癌变.畸变.突变 ISSN: 1004-616x CN:44-1063/R 2007; 19(6) :427-431

论著

p53基因对人胚肺成纤维细胞周期影响的研究

杨 迪1 /高 杰1 /齐以涛1 /陈 倩1 /王智琴1 /傅娟玲2 /周宗灿2/ 肖希龙1

1.中国农业大学动物医学院，2.北京大学医学部毒理室

收稿日期 2007-2-22 修回日期 2007-9-6 网络版发布日期:

摘要 背景与目的： 研究野生型和179位残基突变型p53基因在HELF细胞周期调控中的作用。探讨p53基因的179位残基突变对细胞生长的影响。 材料与方法： 用野生型p53(pcDNA3_wtp53)和179位残基突变的突变型p53(pcDNA3_mtp53)转染HELF细胞，观察细胞生长情况，绘制细胞生长曲线；用流式细胞仪分析细胞周期；用RT_PCR和Western blotting方法检测p53 基因转染后HELF细胞周期相关基因mRNA和蛋白的表达。 结果： 野生型p53表达的上调使HELF细胞周期阻滞于G1期，细胞体积减小，并下调cyclin D3、cyclin E、Cdk2和Cdk4的表达，同时上调p21的表达。而179位残基突变的突变型p53表达的上调则促进细胞周期从G1期到S期的转换，同时细胞体积增大，上调cyclin A和Cdk4的表达。 结论： p53的179位残基突变对于HELF细胞cyclin A和Cdk4的表达有诱导作用，并可能借此促进细胞周期进程。

关键词 p53； 细胞周期； cyclin A； Cdk4

The Effect of p53 Gene on Cell Cycle of HELF Cells

YANG Di1, GAO Jie1, QI Yi-tao1, CHEN Qian1,WANG Zhi-qin1, Fu Juan-ling2, ZHOU Zong-can2, XIAO Xi-long1,

1.Department of Pharmacology and Toxicology, College of Veterinary Medicine,China Agricultural University, Beijing 100094; 2. Department of Toxicology, Health Science Center, Peking University, Beijing 100083,China

Abstract BACKGROUND & AIM: We investigated the role of wild type and H179Y_mutated p53 in the regulation of HELF cell cycle and proliferation. MATERIALS AND METHODS: We transfected pcDNA3_wild_type p53 (pcDNA3_wtp53) and pcDNA3_H179Y_mutated p53 (pcDNA3_mtp53) plasmids into human embryonic lung fibroblast (HELF) cells. Then we analyzed cell proliferation by cell growth assays, analyzed cell cycle by flow cytometry, and detected the expression levels of mRNA and proteins by PCR and Western blotting. RESULTS: Over_expression of wild_type p53 caused cell cycle arrest at G1 phase with reduced cell size, decreased expression of cyclin D3, cyclin E, Cdk2 and Cdk4, and increased expression of p21. In contrast, over_expression of H179Y_mutant p53 promoted G1 to S phase transition with enlarged cell size and increased cyclin A and Cdk4 expression. CONCLUSION: These results indicated that mutation at the p53 H179Y residue caused up_regulation in the expression of cyclin A and Cdk4, promoting HELF cell proliferation.

Keywords p53 cell cycle cyclin A Cdk4

DOI

通讯作者 肖希龙 xiaoxl@cau.edu.cn