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敲低MSX2可抑制胰腺癌PANC-1细胞的上皮-间质转

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Title: Interfering expression of MSX2 gene suppresses epithelial-mesenchymal transitions in pancreatic cancer PANC-1 cells

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关键词: 胰腺癌; 干扰; 上皮间充质转化; MSX2
Keywords: pancreatic cancer; interference; epithelial-mesenchymal transitions; MSX2
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摘要:

目的　探讨MSX2基因在胰腺癌PANC-1细胞上皮-间质转化/间质-上皮转化（EMT/MET）相互转换中的作用。　方法　将含有MSX2干扰序列的质粒转染胰腺癌PANC-1细胞，利用Real-time RT-PCR、Western-blot等技术检测MSX2、EMT相关上皮标志分子E-cadherin、间质标志分子Vimentin在基因和蛋白水平的表达变化，利用CCK8、Transwell和划痕试验观察细胞的增殖、侵袭转移能力变化，利用RT-PCR初步探索敲低MSX2后EMT相关转录因子twist、snail、slug、zeb1等的表达变化，以寻找MSX2的下游靶基因。　结果　敲低MSX2后的PANC-1细胞增殖（$P<0.05$）、侵袭转移能力降低，EMT相关分子E-cadherin表达升高，而Vimentin表达降低，细胞形态由松散的长梭形变成紧密连接的椭圆形，细胞有发生MET转变趋势，RT-PCR发现敲低MSX2后转录因子twist和snail表达降低（$P<0.05$），而slug和zeb1表达变化无差异（$P>0.05$）。　结论　敲低MSX2可逆转PANC1细胞的EMT，促进MET发生，并且可降低PANC-1细胞的侵袭转移和增殖能力，MSX2可能通过twist、snail发挥其抑制作用。

Abstract: Objective To investigate the influence of interfering MSX2 on epithelial-

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mesenchymal transition (EMT) and mesenchymal-epithelial transition (MET) of pancreatic cancer PANC-1 cells with high metastatic ability, strong drug resistance and strong mesenchymal characteristics. Methods MSX2 shRNA was used to transfect PANC-1 cells with Lipofectamine 2000. Real-time RT-PCR and Western blotting were used to observe the MSX2, E-cadherin, and vimentin expression on gene and protein levels. CCK-8 assay was applied to assess the influence of MSX2 shRNA on cell growth. Cell invasion and metastasis capability was detected by wound scratch assay and Transwell assay. The expression of EMT-related transcription factors, twist snail, slug, and zeb1, was detected by RT-PCR. Results MSX2-specific shRNA reduced invasion, metastasis and proliferation of PANC-1 cells (P<0.05), and increased E-cadherin expression and decreased vimentin expression on gene and protein levels. MSX2 down-regulated cells changed morphology to cobblestone-like appearance, and got much more closely connected. RT-PCR found that the expression of twist and snail decreased (P<0.05), while that of slug and zeb1 had no difference (P>0.05) after interference of MSX2. Conclusion Down-regulation of MSX2 can reverse EMT, induce MET, and reduce invasion, metastasis and proliferation of PANC1 cells, which may involves transcription factor twist and snail.

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