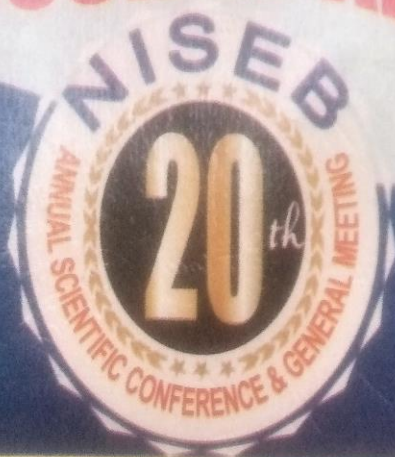


**SOCIETY FOR
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BIOLOGY OF NIGERIA**



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CHALLENGES AND SUSTAINABLE DEVELOPMENT**



***Ganoderma lucidum* Chitosan Nanoparticles-encapsulated *Senna occidentalis* Root phenolics attenuates Lead-induced Haematological Toxicity in Wistar Rats**

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Abstract

The study investigated the effects of *Ganoderma lucidum* chitosan nanoparticles-encapsulated *Senna occidentalis* root phenolics (ChNPs-PSOR) on lead-induced haematological alteration in rats. Eight groups (I, II, III, IV, V, VI, VII and VIII) of Wistar rats comprising of 6 rats each were used for the study. Haematological alteration was induced in group I-VII by administering lead acetate (2ml/kg) thereafter, group I, II, III, IV, V, VI, VII and VIII 10 mg/kg body weight (bw.) of ChNPs-PSOR, 20 mg/ kg bw. of both chitosan nanoparticles-encapsulated *Senna occidentalis* root phenolic (PSOR), 10 mg/ kg bw. of both chitosan nanoparticles-encapsulated, 20 non-encapsulated standard drug calcium disodium edetate (CaNa₂-Edetate.ChNPs and CaNa₂-Edetate) and normal saline (2mg/mL) naïve control group for 60 days. The study revealed the phenolic contents (mg/g) of extracts showed total phenols (26.82 mg/g), flavonoids (15.84) and tannins (12.15) with LD₅₀ > 2000 mg/kg bw. Significant depression of PCV, RBC, MCHC, HB, MCV, MCH, neutrophils and lymphocytes counts with elevation of WBC, PLC and RDWC were observed in negative control group when compared with naïve control group. The administration of ChNPs-PSOR and CaNa₂-Edetate were able to significantly ($p < 0.05$) revert the haematological changes in lead induced toxicity rats when compared with other groups. Therefore, ChNPs-PSOR restore the haematological abnormalities arise from lead- induce toxicity in rats and chitosan nanoparticles-encapsulation improves the standard drug efficacy. Hence, ChNPs-PSOR can be exploited further for drug development for the management of lead toxicity.

Keywords: Lead toxicity, *Senna occidentalis*, Phenolics, Chitosan nanoparticles, Haematological paramtres