

交叉学科

辐照诱导的人正常肝细胞系HL-7702细胞延迟效应

陶家军^{1、2},李强^{1、#},吴庆丰^{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

利用X射线辐照人正常肝细胞系HL-7702细胞, 运用胞质分离阻滞微核法实验检测细胞微核率, AnnexinV FITC细胞凋亡检测试剂盒检测细胞凋亡率, 细胞微核率和凋亡率随着辐照剂量的增加而显著增加。X射线照射后细胞传代培养, 第7代时不同剂量辐照后子代细胞微核率和凋亡率同未辐照细胞相比已无明显区别。对不同剂量辐照后传代7代的细胞再次照射2.5 Gy的相同剂量, 发现它们细胞微核率和凋亡率存在明显差异, 即初次受辐照剂量高的细胞, 再次以相同剂量辐照后的微核率和凋亡率也高。这些结果表明, X射线辐照导致了HL-7702细胞基因组不稳定性这一辐射延迟效应, 再次辐照使得辐射的延迟效应得以明显的表现。

Human normal liver cell line HL-7702 cells were irradiated with different doses of X rays. Micronucleus and apoptosis rates in the irradiated cells were measured with cytokinesis block micronucleus method and Annexin V FITC apoptosis detection kit, respectively. Experimental data showed that the micronucleus and apoptosis rates increased obviously with increasing irradiation dose. After seven population doublings, the micronucleus and apoptosis rates of the cells surviving exposure to the X rays reduced to the same levels as non irradiated control cells; the progenies of the cells were secondly exposed to X rays at the same dose of 2.5 Gy. We found that the progenies of the cells surviving the first irradiations of the various doses showed markedly differential micronucleus frequencies and apoptotic rates. Although the same dose of 2.5 Gy was applied in the second irradiations, the micronucleus frequencies and apoptotic rates of the progenies of the cells initially exposed at higher doses were significantly higher than the others. These results indicate that X rays lead to genomic instability in HL 7702 cells, which is an important manifestation of radiation induced delayed effect, and a second radiation stimulus makes the delayed effect in the progeny of the previously irradiated cells be expressed obviously.

关键词 [延迟效应](#); [微核](#); [凋亡](#); [细胞损伤](#); [基因组不稳定性](#)

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通讯作者:

作者个人主页: 陶家军^{1、2};李强^{1、#};吴庆丰^{1、2}

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