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Protective effects of Tunisian medicinal plant *Salvia officinalis* on cytotoxicity, and histological changes in vanadium-induced renal toxicity in rats

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Aim: In recent years, there has been an increased interest in vanadium (V) because of its toxicological effects and pro-neoplastic action that affects many organs, specially the kidney. Aim of this study was to evaluate protective effect of medicinal plant on vanadium-induced renal toxicity in adult male Wistar rats.

Methodology: The animals were divided into three groups of six animals each: Group C served as control which received oral gavage with NaCl 0.9%; group V received oral gavage with NaCl 0.9% and injected by vanadium; group SV received oral gavage with essential oil of *Salvia officinalis* and injected by vanadium for 10 days.

Results: Administration of vanadium intraperitoneally for 10 days increased significantly ($p < 0.05$) the levels of serum renal markers [creatinine, urea, blood urea nitrogen (BNU), lactate dehydrogenase (LDH), alkaline phosphatase (ALP) activities and lipid peroxidation thiobarbituric acid reactive substances (TBARS) and protein carbonyl]. Co-administration of the plant essential oil shows a decrease of the tested parameters and an increase of the endogenous antioxidants levels. The vanadium-induced histopathological changes were also minimized with the tested extract.

Conclusion: These results suggest that the essential oil of *Salvia officinalis* might play a role in reducing the toxic effect of vanadium and its biochemical parameters seem to mediate such a protective effect.

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