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Ginger leaf-induced reduction of cell viability is mediated by activating transcription factor 3 in human colorectal cancer cells

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We performed *in vitro* study to evaluate anti-cancer properties of ginger leaf (GL) and then elucidate the potential mechanisms. Exposure of GL to human colorectal cancer cells(HCT116, SW480 and LoVo cells) reduced the cell viability in dose-dependent manner. GL increased activating transcription factor 3 (ATF3) expression and activated ATF3 promoter activity, indicating transcriptional activation of ATF3 gene by GL. In addition, our data showed that GL-responsible sites might be between -514 and -85 region of the ATF3 promoter. We also observed that ERK1/2 inhibition by PD98059 attenuated GL-mediated ATF3 expression but not p38 inhibition by SB203580, indicating ERK1/2 pathway implicated in GL-induced ATF3 activation. These findings suggest that the reduction of cell viability and apoptosis by GL may be a result of ATF3 promoter activation and subsequent increase of ATF3 expression through ERK1/2 activation in human colorectal cancer cells.

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