The *In vivo* toxicity evaluation of leaf and root methanolic extracts of *Tephrosia vogelii* Hook.f using animal model

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Abstract

Background: Traditionally, herbal medicines are commonly used to cure several diseases since immemorial of human life. Nevertheless, the safety of some traditionally used medicinal plants is uncertain. Since *Tephrosia vogelii* Hook.f is a traditionally used medicinal plant, the effects of its extracts were evaluated on lethality (LD_{50}) and sub-acute toxicity in this study.

Methods: Phytochemistry screening and an *in vivo* toxicity evaluation of leaf and root methanolic extracts of *T. vogelii* using laboratory albino rats were conducted. Methanolic extracts of doses 600, 1200, 2000 and 5000 mg/kg body weights were administered single dose in rats to observe deaths within 72 hours in order to determine the LD_{50}. Methanolic extracts doses of 600, 1200 and 2000 mg/kg body weights were consecutively administered for 14 days in order to evaluate sub-acute toxicity.

Results: Tannins, steroids, terpenoids, flavonoids and saponins were identified in the phytochemical screening. The LD_{50} experiments revealed zero deaths of rats for the administered doses, 600 to 5000 mg/kg body weight. Histopathological examination of liver and kidney for sub-acute toxicity test showed safety at all doses except root methanolic extracts dose of 2000 mg/kg which exhibited necrosis and vacuolation of liver cells on the 14^{th} day. Nonetheless, hepatic necrosis and hepatic vacuolation disappeared upon time elongation without dose administration to 28^{th} day.

Conclusion: The conducted toxicity evaluation of methanolic leaf and root extracts in albino rats revealed no deleterious effects, henceforth, suggesting that *T. vogelii* could be safe to users using it as a medicinal plant.