Kaempferol increases apoptosis in human cervical cancer HeLa cells via PI3K/AKT and telomerase pathways

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Abstract

Cervical cancer is one of the most frequent cancers in women worldwide. Defects in the apoptotic pathways are responsible for both the disease pathogenesis and its therapy resistance. It is thus a good candidate for treatment by pro-apoptotic agents. Kaempferol as a flavonoid has antioxidant and antitumor properties. Kaempferol has been shown to induce apoptosis and cell death in cancer cells. However, due to the problems in the treatment of cervical cancer, this study is designed to investigate the molecular mechanism by which kaempferol suppresses the growth of cervical cancer HeLa cell as compared with HFF cells (normal cells). Cells treated with kaempferol (12-100 mu M) and 5-FU (1-10 mu M), as the positive control, up to 72 h. Cell viability was determined by MTT assay and real time PCR was used to investigate apoptosis and telomerase genes expression. The results showed that kaempferol decreased cell viability as concentration- and time-dependently. IC50 values were 10.48 mu M for HeLa and 707.00 mu M for HFF cells, as compared with 1.40 mu M and 16.38 mu M for 5-FU after 72 h treatment, respectively. Also, kaempferol induced cellular apoptosis and aging through down-regulating the PI3K/AKT and hTERT pathways. This study suggests that kaempferol may be a useful adjuvant therapeutic agent in the treatment of cervical cancer.

Key words: Kaempferol increases apoptosis in human cervical cancer