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Hepatoprotective effects of aqueous and hydroethanolic stem bark extracts of Tetrapleura tetraptera (Schum. & Thonn.) Taub. in drug-induced toxicities in rats

Christopher Larbie
Kwame Nkrumah University of Science and Technology, Ghana

Hepatotoxicity is an issue of global concern because of numerous liver-related deaths. In addition, conventional hepatoprotective and hepatocurative drugs are more expensive, uneasily accessible and may have serious adverse effects. It is for these reasons that many people have resorted to traditional medicine. This study sought to evaluate the hepatoprotective effects of aqueous and hydroethanolic stem bark extracts of Tetrapleura tetraptera in paracetamol and carbon tetrachloride-induced hepatotoxicities in rats. Pulverized samples (500g each) were soaked in 1000 mL of boiled water and 50% hydroethanol respectively for 24 hours. Filtrates were extracted to obtain aqueous and hydroethanolic stem bark extracts, ASE and HSE respectively. Extracts were evaluated for phytochemicals and free radical scavenging effects. Seventy-two male Wistar albino rats (120-180 g) were divided into eighteen groups with four in each group. Carbon tetrachloride (1.0 mL/kg b.wt; 1/1 v/v olive oil, intraperitoneal for 2 days) and Paracetamol (500 mg/kg b.wt p.o. daily for 7 days) were used to induce hepatotoxicity. The protective effects of extracts at 100 mg and 250 mg and silymarin (100 mg) were accessed. HSE had higher amounts of phytochemicals than ASE. The LD50 was above 5000 mg/kg b.wt. Haematological and biochemical analyses revealed HSE had a greater hepatoprotective effect against paracetamol and carbon tetrachloride compared to Silymarin. The liver antioxidant profile further confirmed ASE and HSE as hepatoprotective. These results indicate ASE and HSE of Tetrapleura tetraptera have hepatoprotective effects against paracetamol and carbon tetrachloride-induced hepatotoxicities in rats and could be developed as a potential liver protective agent.

Biography

Christopher Larbie is a Senior Lecturer at the Department of Biochemistry and Biotechnology, Kwame Nkrumah University of Science and Technology (KNUST), and the Coordinator for Graduate Programmes in Biochemistry and Biotechnology at the Department. He holds a BSc and Ph.D. in Biochemistry focusing on pharmacological and toxicological evaluation of medicinal plants for managing drug-induced liver injury from the KNUST. His research interests further include the development of animal models for diabesity (coexistence of diabetes and obesity), site-specific cancers, and clinical evaluation of characterized medicinal products for human diseases. Experimental techniques employed include phytochemical screening for natural products, haematological and biochemical assessment, histological and immunohistochemical assessment of pro- and anti-inflammatory cytokines.