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Identification of miR-29c/FBXO31 as a key regulatory mechanism in esophageal cancer chemoresistance

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Esophageal cancer ranks as the 6th most frequent cause of cancer death in the world. Chemoresistance is a major obstacle in cancer therapy, but the mechanism remains unclear. MicroRNAs have received increasing attention as a novel and promising targets in cancer diagnosis, prognosis and treatment. Identification and experimental validation of the chemoresistance-related miRNAs in esophageal cancer are urgently needed. We have established esophageal squamous cell carcinoma (ESCC) cell line models of acquired chemoresistance to 5-FU (FR sublines). MicroRNA profiling and subsequent RT-PCR confirmation showed that miR-29c was one of the most down-regulated miRNA in FR sublines. We found that miR-29c overexpression could revert acquired chemoresistance of FR cells, and that lower miR-29c expression in ESCC was associated with poor survival of patients. FBXO31, a novel F Box protein with prognostic significance in ESCC, was amongst the upregulated mRNAs identified in the FR cells using cDNA microarray and was predicted by comtputational algorithms to be a target of miR-29c. Our data showed that FBXO31 increased chemoresistance of ESCC cells *in vitro* and *in vivo*, and that ectopic expression of miR-29c significantly reduced FBXO31 expression. More importantly, FBXO31 mediated the functions of miR-29c in chemoresistance of ESCC cells. In summary, this study greatly enhances our understanding of the functions of miR-29c and FBXO31 in esophageal cancer; their significance in diagnosis, prognosis and treatment warrants further investigation.

Biography

Bin Li has completed his PhD from University of Hong Kong, and his PhD research focused on the role of Id1 in activating PI3K/AKT signaling pathway and promoting esophageal cancer progression. He is currently a Postdoctoral research scientist, and he has established highly chemoresistant and metastatic esophageal cancer cell models. His current research interests include functional identification and characterization of novel genes/miRNAs associated with chemoresistance and metastasis, the mechanistic study and targeted therapy; identification and characterization of esophageal cancer stem cells. He has over ten peer-reviewed research papers published in reputed journals.

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