

The Effect of Naringenin on the Apoptosis in T47D Cell Line of Breast Cancer

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Abstract : Background: Breast cancer is the most common cancer in women. In most cancer cells, apoptosis is blocked. As for the importance of apoptosis in cancer cell death and the role of different genes in its induction or inhibition, the search for compounds that can begin the process of apoptosis in tumor cells is discussed as a new strategy in anticancer drug discovery. The aim of this study was to investigate the effect of Naringenin (NGEN) on the apoptosis in the T47D cell line of breast cancer. Materials and Methods: In this experimental study in vitro, the T47D cell line of breast cancer was selected as a sample. The cells at 24, 48, and 72 hours were treated with doses of 20, 200, and 1000 μm of Naringenin. Then, the transcription levels of the genes involved in apoptosis, including Bcl-2, Bax, Caspase 3, Caspase 8, Caspase 9, P53, PARP-1, and FAS, were assessed using Real Time-PCR. The collected data were analyzed using IBM SPSS Statistics 24.0. Results: The results showed that Naringenin at doses of 20, 200, and 1000 μm in all three times of 24, 48, and 72 hours increased the expression of Caspase 3, P53, PARP-1 and FAS and reduced the expression of Bcl-2 and increased the Bax/Bcl-2 ratio, nevertheless in none of the studied doses and times, had not a significant effect on the expression of Bax, Caspase 8 and Caspase 9. Conclusion: This study indicates that Naringenin can reduce the growth of some cancer cells and cause their deaths through increased apoptosis and decreased anti-apoptotic Bcl-2 gene expression and, resulting in the induction of apoptosis via both internal and external pathways.

Keywords : apoptosis, breast cancer, naringenin, T47D cell line

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