

423~427. 靶向hTERT的RNAi载体的构建及其对大肠癌SW-480细胞增殖的影响[J]. 孙彦, 孟永亮. 中国肿瘤生物治疗杂志, 2014, 21(4)

靶向hTERT的RNAi载体的构建及其对大肠癌SW-480细胞增殖的影响 [点此下载全文](#)

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基金项目: 山东万杰医学院校级课题 (No. X10ZK02)。

DOI: 10.3872/j.issn.1007-385X.2014.4.012

摘要:

目的: 构建靶向人大肠癌细胞端粒酶逆转录酶 (human telomerase reverse transcriptase, hTERT) 基因的RNAi载体, 探讨其对人大肠癌SW480细胞增殖的影响。方法: 设计3条靶向hTERT的shRNA序列和阴性对照序列, 分别克隆入pGPU6/GFP/Neo载体, 构建RNAi载体pGPU6-hTERT-1、2、3和阴性对照载体pGPU6-hTERT-NC, 转染SW480细胞。RT-PCR检测各组载体对hTERT mRNA表达的影响, MTT法检测下调hTERT mRNA表达对SW480细胞增殖的影响。结果: 成功构建3个携带hTERT mRNA序列的重组载体, 3种RNAi载体均能明显抑制SW480细胞hTERT mRNA的表达, pGPU6-hTERT-3组SW480细胞hTERT mRNA表达水平较空白对照组下调最为显著 (0.347 ± 0.028 vs 0.513 ± 0.032 , $P < 0.01$)。转染3种RNAi载体均能明显抑制SW480细胞增殖, pGPU6-hTERT-3组细胞增殖抑制率较空白对照组、脂质体对照组和pGPU6-hTERT-NC组升高最为显著 [$(50.08 \pm 0.43)\%$ vs $(4.11 \pm 0.39)\%$ 、 $(3.88 \pm 0.35)\%$ 、 $(3.38 \pm 0.35)\%$, $P < 0.05$]。结论: 转染RNAi载体pGPU6-hTERT-3能够抑制SW480细胞的增殖, 其机制可能与降低hTERT基因的表达从而抑制端粒酶活性有关。

关键词: [大肠癌](#) [RNA干扰](#) [人端粒酶逆转录酶](#) [SW-480细胞](#) [增殖](#)

Effect of RNAi-mediated silencing of the human telomerase reverse transcriptase gene on colorectal cancer cell proliferation in vitro [Download Fulltext](#)

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Fund Project: Project supported by the Shandong Wanjie Medical School Subject (No. X10ZK02)

Abstract:

Objective: To construct an optimized human telomerase reverse transcriptase (hTERT) gene-specific RNAi and to evaluate its effect on human colon cancer cell proliferation in vitro. Method: Three hTERT-specific RNAi sequences and a negative control (NC) or scrambled sequence were cloned, respectively, into a pGPU6/GFP/Neo vector to generate pGPU6-GFP-hTERT-1, pGPU6-GFP-hTERT-2, pGPU6-GFP-hTERT-3 and pGPU6-GFP-NC. Human colon cancer SW480 cells were transfected with these vectors respectively. At 24, 48 and 72 h after transfection, hTERT mRNA abundance was assessed by RT-PCR and cell viability by MTT assay. Results: The 3 hTERT-specific RNAi vectors constructed were all effective to silence the hTERT gene; hTERT mRNA abundance in SW480 cells transfected with pGPU6-GFP-hTERT-3 was significantly lower than that in SW480 cells transfected with pGPU6-GFP-NC (0.347 ± 0.028 vs 0.513 ± 0.032 , $P < 0.01$). All the three hTERT sequence-specific RNAi vectors were effective to inhibit the proliferation of SW480 cells; cellular proliferation inhibition rate in SW480 cells of pGPU6-GFP-hTERT-3 group was significantly increased than that of blank control, liposomal and NC group [$(50.08 \pm 0.43)\%$ vs $(4.11 \pm 0.39)\%$, $(3.88 \pm 0.35)\%$ and $(3.38 \pm 0.35)\%$; $P < 0.05$]. Conclusion: RNAi-mediated hTERT gene silencing results in colon cancer cell growth inhibition and may offer a novel therapy for colon cancer.

Keywords: [colorectal cancer](#) [RNA interference](#) [human telomerase reverse transcriptase](#) [SW-480 cell](#) [proliferation](#)

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