

RESEARCH ARTICLE

Antimicrobial evaluation and toxicity studies of a Nigerian polyherbal formulation used in treatment of Diabetes

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ABSTRACT

Studies were carried out to ascertain microbial purity, acute, sub-chronic toxicity and safety profile of a polyherbal diabetic formulation prepared with the leaves of *Vernonia amygdalina*, (bitterleaf) *Phyllanthus amarus* (sleeping plant), *Chrysophyllum albidum* (white star apple) and bark of *Kigellia africana* (African nut tree). Microbial purity was evaluated on some bacterial and fungal organisms using appropriate diagnostic media. Acute toxicity was evaluated in Swiss albino mice by administering orally graded doses of the lyophilized drug in the range of 1.0g to 15.0g/kg body weight. The mice were observed continuously for the first 4h and hourly for the next 12h, then 6 hourly for 56hours(72hr). Wistar rats were also fed with different doses of lyophilized formulation for 28 days and the effect on body weight, biochemical and haematological profiles and tissue histology were evaluated (sub-chronic toxicity model). The purity evaluation test revealed absence of some bacterial and fungal organisms in the cultured media. However, *B. subtilis* occurred with a load of 1.2×10^2 cfu/ml which is above acceptable official limit of 10^3 cfu/ml . The median acute toxicity value (LD₅₀) of the polyherbal medicine was found to be above 15.0g/kg body weight. Blood chemistry showed significant reduction in plasma glucose, Alanine aminotransferase (ALT), Aspartate aminotransferase (AST) and Alkaline phosphatase (ALP) and creatinine .There was a significant increase in HDL-cholesterol level and reduction in total cholesterol, LDL-cholesterol and triglyceride (TG) levels . The study showed that the formulation exhibited good hypoglycaemic activity by lowering the plasma sugar level and beneficial effects on cardiovascular risk factor but its safety was negated by high presence of *B. subtilis* load.

Keywords: Acute, Microbial purity, Polyherbal form, Sub-acute, Toxicity