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Efficacy of Ethanolic Extract of Aerva javanica Aerial Parts in the Amelioration of CCl4-Induced Hepatotoxicity and Oxidative Damage in Rats

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Abstract : We investigated ex vivo and in vivo antioxidative and hepatoprotective effect of Aerva javanica. Total ethanol extract of A. javanica aerial parts was prepared, and tested on DCFH-toxicated HepG2 cell in CCl4-injured Wistar rats. MTT-assay was used to determine cell viability, and serum biochemical markers of liver injury as well as histopathology were performed. In vitro DPPH and β-carotene free-radical scavenging assay and phytochemical screening of the extract was done. Furthermore, A. javanica total extract was standardized and validated by HPTLC method. While DCFH-injured cells were recovered to about 56.7% by 100 microg/ml of the extract, a 200 microg/ml dose resulted in hepatocytes recovery by about 90.2%. Oral administration of the extract (100 and 200 mg/kg.bw/day) significantly normalized the serum SGOT, SGPT, GGT, ALP, bilirubin, cholesterol, HDL, LDL, VLDL, TG and MDA levels, including tissue NP-SH and TP in CCl4-injured rats. In addition, the histopathology of dissected liver also revealed that A. javanica cured the tissue lesion compared to reference drug, Silymarin. In vitro assays revealed strong free-radical scavenging ability of the extract and presence of alkaloids, flavonoids, tannins, sterols and saponins where Rutin, a well-known antioxidant flavonoid was identified. Our finding therefore, suggests the therapeutic potential of A. javanica in various liver diseases. However, isolation of the active principles, their mechanism of action and other therapeutic contribution remain to be addressed.

Keywords : Aerva javanica, antioxidant, hepatoprotection, rutin
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