

## Eurycomanone induce apoptosis in HepG2 cells via up-regulation of p53.

### Abstract

Background: Eurycomanone is a cytotoxic compound found in *Eurycoma longifolia* Jack. Previous studies had noted the cytotoxic effect against various cancer cell lines. The aim of this study is to investigate the cytotoxicity against human hepato carcinoma cell in vitro and the mode of action. The cytotoxicity of eurycomanone was evaluated using MTT assay and the mode of cell death was detected by Hoechst 33258 nuclear staining and flow cytometry with Annexin-V/propidium iodide double staining. The protein expression Bax, Bcl-2, p53 and cytochrome C were studied by flow cytometry using a specific antibody conjugated fluorescent dye to confirm the up-regulation of p53 and Bax in cancer cells. Results: The findings suggested that eurycomanone was cytotoxic on cancerous liver cell, HepG2 and less toxic on normal cells Chang's liver and WLR-68. Furthermore, various methods proved that apoptosis was the mode of death in eurycomanone-treated HepG2 cells. The characteristics of apoptosis including chromatin condensation, DNA fragmentation and apoptotic bodies were found following eurycomanone treatment. This study also found that apoptotic process triggered by eurycomanone involved the up-regulation of p53 tumor suppressor protein. The up-regulation of p53 was followed by the increasing of pro-apoptotic Bax and decreasing of anti-apoptotic Bcl-2. The increased of cytochrome C levels in cytosol also results in induction of apoptosis. Conclusion: The data suggest that eurycomanone was cytotoxic on HepG2 cells by inducing apoptosis through the up-regulation of p53 and Bax, and down-regulation of Bcl-2.

**Keyword:** Eurycomanon; HepG2; Apoptosis; *Eurycoma Longifolia*; Up-regulation; p53.