The protective therapeutic effect of Silymarin in acute hepatotoxicity of CCl4 in rats

Hossein Ayatollahi (PhD)*[1], Abbas Ali Omidi (MD)[2], Mehrdad Katebi (MD)[3] Saeede Sabbagh (MD)[3], Hooman Tavassolian (MD)[3], Mohammad Reza Khalighi (PhD)[4], Abbas Pardakhti (PhD)[5], Mahdi Shariat (PhD)[5]

[1] Assistant Professor, Department of Biochemistry& Nutrition, Mashhad University of Medical Sciences, Mashhad, Iran. [2] Professor, Department of Pathology, Mashhad University of Medical Sciences, Mashhad, Iran. [3] Pathologyst. [4] Professor,Department of Pharmacology, Mashhad University of Medical Sciences, Mashhad, Iran. [5] Pharmacologyst.

Abstract

Background & Objective: Tetra Carbon Cholride has been known as reference hepatotoxin because it can cause necrosis, fatty change, cirrhosis and cancer liver. Silymarin has hepatoprotective and anti hepatoxin effect. This study was done to determine the protective effect of Silymarin in acute hepatotoxicity of CCl4 in rats.

Materials & Methods: In this experimental study, we chose 25µl/kg dose of CCl4 (in mineral oil solvent) as an optimum dose. The hepatotoxic effects of intraperiotoneal injection of CCl4 for obtaining parameters of toxicity and therapeutic effects have been examined. According to enzymatic results (increase in ALT and AST) and histopathologic changes (grading the changes in liver including cytoplasmic granularity, cloudy swelling, necrosis and fatty change), the interval between prescribing silymarin and sampling was determined. Silymarin as a suspension in propylene glycol CMC 2% (3/2 ratio) has been prescribed in 50, 200 and 800mg/kg doses and serum and liver samples were obtained. Negative control group received silymarin vehicle in CCl4 solvent, drug control received 800 mg/kg of silymarin in CCl4 solvent and positive control received silymarin vehicle after injecting CCl4.

Results: The results showed that prescribing 50mg/kg silymarin one hour after injecting CCl4, in addition to inhibiting transaminase activity, prevents progress of liver injury up to 50% of positive control group. Cellular repair and regeneration are also enhanced, So the grade 3necrosis in positive control group is decreased to grade 0.5 in silymarin gourp in 48 hours prescribing silymarin (50mg/kg).

Conclusion: This study showed that up to six hours after injecting CCl4 significantly prevents hepatotoxicity, and cause acceleration in repair of liver injuries.

Key Words: Silymarin, CCl4, Hepatotoxicity

*** Corresponding Author:** *Hossein Ayatollahi (PhD),* **E-mail :** *AyatollahiH@mums.ac.ir*