PDCD4促进吉西他滨诱导胰腺癌细胞凋亡的实验研究

《现代肿瘤医学》[ISSN:1672-4992/CN:61-1415/R] 期数: 2019年20期 页码: 3571-3576 栏目: 论著（基础研究） 出版日期: 2019-09-08

Title: PDCD4 promoted the apoptosis of pancreatic cancer cells induced by gemcitabine

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关键词: 胰腺癌细胞; PDCD4; 吉西他滨; 凋亡

Keywords: pancreatic cancer cell; PDCD4; gemcitabine; apoptosis

分类号: R735.9

DOI: 10.3969/j.issn.1672-4992.2019.20.006

文献标识码: A

摘要: 目的：研究程序性细胞死亡因子4（programmed cell death 4,PDCD4）在吉西他滨诱导胰腺癌细胞凋亡中的作用。方法:用吉西他滨处理胰腺癌细胞PANC-1，荧光定量PCR和Western blot分别检测胰腺癌细胞中PDCD4的表达变化。PANC-1细胞感染PDCD4-pGC-Fu-GFP重组慢病毒和对照pGC-Fu-GFP重组慢病毒，荧光定量PCR和Western blot检测过表达效果。用吉西他滨处理过表达PDCD4的PANC-1细胞，MTT测定细胞增殖，克隆形成实验测定细胞克隆能力，流式细胞术测定细胞凋亡，Western blot检测细胞中剪切的Caspase-3（Cleaved Caspase-3）、剪切的Caspase-9（Cleaved Caspase-9）蛋白水平和胞浆、线粒体中细胞色素C（Cytochrome C）蛋白水平。结果:吉西他滨处理后的PANC-1细胞中PDCD4 mRNA和蛋白水平均明显升高。吉西他滨处理和过表达PDCD4的PANC-1细胞增殖、克隆形成能力明显降低，细胞凋亡率明显升高，细胞中Cleaved Caspase-3、Cleaved Caspase-9蛋白水平升高，胞浆中Cytochrome C蛋白水平也升高，线粒体中Cytochrome C蛋白水平降低。吉西他滨处理过表达PDCD4的PANC-1细胞增殖能力、克隆形成能力降低更多，细胞凋亡率更高，细胞中Cleaved Caspase-3、Cleaved Caspase-9蛋白水平也更高，胞浆中Cytochrome C蛋白水平更高，线粒体中Cytochrome C蛋白水平更低。结论:吉西他滨通过上调PDCD4表达水平激活线粒体途径诱导胰腺癌细胞凋亡。

Abstract: Objective:To study the role of PDCD4 in the apoptosis of pancreatic cancer cells induced by gemcitabine.Methods:Treatment of pancreatic cancer cell PANC-1 with gemcitabine,Fluorescence quantitative PCR and Western blot were used to detect the expression of PDCD4 in pancreatic cancer cells.PANC-1 cells infected with PDCD4-pGC-Fu-GFP recombinant lentivirus and control pGC-Fu-GFP recombinant lentivirus,Fluorescent quantitative PCR and Western blot were used to detect the overexpression.The PANC-1 cells expressing PDCD4 were treated with gemcitabine.MTT assay cell proliferation,clone formation experiment were used to determine the cell clone ability.Cell apoptosis was measured by flow cytometry.The levels of Cleaved Caspase-3,Cleaved Caspase-9 protein and Cytochrome C protein in cytoplasm and mitochondria were detected by Western blot.Results:PDCD4 mRNA and protein levels in gemcitabine treated PANC-1 cells increased significantly.After gemcitabine treatment and over expression of PDCD4,the proliferation and colony formation ability of PANC-1 cells were significantly reduced,and the rate of apoptosis was significantly increased,and the level of Cleaved Caspase-3 and Cleaved Caspase-9 protein increased in cells,the level of Cytochrome C protein in the cytoplasm also increased,the levels of Cytochrome C protein in mitochondria decreased.Gemcitabine reduced the proliferation and clone formation ability of PANC-1 cells expressing PDCD4,and the rate of cell apoptosis was higher.The levels of Cleaved Caspase-3 and Cleaved Caspase-9 protein in cells were also higher.The level of Cytochrome C protein in the cytoplasm was higher,and the level of Cytochrome C protein in mitochondria was lower.Conclusion:Gemcitabine induces apoptosis of pancreatic cancer cells by up regulating the expression level of PDCD4 and activating mitochondrial pathway.

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备注/Memo: -

更新日期/Last Update: 1900-01-01