Alpha mangostin Inhibits Hepatic Stellate Cells Activation Through TGF-β/Smad and Akt Signaling Pathways: An in vitro Study in LX2

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Abstract

Background: Alpha mangostin has been reported to have activity for the treatment of liver fibrosis in the rat. However, the mechanisms of action are poorly understood. This study was aimed to investigate the effect of alpha mangostin on hepatic stellate cells (HSC) activation and proliferation through TGF-β/Smad and Akt signaling pathways.

Methods: Immortalized HSC, LX2 cells, were incubated with TGF-β with or without alpha mangostin (3 or 10 μM). Sorafenib 10 μM was used as positive control. LX2 viability was counted using trypan blue exclusion method. The effect of alpha mangostin on TGF-β concentrations, and the expressions of proliferation and fibrogenic markers were evaluated.

Results: Alpha mangostin treatment resulted in a reduced proliferation of HSC, decreased 45-S and p-Akt expressions. These findings were followed with decreased concentrations of TGF-β in the medium of cells treated with alpha mangostin, decreased expressions of COL1A1, TIMP1, HIC1, α-SMA, and p-Smad3 as fibrogenic markers. These effects were shown to be dose-dependent.

Conclusions: Alpha mangostin inhibits hepatic stellate cells proliferation and activation through TGF-β/Smad and Akt signaling pathways in dose-dependent manner.

Key words

Alpha mangostin - hepatic stellate cells - TGF-β - Sorafenib - Akt

* equal contribution