Effect of RNAi-mediated silencing of Livin gene on biological properties of colon cancer cell line LoVo

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ABSTRACT. This study aimed to investigate the effect of RNAi-mediated silencing of the Livin gene on biological properties of the colon cancer cell line LoVo. Interference vectors pSilencer4.1-L1 and pSilencer4.1-L2 targeting the Livin gene were constructed and transfected into LoVo cells. The expression of the Livin gene was determined by RT-PCR and Western blotting. The apoptosis, cell cycle, colony formation, proliferation of LoVo cells, as well as their sensitivity to cisplatin, were detected by flow cytometry, colony formation assay and MTT. Livin mRNA and protein expression in LoVo cells could be effectively silenced by pSilencer4.1-L1 but not pSilencer4.1-L2. In the pSilencer4.1-L1 transfection group, the apoptosis rate of LoVo cells was significantly higher than in the control group (24.2 ± 3.2 vs 8.1 ± 1.4%, P < 0.01), and after 72 h, cell proliferation was clearly decreased (about 70% inhibition). Compared with the control group, the colony formation rate in pSilencer4.1-L1 transfection group was obviously decreased (15...
± 4.6 vs 85 ± 5.8%, P < 0.01), with increased proportion of S phase cells (45.7 ± 4.9 vs 28.0 ± 3.0%, P < 0.01), decreased proportion of G1 phase cells (43.0 ± 5.2 vs 62.8 ± 5.1%, P < 0.01), and increased sensitivity to cisplatin (apoptosis rate increased from 43.4 ± 6.9 to 65.3 ± 6.2%, P < 0.01). pSilencer4.1-Ll can effectively silence Livin gene expression in LoVo colon cancer cells, inhibit cell proliferation and colony formation, induce apoptosis, and enhance sensitivity to cisplatin.

**Key words:** Livin gene; Silencing; Biological properties; LoVo