Ácido betulínico diminui a proliferação e aumenta a apoptose em células Jurkat

Effects of betulinic acid on proliferation and apoptosis in Jurkat cells and its in vitro mechanism.

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Source

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Abstract

The anti-cancer effects of betulinic acid (BA) on Jurkat cells and its in vitro mechanism were examined by using MTT assay. Apoptosis was detected by using Hoechst33258 staining and annexin-V/PI double-labeled cytometry. The effects of betulinic acid on the cell cycle of Jurkat cells were studied by propidium iodide method. RT-PCR and Western blotting were used to analyze the changes of cyclin D3, bcl-xl mRNA and protein levels in Jurkat cells after treatment with betulinic acid. Our results showed the proliferation of Jurkat cells was decreased in betulinic acid-treated group with a 24-h IC50 value being 70.00 mumol/L. Betulinic acid induced apoptosis of Jurkat cells in a time- and dose-dependent manner. The number of Jurkat cells treated with betulinic acid showed an increase in G(0)/G(1) phase and decrease in S phase. After treatment with 0, 20, 60, 100 mumol/L betulinic acid for 24 h, the number of Jurkat cells was increased from (31.00+/-1.25)% to (58.84+/-0.32)% in G(0)/G(1) phase, whereas it was decreased from (61.45+/-1.04)% to (35.82+/-1.95)% in S phase. PBMCs were less sensitive to the cytotoxicity of betulinic acid than Jurkat cells. The expressions of cyclin D3, bcl-xl mRNA and protein were decreased sharply in Jurkat cells treated with betulinic acid. It is concluded that betulinic acid is able to inhibit the proliferation of Jurkat cells by regulating the cell cycle, arrest cells at G(0)/G(1) phase and induce the cell apoptosis. The anti-tumor effects of betulinic acid are related to the down-regulated expression of cyclin D3 and bcl-xl.

PMID:

19107355