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Ethanol and hydrazine-induced hepatic steatosis: Mitigation of hyperlipidemia and hepatotoxicity by silymarin and picroliv post-treatments in rats

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The issue of ethanol (EtOH) and hydrazine (Hz)-induced hepatic steatosis deserves investigation not only for their inherent capability to accumulate lipids in the liver, but also in view of constant intake of EtOH by alcoholics and occupational/medicinal exposure of Hz in humans. It was evaluated the mitigating properties of silymarin (SIL) and picroliv (PIC) (50 mg/kg b.w., each; p.o; daily for 7 days), the standard hepatoprotective and antioxidant principles extracted from Silybum marianum and Picrorrhiza kurroa against EtOH and Hz-induced hepatic steatosis and necrosis in male Wistar albilo rats. Acute single dose Hz exposure (50 mg/kg b.w., i.p.) in EtOH pre-treated rats (4 gm/kg b.w.; p.o., daily for 14 days) produced hepatotoxicity manifested as hyperlipidemia, micro and macrovascular hepatic steatosis, oxidative stress and alteration of membrane stability. EtOH and Hz treatments caused increase in the expression of Agpat-2 gene associated with the down regulation of Apoa-5, demonstrating net triglyceride (TG) synthesis, resulting in hepatic steatosis and its uninhibited exodus from the liver tissue. Mobilizations of depot fat from adipose tissues were also induced by these toxicants. Hepatic steatosis and necrosis is well evidenced in H & E and oil red O staining and in TEM studies of liver tissues. EtOH and Hz treatments induced hepatic steatosis and necrosis were significantly protected and reversed (to an extent of 70 to 80%) in group of rats post-treated with SIL and PIC separately. Both these plant principles exhibit identical hepatoprotective properties. It is concluded that SIL and PIC might mitigate hepatic steatosis by i) preventing accumulation of TG in the liver; and by ii) inhibiting mobilization of TG from adipose tissues by virtue of their anti-lipidemic, antioxidant, free-radical scavenging and membrane stabilizing properties.

Biography

Karthikeyan S has completed his PhD at the age of 26 from the Department of Pharmacology and Environmental Toxicology, University of Madras, Taramani Campus, Chennai, in the interdisciplinary research area Zoology-Pharmacology. He is the Assistant Professor (Stage-III) in the above Department. He has published more than 25 papers in reputed National and International Journals and serving as editorial board member of repute. He is a supervisor and guide and 6 research scholars have already been awarded PhD Degree under guidance. Presently he is guiding 4 nos. of PhD students of which, the adjudication report of one student is awaited. He is the Visiting Professor and examiner in Gulf Medical University, Ajman, UAE for the M.S. Toxicology course offered by this University. He has completed 5 nos. Major Research Projects funded by Government agencies like UGC, DST. His area of research interest is drugs, chemicals and food toxicants induced hepatotoxicity, environmental toxicology and phytopharmacology.

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