البحث الرابع

The Possible Protective Effect of Chlorophyllin and Vitamin D3 on Non-steroidal Anti-Inflammatory Drug Induced Renal Injury in Adult Albino Rat

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Abstract

Background : Analgesic nephropathy is a renal disease which was characterized by papillary necrosis and chronic interstitial nephritis and was occurred by long-term consumption of analgesic factors. Analgesic nephropathy is one of the more common causes of chronic kidney disease Aim of the Work: Studying the possible protective effect of chlorophyllin and vitamin D3 on diclofenac induced renal injury in albino rat.

Material and Methods: 32 males (adult albino rat) divided to 4 groups: I (control), II (diclofenac as treatment): received daily intramuscular (IM) injection of 4 mg/kg diclofenac for 15 days, III (vitamin D3 as treatement): received oral daily dose of vitamin D3 (1000 IU/ kg) for 15 days before diclofenac injection and continued for another 15 days, IV (chlorophyllin as treatment): received daily intraperitoneal (IP) injection of 30 mg/kg chlorophyllin similar to aforementioned way in group III. Biochemical studies were performed to assess urea and creatinine, NADPH oxidase, Superoxide dismutase and IL-2, MDA, TNF-α by ELISA. Quantitative assessment of Caspase-3 and Nrf2 gene expression were also performed by real-time PCR. Histological, histochemical and immunohistochemical investigations were done. Morphometric measurements of optical density of PAS reactions and Ki67 immunoreactive cells area % were done. All measurements were followed by statistical analysis.

Results: Diclofenac only treated group showed marked distortion in glomeruli and renal tubules. Significant decrease in PAS reaction (optical densities), with decrease in mean number of Ki67 immunoexpressed cells. These histological changes were accompanied by alterations in biochemical measurements. Pretreatment with chlorophyllin and vitamin D3 significantly improved the histological and biochemical changes.

Conclusion: A protective effects of chlorophyll and vitamin D3 were found in diclofenac-induced cortical renal damage. This evidenced through reversing biochemical and pathological change in rat.