Research 4:

Evaluation of hepatoprotective effect of Nebivolol and sodium copper Chlorophyllin on CCL_4-induced hepatotoxicity in mice

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Objective: In this study, the protective effect of sodium copper chlorophyllin and nebivolol was evaluated in a mice model of CCL4 induced hepatotoxicity. Silymarin was used as a traditional hepatoprotective drug. **Materials and methods:** Thirty (30) mice were used as they were divided into five groups: the first group was the control group which received distilled water + olive oil, the second group which received 1.5 ml/kg of CCl4 diluted in olive oil three times a week, the third group which received CCl4 + Silymarin 50 mg/kg/day, the fourth group which received CCl4 + nebivolol 4 mg/kg/day, and the fifth group which received 1.5 ml/kg of CCl4+ Cu-chlorophyllin 50 mg/kg/day. The drugs were given by intraperitoneal route for 5 weeks. The detection, quantification of CCl4 induced hepatotoxicity and possible protective effect of either silymarin, nebivolol, or sodium copper chlorophyllin were assessed using biochemical analysis of alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), total protein, lipid profile, an assay of oxidants and antioxidants, assay of

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interleukin 6 (IL6) and tumor necrosis factor-alpha (TNF-α), and histopathological examination.
Results: The administration of carbon tetrachloride (CCl4) produced pronounced liver impairment. It significantly increased ALT, AST, ALP, malondialdehyde, and serum nitric oxide levels compared to normal control group besides a decrease in total protein, serum catalase, tissue SOD, and GSH levels. IL-6 and TNF-α levels were significantly higher while total cholesterol was significantly lower in mice receiving CCL4 compared to the normal control group. CCL4 induced severe hyperemia and congestion inside the portal area with leukocytic infiltration, hepatic degeneration, and bridge fibrosis.
Conclusions: Co-administration of either silymarin, nebivolol, or sodium copper chlorophyllin with CCl4 was able to ameliorate up to almost contradict CCl4 induced hepatic injury through their anti-inflammatory and antioxidant activities.
Key words: Carbon tetrachloride, Hepatotoxicity, Silymarin, Nebivolol, Sodium copper chlorophyllin.

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