PTEN基因通过Akt-mTOR对乳腺癌细胞增殖与凋亡的影响

《现代肿瘤医学》[ISSN:1672-4992/CN:61-1415/R] 期数: 2019年12期 页码: 2048-2051 栏目: 论著（基础研究） 出版日期: 2019-05-08

Title: **Effects of PTEN gene on proliferation and apoptosis of breast cancer cells by Akt-mTOR signaling pathway**

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关键词: PTEN基因; 乳腺癌; 细胞增殖; 细胞增殖; Akt-mTOR信号通路

Keywords: PTEN gene; breast cancer; cell proliferation; cell proliferation; Akt-mTOR signaling pathway

分类号: R737.9

DOI: 10.3969/j.issn.1672-4992.2019.12.004

文献标识码: A

摘要: 目的:探讨PTEN基因通过Akt-mTOR对乳腺癌细胞增殖与凋亡的影响。方法：人乳腺癌MDA-MB-231细胞随机分为两组：pcDNA3.0组与pcDNA3.0-PTEN组，分别转染pcDNA3.0质粒、pcDNA3.0-PTEN质粒2 μg，转染48 h收集细胞。采用CCK-8法检测细胞存活率，双染法检测细胞凋亡，Western-blot检测细胞蛋白表达。结果：pcDNA3.0-PTEN组的细胞存活率低于pcDNA3.0组，对比差异有统计学意义(P < 0.05)。与pcDNA3.0组对比，pcDNA3.0-PTEN组的细胞凋亡率显著上升，对比差异有统计学意义(P < 0.05)。pcDNA3.0-PTEN组的PTEN蛋白表达量高于pcDNA3.0组，Akt、mTOR蛋白表达量低于pcDNA3.0组，对比差异有统计学意义(P < 0.05)。结论：PTEN基因过表达可通过抑制Akt-mTOR信号通路，提高乳腺癌细胞凋亡指数，降低细胞增殖活性，从而发挥抑癌作用。

Abstract: Objective:To investigate the effect of PTEN gene on proliferation and apoptosis of breast cancer cells by Akt-mTOR signaling pathway.Methods:Human breast cancer MDA-MB-231 cells were randomly divided into two groups:pcDNA3.0 group,pcDNA3.0-PTEN group,respectively and were transfected with pcDNA3.0 plasmid,pcDNA3.0-PTEN plasmid of 2 μg.The cell viability was detected by CCK-8 method.Apoptosis was detected by double staining,and cell protein expression was detected by Western-blot.Results:The cell viability of the pcDNA3.0-PTEN group was lower than that of the pcDNA3.0 group,and the difference were statistically significant (P < 0.05).Compared with the pcDNA3.0 group,the apoptosis rates of the pcDNA3.0-PTEN group were increased significantly,and the difference was statistically significant (P < 0.05).The expression of PTEN protein in pcDNA3.0-PTEN group was higher than that in pcDNA3.0 group,and the expression of Akt and mTOR protein was lower than that in pcDNA3.0 group,and the difference was statistically significant (P < 0.05).Conclusion:Over-expression of PTEN gene can inhibit the Akt-mTOR signaling pathway,increase the apoptosis index of breast cancer cells and decrease the cell proliferation activity,and thus play a tumor suppressing effect.

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备注/Memo: 沈阳市科技计划项目（编号：F15-199-1-46）

更新日期/Last Update: 1900-01-01