

论著

siRNA沉默P21表达对细胞周期解偶联和细胞凋亡的影响

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摘要 目的: 利用RNAi技术探讨P21蛋白表达对HeLa细胞周期解偶联和细胞凋亡的影响。方法: 丝裂霉素刺激HeLa细胞后可诱导P21蛋白高表达, 采用脂质体转染技术将p21 siRNA载体转染至HeLa细胞48 h后给予MMC刺激, 利用流式细胞术检测HeLa细胞的P21蛋白表达、细胞倍体的形成和细胞凋亡的改变。结果: p21 siRNA载体可有效干扰经MMC诱导的HeLa细胞中P21蛋白表达, MMC刺激后24 h和48 h细胞2倍体百分数明显少于对照组($P < 0.01$), 4倍体和8倍体细胞百分数明显多于对照组($P < 0.01$)。p21 siRNA沉默HeLa细胞p21后, 凋亡细胞百分率明显高于空质粒对照组($P < 0.01$)。结论: p21 siRNA可有效沉默HeLa细胞P21蛋白表达, 在P21蛋白低表达的情况下, HeLa细胞可通过p53非依赖途径诱导细胞死亡, 可能与细胞周期解偶联和p53非依赖的细胞凋亡有关。

关键词 [蛋白质P21](#); [细胞周期](#); [细胞凋亡](#); [RNA干扰](#); [解偶联](#)

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Effects of p21 siRNA on cell cycle uncoupling and apoptosis

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Abstract

AIM: To investigate the effects of P21 protein on cell cycle uncoupling and cell apoptosis with RNA interference assay. **METHODS:** The expression of P21 protein in HeLa cells was induced by mitomycin (MMC). Lipofect transfection assay was used to take the p21 siRNA into HeLa cells and MMC was given 48 h after transfection. FCM assay was applied to detect the expression of P21 and ratio of polyploid cells and apoptosis. **RESULTS:** p21 siRNA plasmid interfered the expression of P21 protein in HeLa cells. The number of 2 haploid cells was decreased obviously ($P < 0.01$). The number of 4 haploid and 8 haploid cells was increased significantly ($P < 0.01$) compared with control plasmid 24 and 48 h after MMC was given. **CONCLUSION:** p21 siRNA silenced the P21 protein and cell death in HeLa cells was induced by p53-independent pathway in the condition of lower expression of P21 protein. The mechanism may be related to cell cycle uncoupling and apoptosis by p53-independent pathway.

Key words [Protein P21](#) [Cell cycle](#) [Apoptosis](#) [RNA interference](#) [Uncoupling](#)

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