Effects of Ginkgo biloba extract on cell proliferation and cytotoxicity in human hepatocellular carcinoma cells.

Jane CJ Chao, Chia Chou Chu
Chao JC, Chu CC.

Abstract

AIM: To study the effect of Ginkgo biloba extract (EGb 761) containing 22-27% flavonoids (ginkgo-flavone glycosides) and 5-7% terpenoids (ginkgolides and bilobalides) on cell proliferation and cytotoxicity in human hepatocellular carcinoma (HCC) cells. METHODS: Human HCC cell lines (HepG2 and Hep3B) were incubated with various concentrations (0-1 000 mg/L) of EGb 761 solution. After 24 h incubation, cell proliferation and cytotoxicity were determined by 3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium (MTS) assay and lactate dehydrogenase (LDH) release, respectively. After 48 h incubation, the expression of proliferating cell nuclear antigen (PCNA) and p53 protein was measured by Western blotting. RESULTS: The results showed that EGb 761 (50-1 000 mg/L) significantly suppressed cell proliferation and increased LDH release ($P<0.05$) in HepG2 and Hep3B cells compared with the control group. The cell proliferation of HepG2 and Hep3B cells treated with EGb 761 (1 000 mg/L) was 45% and 39% of the control group ($P<0.05$), respectively. LDH release of HepG2 cells without and with EGb 761 (1 000 mg/L) treatment was 6.7% and 37.7%, respectively, and that of Hep3B cells without and with EGb 761 (1 000 mg/L) treatment was 7.2% and 40.3%, respectively. The expression of PCNA and p53 protein in HepG2 cells treated with EGb 761 (1 000 mg/L) was 85% and 174% of the control group, respectively. CONCLUSION: Ginkgo biloba extract significantly can suppress proliferation and increase cytotoxicity in HepG2 and Hep3B cells. Additionally, Ginkgo biloba extract can decrease PCNA and increase p53 expression in HepG2 cells.