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# Scientific Validation for Hepatoprotective Potential of Sharbat-e-deenar Against Acetaminophen-induced Liver Toxicity

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**Abstract**

**Background***: Drug-induced liver injury is common worldwide which account for 20-40% of all chronic liver diseases. Herbal plants play a vital role in the management of liver diseases.*

**Objective***: To evaluate the hepatoprotective effects of Sharbat-e-Deenar (SD) against acetaminophen (APAP) induced liver damage.*

**Study Design***: The present study was divided into three parts, including (1) measurement of antioxidant activity (2) In vitro cell proliferation assay by SRB dye and Cell cycle analysis, (2) screening the effective dose of SD (1, 2, 4 ml/kg, p.o.) against APAP exposure (2 g/kg, p.o.) for acute study and (3) confirmation of selected dose of SD against APAP-induced subchronic liver toxicity (20 mg/kg, p.o. for 20 days).*

**Methods***: Blood and tissue biochemical parameters, comet assay, ultrastructural study and heptatocyte cell culture study were performed.*

**Results***: APAP exposure in rats significantly increased the level of hepatospecific markers such as aspartate aminotransaminase (AST), alanine aminotransaminase (ALT), lactate dehydrogenase (LDH), and serum alkaline phosphatase (SALP) into the blood stream. SD treatment at all doses showed dose- dependent protective effects in restoring of hepatic markers against APAP-toxicity. Subchronic toxicity showed marked alterations in the level of oxidative stress markers i.e. lipid peroxidation, reduced glutathione, catalase, superoxide dismutase, glutathione peroxidase, glutathione reductase and microsomal aniline hydroxylase which were significantly restored by SD therapy which indicated improvement in the functional integrity of the hepatocytes and possibly modulation of antioxidant enzymes.*

**Conclusion***: Combined with liver histopathology, comet and cell proliferation assays, these results suggest that SD is able to alleviate hepatotoxicity that might be due to the antioxidant and synergistic effects of the formulation.*

**Keywords***: Sharbat-e-Deenar, Acetaminophen, Hepatotoxicity, Hepatoprotection.*