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论文

苯并芘对人支气管上皮细胞周期影响

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摘要:

目的 探讨苯并芘(BaP)对人支气管上皮细胞(16HBE细胞)周期影响及其作用机制。方法 使用不同浓度BaP染毒16HBE细胞后,检测细胞增殖率,使用流式细胞仪分析细胞周期的改变,并采用实时荧光定量聚合酶链式反应(RT-PCR)和western blot检测DNA损伤相关基因共济失调毛细血管扩张突变基因(ATM)和p53改变。结果 BaP能明显抑制细胞增殖功能;BaP染毒后细胞S期延长,0、5、10、20、40、80 μmol/L剂量组S期细胞比例分别为18.25%、39.59%、40.96%、41.89%、42.82%、43.16%;RT-PCR和western blot分析均显示BaP作用后ATM和p53蛋白表达增加,当BaP作用剂量达到40 μmol/L时,ATM基因相对表达量为(3.0±0.21)、p53基因的相对表达量为(3.2±0.11),明显高于对照组(P<0.01)。结论 BaP能明显延长16HBE细胞的S期,而ATM和P53基因在其中可能发挥重要作用。

关键词: 苯并芘(BaP) 细胞周期 p53 失调毛细血管扩张突变基因(ATM)

Effects of BaP on 16HBE cell cycle

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Abstract:

Objective To investigate the effects and mechanisms of benzo(a)pyrene(BaP) on cell-cycle of cultured human bronchial epithelial(16HEB) cells.Methods Cell viability was assessed by the Cell Counting Kit-8 (CCK-8) kit assay. Flow cytometry(FACS) analyses were performed on 16HBE cells 24 hours after 0,5,10,20,40,and 80 μmol/L BaP treatment,and we detected the expression levels of ataxia telangiectasia-mutated gene(ATM) and p53 using real-time reverse transcription PCR(RT-PCR) and western blot.Results BaP induced significant concentration-dependent inhibition in the cell proliferation and BaP enhanced S-phase arrest or delayed S-phase transition in 16HBE cells.RT-PCR and western blot analyses showed that BaP induced concentration-dependent increase in expression of ATM and p53. Conclusion BaP could prolong S-phase in 16 HBE cells and ATM and p53 play important roles in the response to the cell-cycle change induced by BaP.

Keywords: benzo(a)pyrene cell-cycle p53 ATM

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