

论著

α-粒子诱发 BEP2D 细胞恶性转化中 DNA 修复基因 DNA-PK 的表达和突变分析

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摘要 目的: 研究 α 粒子诱发人支气管上皮细胞 BEP2D 恶性转化中 DNA 修复基因 DNA2PK 的结构和表达变化。方法: 用反应 2 单链构象多态性 PCR2SSCP 分析基因编码序列结构变化。结果: 癌变细胞中 DNA 修复基因 Ku70 XRCC26 的编码碱基发生突变, 第 1148~1153 位点由 AGGATC 突变为 GAGTAC, 致使编码的 α 氨基酸由 RI 变为 EY; 细胞恶性转化过程中, DNA 修复基因 DNA2PKcs XRCC27 的表达发生改变, 在恶性转化早期即 α 粒子照射后第 21 代就已被抑制, 但发生癌变第 35 代后, 部分细胞克隆的该基因表达又重新上调。结论: DNA 修复基因 DNA2PKα 的结构和表达的变化, 导致细胞 DNA 修复能力缺陷, 基因组不稳定性增加, 是 α 粒子癌变的分子机制之一。

关键词 [人支气管上皮细胞BEP2D](#) [α-粒子](#) [癌变](#) [DNA 依赖蛋白激酶\(DNA2PK\)](#) [DNA 修复](#)

MUTATIONS AND EXPRESSION CHANGES OF DNA-PK GENES DETECTED IN THE MALIGNANT TRANSFORMED BEP2D CELLS INDUCED BY α-PARTICLES EXPOSURE

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Abstract Purpose : To detect the mutations and expression changes of DNA-PK genes in the transformed human bronchial epithelial cells (BEP2D) induced by α-particles. Methods : Mutations were detected with PCRSSCP ; gene expression was analyzed using Northern blot hybridization. Results : Mutations in the encoding sequence of Ku70 (XRCC-6) gene were discovered in the malignant transformed cells. In the process of α-particle induced BEP2D transformation , the expression of DNA2PKcs gene was depressed at the early stage of transformation , and was up-regulated again in some of the malignant transformants. Conclusion : The mutations and depressed expression of DNA repair genes lead to the deficiency of DNA DSBs repair capacity , which in turn might result in genomic instability. These events could play an important role in the malignant transformation of BEP2D cells induced by α-particles exposure.

Keywords [human bronchial epithelial cell line BEP2D](#) [α-particles](#) [carcinogenesis](#) [DNA2PK genes](#) [DNA repair](#)

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