

INTERNATIONAL SUMMIT ON DIABETES, ENDOCRINOLOGY, AND METABOLIC DISORDERS



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Nephroprotective potential of *Polyalthia longifolia* roots against vancomycin-induced renal toxicity in experimental animals

Abstract:

This study investigated the possible nephroprotective effects of an ethanolic root extract of *Polyalthia Longifolia* (PL) on vancomycin-induced nephrotoxicity using curative and protective models. Vancomycin (150 mg/kg, intravenously) was administered to healthy Wistar albino rats in the curative model before the start of treatment, whereas the protective group received vancomycin after the 10-day treatment procedure. Animals were divided into six groups for both models: groups III, IV, V, and VI were kept as toxic control, standard (selenium, 6 mg/kg), LDPL (low dose of PL 200 mg/kg), HDPL (high dose of PL 400 mg/kg), and HDPL + selenium (interactive) groups, respectively. Renal biomarkers (uric acid, creatinine, blood urea nitrogen (BUN), and serum proteins) and blood electrolyte levels were measured in all tested groups. Compared to the vancomycin group, HDPL showed significantly ($p < 0.01$) greater effectiveness in lowering BUN, potassium, and calcium levels. Additionally, in the curative model, there was a significant ($p < 0.05$) decrease in the blood levels of uric acid, creatinine, BUN, potassium, and calcium in animals that received the combination of selenium and HDPL. Neither LDPL nor HDPL showed any distinguishable effects in the protective model. However, groups that received HDPL with selenium provided detectable protection by significantly lowering their levels of uric acid, BUN, serum potassium, and total serum protein in comparison to the vancomycin control group. These findings indicate that, whether administered before or after renal damage is induced, the *Polyalthia longifolia* root extract provided only modest protection to nephrons, which require selenium support to prevent vancomycin-induced kidney damage.

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Keywords: antioxidants, antibiotics, biomarkers, vancomycin, kidney disease, treatment, Polyalthia longifolia, nephrotoxicity

Biography:

My academic foundation rests upon an MBBS from Subharti Medical College, Meerut, and an MD in Biochemistry from Uttar Pradesh University of Medical Sciences, Saifai, Etawah. My dedication to research is reflected in my publications across esteemed national and international journals. My expertise extends beyond core biochemistry, encompassing certifications in Diabetes mellitus (CCEBDM) and Hypertension (CCPMH) from the Public Health Foundation of India, New Delhi. A pivotal Experimental Biotechnology course from NPTEL has further enriched my scientific perspective.