

论著

## STAT3基因RNAi诱导肝癌细胞凋亡及对STAT3信号转导相关基因表达的影响

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**摘要** 背景与目的: 探讨STAT3基因RNAi对人肝癌细胞SMMC7721凋亡的影响, 及对STAT3信号转导相关基因表达的影响, 为STAT3信号通路的肿瘤靶向治疗提供理论依据。材料与方法: 采用RNAi技术特异性沉默SMMC7721细胞中STAT3的表达, 通过Western blot技术检测经RNAi作用后SMMC7721细胞STAT3蛋白表达水平的变化。采用透射电镜和流式细胞术检测经RNAi沉默SMMC7721细胞中STAT3的表达后, 对细胞凋亡的影响。通过半定量RT-PCR法检测细胞凋亡相关因子bcl-2和survivin基因表达的变化。结果: STAT3基因RNAi可有效沉默SMMC7721细胞中STAT3的表达( $P<0.05$ )。STAT3的表达被RNAi沉默后, SMMC7721细胞凋亡率较对照组明显增加( $P<0.01$ ), 且SMMC7721细胞bcl-2和survivin mRNA的表达水平均受到明显抑制, 与对照组间的差异均具有统计学意义( $P<0.01$ )。结论: STAT3基因RNAi可有效沉默SMMC7721细胞中STAT3的表达, 诱导SMMC7721细胞凋亡, 下调SMMC7721细胞bcl-2、survivin mRNA的表达。

关键词 [RNA干扰](#) [STAT3](#) [肝癌](#) [信号转导](#) [细胞凋亡](#)

## Effects of RNAi Targeted to STAT3 on Apoptosis Induction and on STAT3 Signaling in Human Hepatocellular Carcinoma Cells

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**Abstract** BACKGROUND AND AIM: To investigate the effects of RNAi targeted to STAT3 on apoptosis induction and on STAT3 signaling in human hepatocellular carcinoma cell line SMMC7721. The research provided theoretical and experimental basis for further development and clinical application of targeting STAT3 signaling pathway therapy for cancer. MATERIALS AND METHODS: Applying RNAi technique to specifically silence STAT3 gene in SMMC7721 cells, and expression of STAT3 protein in cells was determined by Western blot. Effect of RNAi on SMMC7721 apoptosis was determined by flow cytometry. Expressions of apoptosis-associated genes survivin and bcl-2 were determined by semi-quantitative RT-PCR. RESULTS: RNAi technology could effectively and specifically silence the expression of STAT3. Compared to the control group, the apoptosis rate was significantly increased after RNAi silencing STAT3 ( $P<0.01$ ). Expressions of survivin and bcl-2 mRNA were significantly inhibited compared to the control group ( $P<0.01$ ). CONCLUSION: RNAi technology targeted to STAT3 could effectively silence STAT3 expression in SMMC7721. RNAi targeted to STAT3 induced apoptosis by down-regulating the expressions of bcl-2 and survivin mRNA.

**Keywords** [RNAi](#) [STAT3](#) [hepatocellular carcinoma](#) [signal transduction](#) [apoptosis](#)

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