Anti-proliferative effect of resveratrol and etoposide on human hepatocellular and colon cancer cell lines

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Abstract

Introduction & Aim: Resveratrol is an active component of grape, which has been shown to inhibit proliferation of a wide variety of tumor cells. The ability of resveratrol to enhance anti-proliferative effects of etoposide in wild type p53 liver carcinoma (HepG2) and colon cancer (HCT-116) cells was investigated with focusing on p53 activation.

Methods: HepG2 cells and HCT-116 cells were treated with resveratrol and/or etoposide in a time- and dose-dependent manner and their proliferative response was evaluated by XTT assay. The expression of p53 protein was assessed using Western blot.

Results: Resveratrol exerted anti-proliferative activity on both cell types in a dose (25 to 100 μM)- and time (24-72 h)-dependent manner. Interestingly in HepG2 cells, resveratrol exhibited the same levels of cytotoxicity as etoposide (10 μM) when the cells treated with ≥ 25 μM for 48-72 h. In contrast to HepG2, resveratrol significantly enhanced anti-proliferative effects of etoposide in HCT-116 cells. P53 expression was

up-regulated by resveratrol and etoposide and pre-incubation of both cells with resveratrol increased levels of etoposide-induced p53 expression. In line with cytotoxicity effect, combination therapy showed stronger activation of p53 in HCT-116 compared to HepG2.

Conclusion: It seems that resveratrol exerts differential synergistic effect with etoposide on proliferation of cancer cells from different origin which is mainly accompanied by p53 activation. Our data represent a future strategy to provide much safer and more effective treatment for colon cancer.

Key Words: resveratrol, etoposide, HepG2, HCT-116, cytotoxicity, p53\