Potential Anti-diabetic Effects and Safety of Aqueous Extracts of Urtica dioica Collected from Narok County, Kenya

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Abstract

Drug bio screening for potential anti-diabetics is scientifically motivated by the desire to discover newer, safer and affordable drugs that complement conventional strategies for management of diabetes. *Urtica dioica* grows naturally in many parts of Africa with a wide variety use in traditional medicine and diet. However, scientific validation for use of *U. dioica* has not been done for anti-diabetic activity. The aim of the study was to determine the antidiabetic effects of aqueous extracts of *U. dioica* in alloxan induced mice and the safety of *U. dioica* on mice models. The plant extracts were administered orally at doses of 25 mg/kg, 100 mg/kg, 200 mg/kg and 300 mg/kg which is the common route used in traditional herbal medicine administration. Evaluation for toxicity was determined at a dose of 1000 mg/kg body weight aqueous extracts of *U. dioica*. The results from the study indicated that the plant extracts exhibited insulin mimetic anti-diabetic activity. Evaluation for toxicity also indicated that a dose of 1000 mg/kg bw preserved the integrity of liver, kidney and lipid profiles for biochemical markers. Moreover, there was no significant change in the hematological and leucocyte counts. There was no significant change in gross body weight, organ body weight and histopathological changes on tissues of the body organs in this study. Furthermore, qualitative and quantitative phytochemical screening of aqueous leaf extracts of *U. dioica* indicated the presence of phenols, alkaloids, flavonoids, tannins and saponins. Various levels of different mineral elements were also recorded. In conclusion, this study confirmed that *U. dioica* at a dose of 50 mg/kg, 100 mg/kg, 200 mg/kg and 300 mg/kg body weights possessed anti-diabetic activity. It is also safe for use at a dose of 1000 mg/kg body weight. More studies should be explored on the potential anti-diabetic effects using other routes of administration.

Keywords

Urtica ,dioica ,Diabetes ,mellitus ,Aqueous ‘extracts ,Antidiabetic ‘activity ,Phytochemicals