014/A

Histopathological, haematological and serum biochemical changes in Wistar rats after oral administration of *Alternanthera sessilis* water extracts

B M G K Balasuriya[1], G S P de S Gunawardena[2] and H R W Dharmaratne[1*]
[1]*Natural Products Programme, Institute of Fundamental Studies, Kandy*
[2]*Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya*

Alternanthera sessilis commonly known as Mukunuwenna is a leafy vegetable popular among Sri Lankans. This investigation was carried out to study the histopathological, haematological and serum biochemical changes in Wistar rats, after oral administration of *A. sessilis* water extracts.

Eight-week-old Wistar rats weighing 170 ± 10g were grouped into eight experimental groups (A I, A II, A III, A IV, B I, B II, B III, B IV) each consisting of 3 rats. Each rat of A I & B I received 10 times of the calculated dose (assuming a human of 50kg consumes 50g of *A. sessilis* per day, and amount per unit weight of human was calculated and converted to the average weight of rats, 170g) which amounted 82.1 mg/day of the freeze-dried water extract of aerial parts of *A. sessilis* in 2 mL of water. A II & B II received 20 times (164.2 mg/day), and the highest dose 40 times (328.4 mg/ per day) was given to A III & B III. Water (2 mL) was given orally to A IV & B IV as the control. Haematological, serum biochemical and histopathological studies were carried out by employing standard techniques on all the animals A I, A II, A III & A IV on the 21st and B I, B II, B III & B IV on the 42nd day. The tested doses of *A. sessilis* were not lethal to Wistar rats and there were no significant changes in haematological parameters, viz., total RBC and WBC counts, PCV and hemoglobin concentration. However, significant elevations ($p< 0.05$) in the levels of AST (158%- 52%) and ALT (73%- 27%) were found in the treatment rats on the 21st day. Significant changes were also observed in AST (192%-126%), ALT (67%-33%), ALP, urea, creatinine, magnesium and albumin levels in all the treatment groups on the 42nd day.

Histopathological changes characterised by congestion and mild degenerative lesions were observed on the 21st day in the liver and kidney of the rats that received the highest dose (A III). The histological lesions indicative of mild to moderate hepatocyte degeneration and/or necrosis and mild degenerative changes in the kidney tubules were found in the rats of all treatments on the 42nd day. In contrast, the liver and kidney of the rats of both control groups (A IV & B IV) were devoid of histopathological changes.

The present findings indicate that, the oral administration of fresh *A. sessilis* water extract leads to hepatic and renal toxicities in male Wistar rats. Further investigations with smaller quantities of cooked *A. sessilis* are necessary to confirm the long-term hepatic and renal toxicities observed.

* hrwd@ifs.ac.lk Tel: 081-2232002