

Histological studies on the effects of new plant extracts on the liver of albino rat after induction of fibrosis

Thesis

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Abstract

Introduction: The liver is an organ of paramount importance. Hepatic fibrosis has been noted in chronic liver disease. Many natural substances like licorice and silymarine are used as protective agents against various hepatotoxins (as acetaminophen, alcohol and carbon tetrachloride) on a large scale.

Aim: To identify and compare the protective effects of licorice root extract and silymarin on the CCL4-induced liver fibrosis in male albino rats by using histological, immunohistochemical and morphometric studies.

Materials & Methods: seventy male albino rats were divided into five groups, group I: control (14 rats) (given solvents of the drugs of corresponding groups), group II: subdivided into subgroups IIa,b (each 8 rats) (injected with CCl₄ – 0.2 ml/day subcutaneously for 4, 8 weeks respectively), group III: subdivided into subgroups IIIa,b (each 8 rats) (injected with CCl₄ – 0.2 ml/day subcutaneously + Silymarin 50 ml/kg/day (orally) for 4, 8 weeks respectively), group IV: subdivided into subgroups IVa,b (each 8 rats) (injected with CCl₄ – 0.2 ml/day subcutaneously + Licorice 80 ml/kg/day (orally) for 4, 8 weeks respectively) and group V: recovery group (8 rats) (CCl₄ – 0.2 ml/day (S.C.) for 6 weeks then treatment stopped for 4 weeks). Histological (using H&E and Masson's trichrome stains) and immunohistochemical (using NF-kB/p65 and α – SMA) studies were performed. Morphometric measurements of area % of collagen fibers, NF-kB/p65 and α – SMA were done followed by statistical analysis.

Results: Necrotic changes accompanied by congested vein and dilated lymphatic vessels and increased collagen content were noticed in CCl₄ treated group. Increased area% of collagen fibers, NF-kB/p65 immunoreactivity and α – SMA immunoeexpression were found in CCL4 treated group. Both silymarin and licorice showed a significant reduction in histological, immunohistochemical and morphometric changes.

Conclusions: both silymarin and licorice had protective effects on the liver cells and hepatic architecture, subjected to CCL4. Liver fibrosis showed minimal improvement with silymarin when compared to licorice which showed normal connective tissue content after eight weeks of treatment.

Keywords: [CCL4](#), Silymarine, [Nuclear factor-kB](#), Licorice, Liver fibrosis.
