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Effects of apoptosis protein XIAP inhibitor on the apoptosis and sensitivity of chemotherapy in A549 cell

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摘要

Background and objective X-linked inhibitor of apoptosis protein (XIAP) is a newly discovered inhibitor of apoptosis protein which prevents apoptosis by inhibiting the activation of caspase. After down-regulating XIAP gene expression in A549 cells, a non-small cell lung cancer (NSCLC) cell lines, we investigated the role of XIAP specific siRNA in apoptosis and chemotherapy sensitivity. Methods The mRNA levels of XIAP gene in A549 cells were assessed using a semi-quantitative reverse transcriptase-PCR (RT-PCR). The expression vector of XIAP small interfering RNA (XIAP siRNA?was constructed and transfected into A549 cells. The transfection was proved effective by the fluorescence microscope. Cell proliferation and cell killing rate after chemotherapeutics treatment were investigated by MTT assay. The rate of apoptosis was detected by flow cytometry assay. Results XIAP siRNA construction was proved successful by enzyme digestion and DNA sequencing. The transfection efficiency in A549 cells from positive transfection group and negative transfection group had no differences. Compared to those in cell from control group, the level of XIAP mRNA expression was significantly decreased, the inhibition activity of Cisplatin was significantly higher in cells from positive transfection group. Proliferation of cells from positive transfection group was significantly inhibited after 24, 48, 72, 96 hours . The rates cell killing and apoptosis in cells from positive transfection group caused by Cisplatin were significantly higher compared to those cells from control group. Conclusion The increased expression of XIAP in NSCLC can inhibit the apoptosis of NSCLC cells and result in NSCLC chemotherapy drug resistance. XIAP siRNA could inhibit the NSCLC cell growth specifically, down-regulation of XIAP gene expression promote apoptosis and increase the chemotherapy sensitivity of NSCLC. XIAP siRNA sequence might become a therapeutic target of NSCLC.

关键词

Lung neoplasms; Human XIAP protein; RNA interference

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