CYTOTOXIC EFFECTS OF APIGENIN ON MULTIPLE MYELOMA CELLS

Y. Baran[1], S. Yilmaz[1], Z.B. Cincin[2], B. Cakmakoglu[2], I. Kozanoglu[3], H. Ozdogu[4]
[1]*Molecular Biology and Genetics, İzmir Institute of Technology, Turkey*
[2]*Institute of Experimental Medical Research, Department of Molecular Medicine, Istanbul University, Turkey*
[3]*Adana Adult Bone Marrow Transplantation Center Cell Processing Unit, Baskent University, Turkey*
[4]*Hematology, Baskent University, Turkey*

Apigenin, a common plant flavonoid, has been reported to suppress the proliferation of prostate, breast cancer and various types of leukemic cells. It also inhibits cell cycle progression and induces apoptosis. Apigenin triggers its anti-carcinogenic effects by inducing modulation of several kinase activities, inhibition of NF-KB and proteosomal activation and proteosomal degradation of Her2/neu proteins. Multiple myleoma is the second most common hematologic cancer. However, an approach that can cure multiple myleoma completely via current approach is not achieved yet. The purpose of this study is to determine the cytotoxic and apoptotic effects of Apigenin on U266 Multiple Myeloma cells. Time-dependent antiproliferative effect of Apigenin was determined by MTT cell proliferation test. Apoptotic effects of Apigenin was determined by changes in activity of caspase-3, loss of mitochondrial membrane potential and localization of phosphatidylserine on plasma membrane (Anexin-V by flow cytometry). The results demonstrated that Apigenin has time and dose-dependent anti-proliferative effect on U266 Multiple Myeloma cells. IC50 values obtained for Apigenin at 48- and 72 hours on U266 Multiple Myeloma cells were 36.6- and 31.4 µM, respectively. It was shown that caspase-3 enzyme activity was increased 164- and 186% in response to 30-, and 40 µM Apigenin, respectively. There were 21.5-, 36.7-, and 63% of the cells in apoptosis in response to 20-, 30-, and 40 µM Apigenin, respectively. As compared to control group, there were 69- and 162% increases in loss of mitochondrial membrane potential of U266 cells exposed to 20-, and 30 µM Apigenin. In conclusion, all these results showed for the first time that Apigenin has anti-proliferative and apoptotic effects on multiple myeloma cells in a dose-dependent manner.