

Hepatoprotective Effect of Ethyl Acetate Fraction of *Ficus carica* L. Leaves against Carbon Tetrachloride-Induced Toxicity in vitro and in vivo

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Abstract : Background: Liver diseases cause serious health issues. Plants contain active compounds that significantly help in the treatment of various diseases. *Ficus carica* is traditionally used for the treatment of liver diseases. The purpose of the present study was the isolation and identification of active components from *F.carica* leaves which are responsible for hepatoprotective activity. Methods: The study was designed to identify the most active hepatoprotective sub-fraction from ethyl acetate fraction of *Ficus carica* by in vitro study and evaluation of its in vivo hepatoprotective effect in animal models. Ethyl acetate fraction was subjected to column, and a total of eight sub-fractions were obtained. In vitro, the hepatoprotective effect of all sub-fractions was determined on HepG2 cell lines. Toxicity was induced by CCl₄ (Carbon tetrachloride), and silymarin was used as a positive control. On the basis of the results, the most active sub-fraction was subjected to LC-MS and FT-IR analysis for the identification of bioactive compounds. In vivo, the hepatoprotective effect was determined in mice. Toxicity was induced by CCl₄; at the end of the experiment, biochemical parameters such as ALT, AST, ALP, bilirubin, and total protein were estimated in serum. Histopathology of liver tissues was also done. Results: Sub-fraction FVI exhibited significant (P<0.05) hepatoprotective activity as compared to other sub-fractions, which was almost similar to the standard drug silymarin. Six known bioactive compounds were identified from this sub-fraction after LC-MS analysis. In vivo, the hepatoprotective activity of sub-fraction FVI was evaluated in CCl₄-induced toxicated mice. Administration of CCl₄ significantly increased level of ALT (Alanine transaminase), AST (Aspartate aminotransferase), ALP (Alkaline phosphatase), and bilirubin and decreased the total protein. Treatment with sub-fraction FVI significantly (p<0.05) reversed the level of these biomarkers toward normal at both doses of 25 mg/kg and 50 mg/kg. Conclusion: Our findings confirmed the hepatoprotective effect of ethyl acetate fraction of *F.carica*. It could be a good candidate for the development of a natural hepatoprotective drug; pre-clinical investigation on ethyl acetate fraction is recommended.

Keywords : *Ficus carica*, hepatoprotective, CCl₄, bioactive compounds, liver markers

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