

Inhibitory Effect of Genistein on PLC/PRF5 Hepatocellular Carcinoma Cell Line.

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Abstract

BACKGROUND:

Natural compounds including flavonoids like genistein (GE) are able to inhibit cell proliferation and induce apoptosis. GE is the main representative of these groups. GE inhibits carcinogenic tumors such as colon, stomach, lung, and pancreas tumors. The aim of the present study was to analyze the apoptotic effect of GE in the hepatocellular carcinoma (HCC) PLC/PRF5 cell line.

METHODS:

Cells were treated with various doses of GE (1, 5, 10, 25, 50, 75, and 100 $\mu\text{M/L}$) at different times (24, 48, and 72 h) and the MTT assay was commonly used. Furthermore, cells were treated with single dose of GE (25 μM) at different times and flow cytometry was performed.

RESULTS:

GE inhibited the growth of liver cancer cells significantly with a time- and dose-dependent manner. The percentage of living cells in GE treatment groups with a concentration of 25 μM at different times were 53, 48 and 47%, respectively ($P < 0.001$). Result of flow cytometry demonstrated that GE at a 25 μM concentration induces apoptosis significantly in a time-dependent manner. The percentage of apoptotic cells at different times were 44, 56, and 60%, respectively ($P < 0.001$).

CONCLUSIONS:

GE can significantly inhibit the growth of HCC cells and plays a significant role in apoptosis of this cell line.

KEYWORDS:

Apoptosis; genistein; hepatocellular carcinoma; proliferation