

Examination of Calpurnia Aurea Seed Extract Activity Against Hematotoxicity and Hepatotoxicity in HAART Drug Induced Albino Wistar Rat

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Abstract : Background: In Ethiopia, medicinal plants have been used for various human and animal diseases. In this study, we have examined the potential effect of hydroethanolic extract of Calpurnia aurea seed against hepatotoxicity and haematotoxicity induced by Highly Active Antiretroviral Therapy (HAART) drugs in Albino Wistar rats. Methods: We collected Matured dried seeds of Calpurnia aurea from northern Ethiopia (south Tigray and south Gondar) in June 2013. The powder of the dried seed sample was macerated with 70% ethanol and dried using rotavapor. We have investigated the Preliminary phytochemical tests and in-vitro antioxidant properties. Then, we induced toxicity with HAART drugs and gave the experimental animals different doses of the crude extract orally for thirty-five days. On the 35th day, the animals were fasted overnight and sacrificed by cervical dislocation. We collected the blood samples by cardiac puncture. We excised the liver and brain tissues for further histopathological studies. Subsequently, we analysed serum levels of the liver enzymes- Alanine Aminotransferase, Aspartate Aminotransferase, Alkaline Phosphatase, Total Bilirubin, and Serum Albumin, using commercial kits in Cobas Integra 400 Plus Roche Analyzer Germany. We have also assessed the haematological profile using an automated haematology Analyser (Sysmex KX-2IN). Results: A significant ($P < 0.05$) decrease in serum enzymes (ALT and AST) and total bilirubin were observed in groups that received the highest dose (300mg/kg) of the seed extract. And significant ($P < 0.05$) elevation of total red blood cell count, haemoglobin, and hematocrit percentage was observed in the groups that received the seed extract compared to the HAART-treated groups. The WBC count mean values showed a statistically significant increase ($p < 0.05$) in groups that received HAART and 200 and 300mg/kg extract, respectively. The histopathological observations also showed that the oral administration of varying doses of the crude extract of the seed reversed to a normal state. Conclusion: The hydroethanolic extract of the Calpurnia aurea seed lowered the hepatotoxicity and haematotoxicity in a dose-dependent manner. The antioxidant properties of the Calpurnia aurea seed extract may have possible protective effects against the drug's toxicity.

Keywords : calpurnia aurea, hepatotoxicity, haematotoxicity, antioxidant, histopathology, HAART

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