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交叉学科

γ射线辐照人类正常肝细胞染色体损伤的动态修复

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摘要

应用早熟染色体凝集技术对人类正常肝脏细胞经γ射线照射导致的染色体损伤后48h内的动态修复过程进行了研究。结果显示：照射后原初染色单体断裂和等点染色单体断裂数随着照射剂量的增加而增多，染色单体断裂显著多于等点染色单体断裂；经过24h的继续培养，这两种类型的损伤都有不同程度的修复，约50%染色单体断裂得到修复，而等点染色单体断裂的修复率最多为15%；经过48h的照射后培养，染色体损伤的水平与24h相比没有显著差异。说明肝细胞经γ射线照射后染色体损伤的主要形式是染色单体断裂，易于修复；虽然等点染色单体断裂数量较少，但修复困难。由此表明，等点染色体断裂是细胞经γ射线照射后死亡和癌变的一个重要因素。

We employed the prematurely chromosome condensation （PCC） technique to investigate the 48 h kinetic repair of normal human liver cell line L02 exposed to γ-rays. The results showed that chromatidtype and isochromatid-type breaks increased with the dose at 0 h measured by PCC, the number of chromatid-type breaks was several times more than that of isochromatid-type breaks. Further 24 h incubationafter exposed to irradiation, both of these two type breaks decreased in different extent, 50% for chromatid-type one, change of the the main type easy to repair. 15% for isochromatid-type one at most, respectively. chromosome breaks compared with that of 24th h（p〉 0. 05 of the chromosome breaks was chromatid-type after exposed 48th h, there was a slightly 〉. These results revealed that to low LET rays, also, it was Though the isochromatid-type breaks was obvioously less than that of the chromatid-type one, it was difficult to repair. It implied that the isochromatid-type breaks was the important factor causing cell death and canceration when cells were exposed to irradiations.

关键词 染色体断裂 动态修复 人肝细胞

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