Downregulation of microRNA-630 inhibits cell proliferation and invasion and enhances chemosensitivity in human ovarian carcinoma

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ABSTRACT. MicroRNAs (miRNAs) are a family of small non-coding RNAs (approximately 21-23 nt long) that can target genes for either degradation of mRNA or inhibition of translation. miRNAs have not been comprehensively studied in human epithelial ovarian carcinoma (EOC). MicroRNA-630 (miR-630) has been frequently observed to be aberrantly expressed in various types of tumors. The present study explored the functions of miR-630 in the proliferation, apoptosis, chemosensitivity, and invasion of EOC. Using real-time polymerase chain reaction, we detected the miR-630 expression in cancerous, benign, and normal human ovarian tissues. Then, we evaluated the role of miR-630 in cell proliferation, chemosensitivity, apoptosis, and invasion by using the Cell Counting Kit-8, Annexin-V/FITC, and transwell assay on A2780 and SKOV3 cells. Western blotting was performed for analyzing the phosphatase and tensin homolog gene (PTEN) protein expression.
The miR-630 expression level was higher in ovarian cancerous tissues than in benign and normal ovarian tissues. Decreased expression of miR-630 suppressed EOC cells’ proliferation, migration, and invasion as well as significantly enhanced cell apoptosis and chemosensitivity to cisplatin. Furthermore, PTEN expression was increased in A2780 cells transfected by miR-630 inhibitor in comparison with inhibitor-negative control-transfected cells. In conclusion, downregulation of miR-630 dramatically increased apoptotic cell death chemosensitivity to cisplatin and decreased the proliferation, invasion, and migration of EOC cells. MiR-630 may thus play an important role in the biological behaviors of EOC cells through negative control of the PTEN expression.

**Key words:** MicroRNA-630; Proliferation; Invasion; Chemosensitivity; Phosphatase and tensin homolog; Epithelial ovarian cancer