Effects of Genistein and Synergistic Action in Combination with Tamoxifen on the HepG2 Human Hepatocellular Carcinoma Cell Line

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Abstract

Introduction: The flavonoids comprise a diverse group of polyphenolic compounds with antioxidant activity that is present in edible plants like soybeans and soy products. In vivo studies have concentrated on the effects of flavonoids on cancer and genistein (GE), a soy-derived isoflavone, has been reported to reduce prostate, colon, hepatic and breast adenocarcinoma risk. Tamoxifen (TAM) is an important drug for cancer treatment worldwide, which can induce apoptosis in various cancers, including examples in the liver, breast and ovaries. The aim of the present study was to evaluate the effects of GE and TAM, alone and in combination, on proliferation and apoptosis in the human hepatocellular carcinoma (HCC) HepG2 cell line. Materials and Methods: HepG 2 cells were treated with GE, TAM and GE/TAM and then MTT and flow cytometry assays were conducted to determine effects on viability and apoptosis, respectively. Results: GE and TAM inhibited cell proliferation and induced apoptosis in the HepG 2 cell lines. Discussion: Our findings clearly indicated that GE and TAM may exert inhibitory and apoptotic effects in liver cancer cells. Conclusion: GE and TAM can significantly inhibit growth of HCC cells and play a significant role in apoptosis.

KEYWORDS:

Genistein; Tamoxifen; proliferation; apoptosis; hepatocellular carcinoma