NF-kappaB-activated tissue transglutaminase is involved in ethanol-induced hepatic injury and the possible role of propolis in preventing fibrogenesis

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Abstract

The increased expression and cross-linking activity of tissue transglutaminase (tTG) have been demonstrated in acute liver injury and fibrosis. We focused on the molecular mechanisms that contribute to ethanol-induced tTG expression and investigated the efficacy of propolis components in preventing both the tTG expression in vitro and fibrogenesis in vivo. We demonstrate herein that both ERK1/2 and PI3K/Akt pathways can regulate the effects of ethanol on NF-kappaB-dependent transcription and these signaling pathways may be involved in activation of ethanol-mediated tTG expression. We also found that administration of pinocembrin (PIN), one of the major components of propolis, inhibited tTG activation and significantly prevented the development of thioacetamide (TAA)-induced liver cirrhosis. The present study suggests that tTG may be an important member of the cascade of factors necessary for ethanol-induced liver fibrogenesis and PIN could serve as an anti-fibrogenic agent.