

Effect of Genistein on DNMT1 Gene Expression and Cell Proliferation of Hepatocellular Carcinoma HepG2 Cell Line

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Abstract

Hepatocellular (HCC) carcinoma is one of the most common types of cancer and the major form of primary liver cancer. Genetic and epigenetic changes play a significant role in tumorigenesis. Deregulation of epigenetic patterns leads to cancer in different tissues. Epigenetic alterations are reversible by epi-drugs. DNA methyltransferases (DNMTs) catalyze DNA methylation and are directly responsible for hypermethylation of tumor-suppressor genes. Genistein (GE) has been shown to decrease methylation of DNA promoter of tumor suppressor genes by reduction of DNMT1 activity by which suppresses the growth of various cancers. The aim of the present study was to analyze the effect of GE on cell growth and DNMT1 gene expression in the hepatocellular carcinoma HepG2 cell line. **Materials and Methods:** MTT assay and Real-Time Quantitative RT-PCR were used to evaluate proliferative effect and DNMT1 gene expression. **Results:** GE inhibited the growth of HepG2 cells and decreased DNMT1 gene expression significantly with a time- and dose-dependent manner. **Discussion:** Our findings clearly indicated that GE has a significant inhibitory effect and decreases DNMT1 gene expression significantly. **Conclusion:** GE can significantly inhibit the growth of HepG2 cells and plays a significant role in DNMT1 gene expression.

Keywords: Genistein, DNMT1 Gene, Cell