

Hepatoprotective and antioxidant activities of *Dicranopteris linearis* leaf extract against paracetamol-induced liver intoxication in rats

ABSTRACT

Context: *Dicranopteris linearis* L. (Gleicheniaceae) leaves have been reported to exert hepatoprotective activity. **Objective:** The hepatoprotective and antioxidant effects of ethyl acetate partition of *D. linearis* (EADL) are investigated. **Materials and methods:** EADL was subjected to antioxidant and anti-inflammatory studies, and phytochemical analyses. **In vivo** study involved six groups (n = 6) of overnight fasted Sprague Dawley rats. The test solutions [10% DMSO (normal), 10% DMSO (negative), 200 mg/kg silymarin (positive) or EADL (50, 250 or 500 mg/kg)] were administered orally once daily for 7 consecutive days followed by oral vehicle (only for normal) or hepatotoxic induction using 3 g/kg paracetamol (PCM). **Results:** EADL exerted $\approx 90\%$ radical scavenging effects based on the DPPH and superoxide anion radical scavenging assays, high antioxidant capacity in the oxygen radical absorbance capacity assay ($\approx 555,000$ units), high total phenolic content (≈ 350 mg GAE/100 g extract) ($p < 0.05$), but low anti-inflammatory effect. EADL also attenuated PCM-induced liver intoxication as indicated by reduced level of serum liver enzymes; increased activity of endogenous enzymatic antioxidant (superoxide dismutase – 8.3 vs. 4.0 U/g tissue; catalase – 119 vs. 52 U/g tissue) and; reduced level of lipid peroxidation marker (2.7 vs. 5.0 μM). Preliminary screening of EADL revealed the presence of saponins, tannins and flavonoids with further HPLC analysis demonstrating the presence of rutin and quercetin. **Discussion and conclusion:** EADL exerted hepatoprotective and antioxidant activities; thus, these data support the potential use of *D. linearis* as a new source for future hepatoprotective drug development.

Keyword: Paracetamol intoxication; Polyphenolics; Flavonoids; Rutin; Quercetin