

交叉学科

碳离子辐照对人肺癌细胞A549细胞周期进程的影响

王燕玲^{1, 2}, 张红¹, 李宁¹, 郝冀芳¹, 赵卫平^{1, 2}

(¹中国科学院近代物理研究所, 甘肃 兰州 730000;

²中国科学院研究生院, 北京 100049)

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摘要

选取对数生长期人肺癌细胞A549接受0—6.0 Gy 碳离子照射, 用克隆形成法检测细胞的存活率; 并于照射后12和24 h收集细胞, 用流式细胞术检测细胞周期各时相的细胞百分比, 观察不同剂量碳离子辐照对A549细胞周期进程的影响。结果显示: 0—6.0 Gy 碳离子照射后细胞存活率显著下降; 照射后12 h细胞发生G0/G1期阻滞, 而照射后24 h, 1.0 Gy 照射组细胞在G0/G1期阻滞, 2.0—6.0 Gy 照射组细胞在G2/M期阻滞。上述结果表明, 在A549细胞接受碳离子照射后的12和24 h内, 1.0 Gy 照射可持续激活细胞G1期检查点, 而2.0—6.0 Gy 碳离子照射后其细胞周期进程是随时间变化的。

To investigate the effects of cell cycle progression of A549 cell induced by $^{12}\text{C}^{6+}$ ion irradiation at different doses, the survival fractions of the A549 cells were determined by colony forming assay; cell cycles were analyzed by FACS at 12 h or 24 h after irradiation. The results showed that the percentage of survival in the A549 cells decreased with irradiation doses. Compared with control group, the percentage of the cells in G0/G1 phase significantly increased at 12 h after irradiation with different doses of $^{12}\text{C}^{6+}$ ions. However, at 24 h after irradiation the percentage of the cells in G0/G1 phase significantly increased with 1.0 Gy $^{12}\text{C}^{6+}$ ions, while the cells showed increasing percentage in G2/M phase with 2.0, 4.0 or 6.0 Gy $^{12}\text{C}^{6+}$ ions. The results suggested that G1 cell cycle checkpoint was activated in 12—24 h after irradiation with 1.0 Gy $^{12}\text{C}^{6+}$ ions, but after irradiation with 2.0—6.0 Gy $^{12}\text{C}^{6+}$ ions, the cell cycle progression of the A549 cells changed with time.

关键词 [碳离子辐照](#); [人肺癌细胞A549](#); [细胞周期](#); [细胞周期检查点](#)

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王燕玲^{1, 2}; 张红¹; 李宁¹; 郝冀芳¹; 赵卫平^{1, 2}

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