

[PS2.5]

Effects of polygonum avicular on proliferation and apoptotic gene expression of breast cancer cell line

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Breast cancer is one of the most common malignancies in women, and is the leading cause of death worldwide for women between the ages of 40 and 55 years in the world. There are several treatments for breast cancer that have undesirable effects. Using herbal medicine and domestic plants is supplementary treatment that helps to treatment of the disease. Therefore in this study, Polygonum avicular is used to investigate its anticancerous effects on MCF-7 in vitro. Polygonum avicular was collected from Oscou Mountain. Extraction was employed with methanol solvents. MCF-7 cell line was cultured in RPMI-1640 with different concentration of polygonum avicular (50, 100, 150, 200, 250, 300, 350 and 400 ng) in different times (6, 12, 24, and 48 hrs) with 5% Co₂ and 37 ° C. Cytotoxicity was done with trypan blue and MTT assay was used to detect cell proliferation. Finally for apoptotic gene analysis RT-PCR was employed. Our results showed that Polygonum avicular is capable to induce cytotoxicity in MCF-7 cell line and in 300 ng concentration, highest rate of cell death was occurred according to trypan blue and MTT assay. Up-regulation of P53 as an apoptotic gene and Down-regulation of Bcl-2 was occurred according to RT-PCR results. Our results showed that Polygonum avicular can induce apoptosis in MCF-7 cell line. Apoptosis promoting genes such as P53 up-regulated in presence of polygonum avicular and Bcl-2 gene was down-regulated in this study. According to results, it is suggested that polygonum avicular have anticancerous effect, however more studies is necessary to proved it completely.

Key words: Polygonum avicular, brest cancer, Apoptosis, MCF-7

Keywords: