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论著

二噁英对成骨肉瘤细胞增殖和胰岛素样生长因子2表达的影响

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摘要 目的 探讨环境类致癌因子二噁英（TCDD）对成骨肉瘤细胞增殖及胰岛素样生长因子2（IGF-2）mRNA和蛋白表达的影响。方法 TCDD作用于人成骨肉瘤细胞SaOS-2细胞株24～48 h。MTT法检测细胞增殖率；对硝基酚磷酸盐法测定细胞内碱性磷酸酶（ALP）活性；RT-PCR半定量分析细胞IGF-2 mRNA的表达；Western蛋白质印迹法测定细胞IGF-2和丝裂原激活蛋白激酶（MAPK）信号通路中p38 MAPK蛋白表达及其磷酸化水平。结果 与对照组比较，TCDD 1，10和100 nmol·L^{-1}作用48 h，使SaOS-2细胞内ALP活性分别增加38%，95%和142%。TCDD 1，10及100 nmol·L^{-1}作用24 h后，SaOS-2细胞存活率分别增加21%，47%和56%，细胞内IGF-2 mRNA和IGF-2蛋白表达均增加。TCDD对SaOS-2细胞内p38 MAPK蛋白表达无明显影响，但明显降低其磷酸化水平。结论 TCDD具有促进SaOS-2细胞增殖的作用。TCDD可能通过促进SaOS-2细胞内IGF-2的表达，并抑制MAPK信号通路中转录因子p38 MAPK活性而促进细胞增殖。

关键词 二噁英 细胞增殖 骨肉瘤 胰岛素样生长因子2 信号传导通路

分类号 R994.6

Effects of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin on cell proliferation and insulin-like growth factor 2 in osteogenic sarcoma cells

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Abstract

AIM To investigate the effects of environmental carcinogenic factor 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) on cell proliferation and expression of insulin like growth factor 2(IGF-2) in osteogenic sarcoma (SaOS-2) cells. **METHODS** SaOS-2 Cells were treated with TCDD for 24-48 h. MTT assay was used to detect cell proliferation. Alkaline phosphatase (ALP) activity in SaOS-2 cells was measured using the nitrophenol phosphate salt method. IGF-2 mRNA level in SaOS-2 cells was detected by reverse transcription polymerase chain reaction (RT-PCR). IGF-2 protein, p38 mitogen-activated protein kinase (p38 MAPK) and phospho-p38 MAPK(P-p38 MAPK) levels were detected by Western blot analysis. **RESULTS** Treated with TCDD 1, 10 and 100 nmol·L^{-1} for 48 h ALP activity in SaOS-2 cells was increased about 38%, 95% and 142%, respectively, compared with control group. Treated with TCDD 1, 10 and 100 nmol·L^{-1} for 24 h, cell proliferation increased about 21%, 47%and 56%, respectively, and the expressions of IGF-2 mRNA and protein in SaOS-2 cells increased. TCDD did not affect the protein expression of p38 MAPK in MAPK signal pathway, but decreased the P-p38 MAPK level in SaOS-2 cells. **CONCLUSION** TCDD may increase proliferation of SaOS-2 cells, which may be related with its enhancement of IGF-2 expression, and inhibition of p38 MAPK activity.

Key words dioxin cell proliferation osteosarcoma insulin-like growth factor 2 signal transduction pathways

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