Tumori, 96: 744-750, 2010

Suppression of TSPAN1 by RNA interference inhibits proliferation and invasion of colon cancer cells in vitro

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ABSTRACT

Aims and background. To investigate effect of TSPAN1 downregulation by RNA interference (RNAi) on proliferation and invasion of human colon cancer cells *in vitro*.

Methods and study design. RNAi was performed using the vector (pU6H1-GFP)-based small-interfering RNA (siRNA) plasmid gene silencing system to specifically knock down TSPAN1 expression in a colon cancer cell line, HCT-8. The expression of TSPAN1 mRNA was detected by reverse-transcription polymerase chain reaction. TSPAN1 protein expression was observed using Western blots and immunofluorescent microscopy. Cell proliferation and cell cycle assay were measured using methyl thiazolyl tetrazolium (MTT) and flow cytometry, respectively. The invasive ability of HCT-8 cells was examined using a duel culture chamber separated by polycarbonate membranes coated with Matrigel (8.0-μm pore size).

Results. After transfection with the TSPAN1 siRNA plasmid, TSPAN1 mRNA and protein expression was significantly decreased. The decrease in mRNA and protein was associated with a significant decrease in TSPAN1 fluorescent staining and a decrease in cell proliferation due to cell cycle arrest in the G1/G0 phase. A significant decrease in the number of invading HCT-8 cells was associated with these changes.

Conclusion. RNAi-mediated downregulation of TSPAN1 expression significantly inhibits the proliferation and invasion of colon cancer cells *in vitro*. This finding suggests that TSPAN1 plays an important role in colon cancer progression, and RNAi targeting of TSPAN1 may be a potential therapeutic strategy for the treatment of colon cancer. Free full text available at www.tumorionline.it

Key words: TSPAN1, colorectal cancer, invasion, MTT, RT-PCR, immunofluorescence, cell cycle.

Acknowledgments: This work was supported by the University High-New-Tech Development Foundation of Jiangsu Province (No. JHO2-118), Natural Science Foundation of Jiangsu Province (BK2006058) and National Natural and Science Foundation (30771126, and 30772106). The authors thank Dr T FitzGibbon for comments on earlier drafts of the manuscript.

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Received October 14, 2009;
accepted May 18, 2010.