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Polyphenolics and triterpenes presence in chloroform extract of *Dicranopteris linearis* leaves attenuated paracetamol-induced liver intoxication in rat

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Abstract

Introduction: Water-soluble, but not lipid-soluble, extract of *Dicranopteris linearis* leaves has been proven to possess hepatoprotective activity. The present study aimed to validate the hepatoprotective and antioxidant activities, and phytoconstituents of lipid-soluble (chloroform) extract of *D. linearis* leaves.

Methods: The extract of *D. linearis* leaves (CEDL; 50, 250 and 500 mg/kg) was orally administered to rats for 7 consecutive days followed by the oral administration of 3 g/kg PCM to induce liver injury. Blood was collected for liver function analysis while the liver was obtained for histopathological examination and endogenous antioxidant activity determination. The extract was also subjected to antioxidant evaluation and phytochemicals determination via phytochemical screening, HPLC and UPLC-HRMS analyses.

Results: CEDL exerted significant ($p < 0.05$) hepatoprotective activity at 250 and 500 mg/kg and significantly ($p < 0.05$) reversed the PCM-induced decrease in rat's liver endogenous antioxidant (catalase and superoxide dismutase) level. CEDL possessed a high antioxidant capacity when measured using the ORAC assay, but a low total phenolic content value and radical scavenging activity as confirmed via several radical scavenging assays, which might be attributed particularly to the presence of triterpenes. Phytochemicals screening demonstrated the presence of triterpenes and flavonoids, while UPLC-HRMS analysis showed the presence of polyphenols belonging to the hydroxybenzoic acids, hydroxycinnamates and flavonoid groups.

Discussion and conclusion: Lipid-soluble bioactive compounds of CEDL demonstrated hepatoprotective effect against PCM intoxication partly via the modulation of the endogenous antioxidant defense system, and exerted high antioxidant capacity. Further investigation is warranted to identify the potential hepatoprotective leads from CEDL for future drug development.

Keywords: *Dicranopteris linearis*, Chloroform extract, Paracetamol intoxication, Hepatoprotective activity, Triterpenes, Hesperetin, Endogenous enzymatic antioxidant system

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