Effect of ABCE1-silencing gene, transfected by electrotransfer, on the proliferation, invasion, and migration of human thyroid carcinoma SW579 cells

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ABSTRACT. We investigated the effect of an ABCE1-silencing gene on the proliferation, invasion, and migration of human thyroid carcinoma SW579 cells. We designed and synthesized targeted ABCE1-siRNA sequences and a negative control sequence (NC-siRNA), and transfected them into human thyroid cancer SW579 cells by electrotransfer to obtain ABCE1-SW579 and NC-siRNA-SW579 cells (siRNA is small interfering RNA). Through reverse transcription polymerase chain reaction and western blotting analysis, ABCE1 mRNA and protein expression levels in the electrotransferred cells were detected, and flow cytometry was used to detect cell cycle and apoptosis. The cell counting kit-8 (CCK-8) proliferation assay, the scratch healing assay, and the cell invasion assay were used to measure cell proliferation, migration, and invasion capabilities, respectively. Compared with NC-siRNA-SW579 and Ctrl-SW579 groups, ABCE1 mRNA and protein expression levels in the ABCE1-SW579 cells were significantly
reduced. The growth rate of ABCE1-SW579 cells was significantly inhibited, the cell cycle was arrested in the G0/G1 phase, and the number of cells in the S phase was reduced. Compared with the Ctrl-SW579 group, the cell apoptosis rate in the ABCE1-SW579 group was significantly higher (P < 0.01), and proliferation, migration, and invasion were significantly reduced (P < 0.05). Expression of the ABCE1-silencing gene, transfected by electrotransfer, could inhibit the proliferation, invasion, and migration of thyroid cancer cells.

**Key words:** Cell proliferation; Thyroid cancer; ABCE1; Electrotransfer; SW579 cells