for nephrotoxicity (adriamycin 5 mg/kg, ip) were administered with hexane, ethyl acetate, butanol, and aqueous extracts of *A. Moschatus* and the standard drug (fosinopril) orally, at 55, 75, 60, 140 and 0.09 mg/kg doses respectively for 28 consecutive days. The kidneys of all experimental rats were excised from the sacrificed animals and kidney homogenates were prepared for the assessment of antioxidant, anti-inflammatory makers and lipid peroxidation. A significant reduction in the total antioxidant status by ABTS method (72%), along with reduced antioxidant enzyme activities; glutathione peroxidase (GPx; 159%) and glutathione reductase (GR; 29%) was observed in the kidney homogenates of the nephrotoxic control group signifying adriamycin induced oxidative damage. These findings were further corroborated with the significant raise in lipid peroxidation (35%) and the level of the inflammatory cytokine; tumor necrosis factor (TNF- α ; 36%) (p<0.05). Treatment with the four selected extracts of *A. Moschatus* significantly restored the total antioxidant status by 68%, 73%, 95%, 79% respectively and caused an elevation in GPx and GR activities, thereby suggesting potential antioxidant effects *in vivo*. A significant suppression of TNF- α (34%, 34%, 48%, 42%) and lipid peroxidation (29%, 30%, 29%, 30%) was also noted following the treatments (p<0.05). These findings support the hypothesis that the nephroprotective effects of the selected leaf extracts of *A. Moschatus* are mediated via antioxidant and anti-inflammatory pathways in adriamycin induced Wistar rats. Further studies are warranted for the isolation of bioactive chemical compounds in the selected extracts for the development of novel nephroprotective therapeutics.

Keywords: Abelmoschus moschatus, Adriamycin induced oxidative stress, Anti-inflammatory markers, Antioxidant markers, Lipid peroxidation