

Potential targets of hsa-miR-200c-3p microRNA in cisplatin-resistant ovarian cancer

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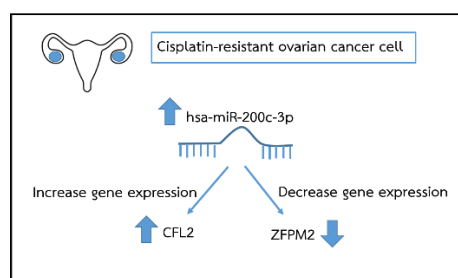
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Abstract: Cisplatin is one of the standard chemotherapy for the ovarian cancer. In this study, we aimed to investigate the microRNAs and its targets that associated with cisplatin resistance ovarian cancer. We retrieved public data from Gene Expression Omnibus (GEO); GSE58469, GSE120256, GSE161784 (The ovarian cancer cell line IGROV-1, OV2008, A2780 and cisplatin-resistant clone IGROV-1/Pt1, C13K, A2780CIS, respectively) and GSE148251 (The ovarian cancer cell line from a Caucasian patient diagnosed for serous ovarian adenocarcinoma and sublines resistant to cisplatin) for the initial analysis. The miRNA profiling in cisplatin-resistant ovarian cancer studies were extracted. The significant differential miRNA expression in at least two out of the four datasets were used in the subsequent analysis. The results showed that hsa-miR-200c-3p was significantly up-regulated in dataset GSE120256 and GSE161784. We predicted potential miRNA targets using miRDB, miRanda, RNA22, miRWalk, and TargetScan. There were 1,592 genes identified in at least four of the five prediction programs. SpidermiR was used to confirm the predicted genes interacting with hsa-miR-200c-3p. The targets then narrowed down to 43 validated genes. Additional transcriptomic dataset, GSE51683 (The ovarian cancer cell line A2780 and cisplatin-resistant clone A2780C20), was used to validate the presence of target genes in cisplatin-resistant cell line. We found that ZFPM2 (Zinc Finger Protein, FOG Family Member 2) and CFL2 (Cofilin 2) were down-regulated and up-regulated in cisplatin-resistant cell line, respectively (p -value < 0.05, |fold-change| > 3). In conclusion, the ZFPM2 and CFL2 are the potential targets of hsa-miR-200c-3p. Further experiments should focus on the roles of the target genes in the cisplatin-resistant ovarian cancer.



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Graphical abstract:



Keywords: Cisplatin-resistant ovarian cancer; MicroRNA; MicroRNA target gene

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