

**INTERACTIVE ROLES OF TERPENOID EXTRACT FROM THE LEAVES
OF NEEM PLANT (*AZADIRACHTA INDICA* A. JUSS) ON LEAD-INDUCED
TOXICITY IN PREGNANT RABBITS.**

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ABSTRACT

This study extracted terpenoid from the dried leaves of Neem plant (*Azadirachta indica*, A.JUSS). It also assessed the possibility of ameliorating the toxic effects and accumulation of lead in both the mother and the litters. This was with a view to investigating its interactive roles in lead-induced toxicity in pregnant rabbits and resulting litters.

Fresh leaves were collected from *Azadirachta indica* trees planted on Obafemi Awolowo University campus, Ile-Ife, Nigeria. The leaves were air dried for 21 days and milled to fine powder. Terpenoid was extracted from dried leaves of *Azadirachta indica* by a procedure that consisted of solvent extraction with methanol (7.2 L), liquid-liquid partitioning with petroleum ether and ethyl acetate and evaporated under reduced pressure. The residue was phytochemically screened for terpenoids. Pregnant rabbits (does) weighing between 3.0 and 3.4 kg were randomly divided into 4 groups. Group I served as control and were treated orally with olive oil (2 ml/kg body weight per day). Group II served as Lead control and were treated with Lead acetate solution (50 mg / kg body weight per day). Group III served as positive control and were treated with ascorbic acid (400 mg / kg body weight per day) and Group IV served as terpenoid treated group and were treated with terpenoid extract (300 mg / kg body weight per day). One hour later, Lead acetate solution (50 mg / kg body weight per day) was administered to animals in groups III and IV. The animals were treated for 11 days starting from day 14 of pregnancy. The does and the litters (young rabbits) were sacrificed 4 weeks after parturition. Blood was collected into tubes containing anti-coagulants for plasma preparation while the blood for Lead analysis was collected into tubes without anticoagulants. Then, liver, kidney, heart and lungs were removed aseptically. The tissues were digested with (Conc.HNO₃ : HCl 1 : 4 v/v) and portion of the liver was homogenized in phosphate buffer (100 mM, pH 7.4). Lead concentration in the tissues were determined by Atomic Absorption Spectroscopy (AAS). The total protein concentration in the plasma and liver homogenates were determined using biuret reaction method. The plasma albumin

concentration was estimated as described in Sigma Chemical Limited catalogue. Hepatic marker enzymes (Alanine aminotransferase (ALT) and Aspartate aminotransferase (AST) activities were also determined spectrophotometrically at 505nm.

The results revealed that, 15.8 g of terpenoid was obtained from 2.4 kg of dried leaf of neem plant representing 0.66% of the starting material. A total number of 32 litters were produced by pregnant rabbits in all the groups. There was no abortion and deformity of litters through out the duration of the experiment. The terpenoid extract was able to reduce Lead concentration in the blood, liver and kidney of pregnant rabbits by 45.45%, 30% and 20.9% respectively. The level of Lead reduction was found to be statistically significant ($t = 3.365$, $p < 0.05$) but the extract had no significant effect on its concentration in the tissues of the litters. Lead concentration in terpenoid treated group was significantly lower than lead treated group ($t = 3.365$, $p < 0.05$). All other parameters (Liver protein, plasma protein and albumin concentration, ALT and AST activities) were not significantly different in all the groups ($t = 3.365$, $p > 0.05$).

In conclusion, the terpenoid extract from the leaf of *Azadirachta indica* was not teratogenic and toxic to rabbits at the dosage used in these investigations. The extract was also able to reduce the lead burden in pregnant rabbits but could not produce the same effects on the litters.