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15<sup>th</sup> Academic Sessions

University of Ruhuna

7<sup>th</sup> March 2018

ISSN 2362 - 0412



## Adriamycin Induced Nephropathy in Wistar Rats: An *in vivo* Model to Screen Nephroprotective Activity of Natural Products

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### Abstract

Animal models of renal disease are important in the development of novel nephroprotective agents in terms of their predictive value for humans. The objective of the present study was to develop adriamycin (ADR) induced nephropathy in Wistar rats in order to use it as a model for screening natural products with proposed nephroprotective activity. Healthy male Wistar rats (10-12 weeks of age, 200±25g) were used in the experiments. Fasted Wistar rats (8h) were divided into four groups (n= 6/ group). Group one served as the control group; received normal saline. Group two, three and four were test groups, received a single dose of ADR (17, 20 and 23 mg/kg b. wt, ip) respectively. The experimental animals were sacrificed on the 7<sup>th</sup> day after the administration of ADR. Blood was collected from all Wistar rats for the estimation of selected biochemical parameters in order to assess renal damage. Hematoxylin and Eosin stained sections of the kidney tissues were used for the histopathology assessment. The dose of 17 mg/kg b. wt in rats showed mild changes in biochemical parameters and the 23 mg/kg b. wt dose resulted in an increase in mortality of rats. There was an increase in serum creatinine concentration (117%, 158%, 259%) and blood urea nitrogen level (11%, 26%, 41%) in rats treated with the selected doses of ADR (p < 0.05). Serum concentration of total protein and albumin were reduced with the increase in the dose of ADR. Histopathological changes of acute tubular necrosis was clearly observed in the kidney tissues of ADR (20 mg/kg b. wt) treated rats. ADR at a dose of 20 mg/kg b. wt was selected as the optimum dose for the development of nephropathy model. The selected dose will be used in the investigation of acute nephroprotective activity of natural products *in vivo*.

**Key words:** Adriamycin induced nephropathy, nephroprotective activity, Sri Lankan medicinal plants, Wistar rats

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