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Abstract No: OP 02

Nephroprotective effects of *Abelmoschus moschatus* against Adriamycin-induced nephrotoxicity model in Wistar rats: A biochemical, histopathological and immunohistochemical assessment

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Abelmoschus moschatus Medik (family; Malvaceae) is widely being used in the treatment of kidney diseases in traditional Ayurvedic practice. The objectives of the present study was to evaluate the nephroprotective effects of the hexane, ethyl acetate, butanol and aqueous leaf extracts of *A. moschatus* against Adriamycin-induced nephrotoxicity model in Wistar rats. Healthy male Wistar rats were randomly divided into seven groups (n=6/group). Experimental rats of Group 1 and 2 were considered healthy and nephrotoxic (adriamycin; 5 mg/kg, ip) controls respectively and administered distilled water. The nephrotoxic rats in group 3-7 were orally administered with hexane; 55 mg/kg, ethyl acetate; 75 mg/kg, butanol; 60 mg/kg, and aqueous; 140 mg/kg extracts of *A. moschatus* and the standard drug (0.09 mg/kg) respectively for a period of 28 days. A sample of urine (24 hour), blood and kidney tissues were collected at the end for the biochemical, histopathological and immunohistochemical assessments. Ethical clearance was granted from the Ethical Review Committee, Faculty of Medicine, University of Ruhuna (14.12.2015:3.1). Treatment with the selected extracts of *A. moschatus* significantly decreased the elevation of serum creatinine (22%, 26%, 21%, 18%), blood urea nitrogen (37%, 43%, 27%, 38%), cystatin-C (59%, 59%, 55%, 56%) and decreased the reduction of serum albumin (32%, 7%, 51%, 27%) and total protein (53%, 25%, 54%, 53%) ($p<0.05$). Serum β_2-microglobulin was reduced with significant changes in hexane (18%) and ethyl acetate (20%) extracts. A reduction in proteinuria was observed only with the butanol (37%) and aqueous (27%) extracts ($p>0.05$). The semi-quantitative assessment of histopathology in the H and E stained kidney sections revealed attenuation of the features of acute kidney injury in plant extract treated rats. The immunohistochemical expression of COX-2 and Bax was decreased and the expression of BCL-2 was increased following the treatments. The results revealed that hexane, ethyl acetate, butanol and aqueous leaf extracts of *A. moschatus* possess significant nephroprotective activity, probably mediated via anti-inflammatory and antiapoptotic mechanisms in Adriamycin-induced nephrotoxicity.

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Key Words: Nephroprotective, *Abelmoschus moschatus,* Nephrotoxicity, Wistar rats