

论著

α 粒子诱发人支气管上皮细胞癌变的DNA修复基因表达谱研究

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摘要 背景与目的: DNA修复系统在细胞基因组完整性维持中发挥重要作用, 本研究探讨 α 粒子辐射诱发人支气管上皮细胞癌变的DNA修复基因表达谱变化。材料与方法: 采用Cy5和Cy3分别标记的癌变细胞BERP35T4和亲本细胞BEP2D的cDNA探针与DNA修复基因cDNA微矩阵杂交、ScanArray3000扫描仪扫描和ImaGene3.0软件分析比较基因表达差异。结果: 分析比较了人支气管上皮细胞癌变前(BEP2D)和后(BERP35T4)126个DNA修复相关基因的表达谱, 发现细胞癌变后有10个修复基因的表达降低, 这些基因分别参与DNA链断裂修复、核苷酸切除修复和碱基切除修复反应, 3个基因(DNA_PKcs、SMUG和RAD18)表达上调。结论: 细胞DNA修复表达改变是辐射诱发细胞恶性转化的机制之一。

关键词 [\$\alpha\$ 粒子; 癌变; DNA修复; 芯片; 基因表达](#)

Investigation of DNA Repair Gene Expression Pattern of Radiation-Induced Malignant Transformation of Human Bronchial Epithelial Cells

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Abstract BACKGROUND & AIM: DNA repair machinery plays an important role in the maintaining of genomic integrity. This study aims at investigating the changes of DNA repair gene expression pattern of malignant transformation of human bronchial epithelial cells generated by α particles exposure. MATERIAL AND METHODS: cDNA microarray chip was used to hybridize with the probes of Cy5 or Cy3 labeled cDNA from transformed BERP35T4 cells or parental BEP2D cells. The hybridized chip was scanned for fluorescent signals with ScanArray3000, the data were analyzed with ImaGene3.0 software. RESULTS: The expression patterns of total 126 DNA repair related genes were compared between BERP35T4 and BEP2D cells. Among the 126 genes, 10 down-regulated genes and 3 up-regulated genes (DNA_PKcs, SMUG and RAD18) were identified in the transformed BERP35T4 cells. Those down-regulated genes function in the pathways of DNA double_strands break repair, nucleotide excision repair and base excision repair respectively. CONCLUSION: The DNA repair machinery was changed in the radiation-induced transformed cells, creating a scenery that could contribute to the acceleration of cellular malignant transforming process.

Keywords [\$\alpha\$ particle; carcinogenesis; DNA repair; DNA chip; gene expression](#)

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