Mechanisms, therapeutic targets of microRNA-associated chemoresistance in epithelial ovarian cancer

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Epithelial ovarian cancer (EOC) is the most lethal disease among gynecologic malignancies. Patients with an advanced disease often relapse due to the development of chemoresistance. Chemotherapy failure is a consequence of acquired drug resistance which may potentially be due to multiple mechanisms including miRNA-mediated gene regulation.

This review provides an overview of current therapeutic targets of miRNA-associated chemoresistance in EOC and illustrates the therapeutic potential and molecular mechanisms by which miRNAs influence the development and reversal of chemoresistance.

There are five major ways of miRNAs involved in chemoresistance. First, some miRNAs mediate the cell cycle by negatively regulating the cell cycle promoting genes associated with chemoresistance. Second, several miRNAs may regulate cell apoptosis by targeting apoptotic mRNA. Third, miRNAs influence the cellular level of drug transporters. Fourth, miRNAs play tumor suppressor and oncogenic-like roles in developing chemoresistance. Fifth, miRNAs target signaling molecules involved in the signaling pathway and have a crosstalk between multi-signaling pathways in mediating chemoresistance.

Based on these findings, miRNAs may, therefore, act as useful therapeutic agents in sensitizing or reversing drug resistance in a disease such as EOC.

More information: Lingyun Zhang et al, Mechanisms and Therapeutic Targets of microRNA-associated Chemoresistance in Epithelial Ovarian Cancer, *Current Cancer Drug Targets* (2016). DOI: 10.2174/1568009616666160404121105

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