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Notch1信号途径在食管鳞癌细胞中的激活及对细胞周期的影响

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Activation of Notch1 Signaling Pathway in Esophageal Squamous Cell Carcinoma

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摘要 目的 观察Notch1信号途径在食管鳞癌EC9706细胞中的激活状态及 其对细胞周期的影响。方法 通过免疫细胞化学 Notch1基因在 食管鳞癌细胞株EC9706细胞中的表达，并通过免疫荧光方法研究 Notch1基因在EC9706细胞中的激活状 利用CCK-8试剂检测
食管癌细胞的增殖状态。此外，采用RT-PCR和Western blot技术检 测与细胞周期相关基因的表达，最后通过流式细胞仪 索激 活的Notch1信号途径对细胞周期的影响。结果 转染pcNICD后的食 管鳞癌细胞株中发现Notch1基因的表达。免疫 显示，转染 pcNICD后的食管鳞癌细胞株中Notch1信号途径处于激活状态。与未处理和转染pcDNA3.1的EC9706细胞相 表达NICD的EC9706细 胞的生长速率明显受到抑制（$P<0.01$）。此外，与未处理的和转染pcDNA3.1的EC9706细胞相比 达NICD的EC9706细胞的CDK2, cyclin D1和E基因的mRNA和蛋白的表达明显下调（$P<0.05$）。转染pcNICD的EC9706 G0/G1期的比率高达74.5%，而未处理的和转染pcDNA3.1的EC9706细胞在G0/G1期的比率分别为 59.1%和59.0%。 分析显示瞬时表达NICD的EC9706细胞在G0/G1期比率的增加，提示激活的Notch1信号途径能够诱导细胞静止在G_0/G_1 期
Notch1信号途径的激活引起食管鳞癌细胞的细胞周期 静止，提示Notch1基因有可能成为治疗食管鳞癌的新靶点。

关键词： Notch1信号途径 细胞周期 pcNICD载体 EC9706细胞

Abstract: Objective To investigate the active status of Notch1 signaling pathway in esophageal squamous cell carcinoma (ESCC) and its effect on cell cycle. Methods The expression of Notch1 gene was detected by immunocytochemistry in EC9706 cells, and the active status of Notch1 signaling pathway was investigated by immunoflurescence. In addition, cell proliferation assay was performed using CCK-8 Kit. Proteins and mRNA of the genes related to cell cycle was studied by Western blot and RT-PCR techniques. Finally, cell cycle distribution was measured by flow cytometry (FCM). Results The expression of Notch1 gene was found in EC9706 cells transfected with pcNICD. Besides, the result of immunoflurecence revealed that Notch1 appeared to be expressed in the cytosol and nucleus, implying an activated status. EC9706 cells had an obvious decreased growth rate compared to the control EC9706 cells and EC9706 cells transfected with pcDNA3.1 ($p<0.01$). Furthermore, the mRNA and proteins expressions of the CDK2, cyclin D1 and cyclin E genes were significantly

decreased in the EC9706 cells transfected with pcNICD compared to those of the cells untreated and transfected with pcDNA3.1. There were higher proportions of cells (74.5%,$P<0.05$)in EC9706 cells transfected with pcNICD at G_0/G_1 phase than that in cells untreated (59.1%) and transfected with pcDNA3.1 (59.0%). Cell cycle distribution analysis demonstrated that the cell increased ($P<0.05$)at G0/G1 phase in the cells transiently expressing NICD, which suggested that active Notch1 signaling pathway induces G_0/G_1 cell cycle arrest in EC9706 cells.Conclusion Active Notch1 signaling pathway can obviously inhibit the growth of EC9706 cells, suggesting Notch1 gene may be a new target of treating esophageal squamous cell carcinoma.

Key words: Notch1 signaling pathway Cell cycle pcNICD vector EC9706 cell

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没有本文参考文献

[1] 周瑞娟;陈红风 . 中药影响乳腺癌细胞周期的研究进展[J]. 肿瘤防治研究, 2012, 39(1): 100-104.

[2] 汪长林;赵名;于晓妩;马健;张琪 . 2-氯脱氧腺苷(2-CDA)对人黑色素瘤细胞系A375生物学性质的影响[J]. 肿瘤防治研

[3] 陈香丽;张王刚;王连才;郭建民;张茵;马肖容;田玮 . IFN-γ对白血病细胞株FBL-3细胞生物学行为的影响 [J]. 肿瘤防治

[4] 王耕;黄韬;薛家鹏;王明华;惠震 . 三羟异黄酮对人乳腺癌MCF-7/ADM细胞体外抑瘤效应、细胞周期及凋亡的影响 [J

[5] 姜雪鹏;李晓林;邹小明 . Cyclin B1、CDK1在结直肠癌中的表达及其临床意义[J]. 肿瘤防治研究, 2011, 38(7): 796

[6] 景绍武;王雅棣;吴凤鹏;卢付河;韩春;刘青;程云杰. 三氧化二砷对食管癌细胞株Eca109的放射增敏作用及机制 [J]. 肿瘤

[7] 王玲;赵连梅;张超;单保恩;. 沉默p65基因对人乳腺癌细胞MDA-MB-231细胞周期的影响[J]. 肿瘤防治研究, 2011, 3

[8] 傅德皓;杨述华;肖宝钧. 大蒜素对骨肉瘤MG-63细胞系增殖和凋亡的影响 [J]. 肿瘤防治研究, 2011, 38(11): 1253-1