Anti-apoptotic effects of tamarind leaves against ethanol-induced rat liver injury

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Abstract

Objectives The leaf decoctions of Tamarindus indica (TI) have long been traditionally used in liver ailments. The aim of this study was to investigate the anti-apoptotic activity of TI leaf extract against acute ethanol (EtOH)-induced liver injury. The major constituents of the extract were also examined for standardization purposes.

Methods Rats (n = 5–7) were orally pretreated with TI leaf extract (25, 50 and 100 mg/kg) for seven days. Silymarin was used as a positive control. Liver tissue biochemical assays included key markers of apoptosis and its redox signalling. Serum enzyme levels were also determined.

Key findings All graded doses of TI leaf extract mitigated the EtOH-induced liver caspase-3 activation (42, 57 and 64%) as well as DNA fragmentation (32, 47 and 50%), respectively. The highest dose of the extract demonstrated membrane-stabilizing (38%) in addition to glutathione-replenishing (88%) effects. Also, the leaves improved the liver histopathological alterations. Moreover, major plant bioactive polyphenolics, that might be responsible for the extract's observed effects, were isolated and identified.

Conclusions TI leaf extract demonstrated promising anti-apoptotic hepatoprotective effects in rats. The use of TI leaves in different liver diseases, having apoptosis as the underlying pathology, hence warrants further clinical investigation.