# Effect of DNA Methyltransferase in Comparison to and in Combination with Histone Deacetylase Inhibitors on Hepatocellular Carcinoma HepG2 Cell Line

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## Abstract

**BACKGROUND:**

DNA demethylating agents and histone deacetylase inhibitors can affect reactivation of gene expression and apoptosis induction by DNA acetylation and demethylation. The aim of the present study was to analyze the effects of DNA demethylating agent genistein (GE) and histone deacetylase inhibitor valproic acid VPA), alone and combined, on hepatocellular carcinoma Hep G2 cell line.

**METHODS:**

The cells were treated with various doses of genistein and valproic acid (alone and combined) and the MTT assay and flow cytometry were used to determine cell viability and apoptosis.

**RESULTS:**

Genistein and valproic acid inhibited the growth of HepG 2 cells significantly. Result of flow cytometry demonstrated that genistein and valproic acid (alone and combined) induce apoptosis significantly in a time-dependent manner.

**CONCLUSIONS:**

Genistein and valproic acid can significantly inhibit proliferation and induce apoptosis in HepG2 cell line. The apoptotic effects of GE in combination with VPA were more significant that of each compound alone.



**KEYWORDS:**

Genistein; valproic acid; apoptosis; proliferation; hepatocellular carcinoma