

# Nephroprotective Activity of Herbal Extracts of *Vernonia Cinerea* in the Cisplatin Model of Renal Toxicity in Rats

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## **Purpose.**

Cisplatin is a potent antitumor agent, but its clinical use is limited by its renal toxicity. Some phytochemical studies have reported that certain Indian Medicinal plants show beneficial effects on kidney and renal injury. *Vernonia cinerea* (compositae) is one such plant, which is widely used by Indian tribal people of Tirumala Hills against the urinary complaints. In this study, we investigated the effect of three extracts from *Vernonia cinerea* on the cisplatin-induced renal damage in rats.

## **Methods.**

Three extracts (ether, ethylacetate and alcohol) were prepared from the authenticated plant material of *Vernonia cinerea* by standard phytochemical methods. These extracts were tested in both preventive and treatment regimens. Nephrotoxicity was induced in male rats by administering a single dose of cisplatin (5 mg/kg, i.p.). In preventive regimen, the three extracts (500 mg/kg, p.o.) were administered in separate groups for 10 days followed by single injection of cisplatin. In treatment regimen, the extracts (500 mg/kg, p.o.) were given on day 6th onwards after cisplatin-induced nephrotoxicity. The efficacy of all three extracts was assessed by estimating the following key indices: blood urea nitrogen (BUN), serum creatinine (SC),  $S_{TP}$ , urinary volume, creatinine clearance, urinary protein, body weight and renal malonaldehyde. Renal histopathology was performed to confirm renal injury.

## **Results.**

Cisplatin caused significant elevation of the levels of BUN, SC,  $S_{TP}$ ,  $U_{TP}$ , malonaldehyde, but markedly reduced the creatinine clearance and body weight. Out of three extracts (ether, ethylacetate and alcohol) of *Vernonia cinerea*, the alcoholic extract showed striking nephrocurative activity (BUN 57%, SC 70%), than ether (BUN 49%, SC 40%) and ethylacetate (BUN 22%, SC 18.18%) extracts. The ethylacetate extract showed significant nephroprotective activity (BUN 43%, SC 75%) than ether (BUN 7.6%, SC 3.5%) and alcoholic (BUN 0% SC 28%) extracts. These biochemical results were supported by both histopathological data and malonaldehyde levels in the kidney tissue, which is an index of oxidative damage.

## **Conclusion.**

The alcoholic extract of *Vernonia cinerea* showed promising nephrocurative activity, where as ethylacetate extract of *Vernonia cinerea* possessed significant nephroprotective activity in the rat model of cisplatin-induced renal toxicity. These results suggest the therapeutic utility of herbal *Vernonia cinerea* extracts in renal injury.