

技术及应用

咖啡因联合辐射处理对人乳腺癌易感基因BRCA1表达的影响

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收稿日期 修回日期 网络版发布日期:

摘要 研究了咖啡因对碳离子束辐射的增敏效应, 并观察在该过程中人乳腺癌易感基因BRCA1表达的变化。碳离子束联合咖啡因处理人乳腺癌细胞MCF-7后, 利用实时细胞检测仪观察细胞生长、流式细胞术检测细胞周期分布变化、real-time PCR检测BRCA1 mRNA水平、Western blot检测BRCA1蛋白水平及其磷酸化水平。结果显示: 咖啡因处理导致细胞生长明显受到抑制; 咖啡因废除了辐射诱导的G2期阻滞, 抑制了BRCA1 mRNA和蛋白表达水平, 同时特异性抑制了BRCA1的丝氨酸1524位点的磷酸化作用。这些结果表明咖啡因抑制了BRCA1蛋白和其磷酸化表达水平。

关键词 [BRCA1](#) [离子辐射](#) [咖啡因](#) [辐射敏感性](#) [G2期检测点](#)

分类号

Effects of Caffeine Cotreatment With Radiation on Breast Cancer Susceptibility Gene BRCA1

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Abstract The sensitizing effect of caffeine to carbon ion radiation was investigated and the change of BRCA1 expression was observed. The MCF-7 breast carcinoma cells were exposed to carbon ion beams with or without caffeine. The cell survival was automatically monitored by RT-CES system. Cell cycle distribution was assessed by flow cytometry. The levels of BRCA1 mRNA were analyzed by real-time RTPCR. The expression of BRCA1 protein and its phosphorylation were examined by Western blot. The results show that caffeine increases the sensitivity of MCF-7 cells to carbon ion radiation, and abrogates the radiation-induced G2 arrest. Caffeine inhibits radiation-induced BRCA1 expression both at mRNA and protein level. At the same time, caffeine specifically abolishes BRCA1 phosphorylation of Ser-1524. The data implicate that caffeine inhibits the expression of BRCA1 protein and its phosphorylation.

Key words [BRCA1](#) [ionizing irradiation](#) [caffeine](#) [radiosensitivity](#) [G2 checkpoint](#)

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