The Studies of Biological Function and Downstream Regulation of Desmocollin-2 (DSC2) Gene in Lung Cancer Cells

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ABSTRACT

Lung cancer is the most common cause of cancer death in the world, lung cancer patients died mainly due to metastasis, the lack of treatment of lung cancer diagnostic biomarkers transfer. Thus lung metastasis has been a major research goal. Desmosome are cell adhesion structures, many research now believe desmosome is the signal center. Desmocollin-2 (DSC2) is a transmembrane protein as the one of main component of the desmosomal proteins, major distribution in the epithelial cells. Recent studies indicate DSC2 in colorectal cancer, stomach cancer, oral cancer, esophageal cancer, and have proven DSC2 expression reducing cancer cell proliferation, metastasis, invasion. However, the role of the DSC2 gene in lung cancer cells is still unclear. Therefore, this study examines the DSC2 whether affect the development of lung cancer. Using real-time PCR and Western blot analysis DSC2 in CL1-0, CL1-5 and A549 lung cancer cell line mRNA and protein expression levels, the results indicate CL1-0 DSC2 expression than CL1-5 and A549 higher. Preliminary evidence in various cancer cell lines, DSC2 expression is different. Using CL1-0 cell line inhibition by shRNA after analysis of gene function DSC2. The results demonstrate inhibition DSC2 could promote cell proliferation, migration and invasion capabilities, and also lead to cell epithelial to mesenchymal transition (EMT) phenomenon. DSC2 expressed in tumor development plays an important role. In order to understand how DSC2 affects cell proliferation, migration and invasion capacity, we used microarray assay method of analysis found DSC2 possible by adjusting: 1. MMP10, SHISA3, NDRG1 and SLIT2 performance may affect cell metastasis. 2. Desmosome other components of the protein JUP, PKP2, DSP, DSC3, DSC1 DSG2 performance and impact of cell adhesion and movement. 3. EGFR and DLC1 expression may affect cell growth. 4. IL18 and SOX4 performance may affect apoptosis. This study further explored DSC2 regulatory mechanisms in lung cancer patients for future treatment and management is a great help.

Keywords : DSC2、Lung cancer、Proliferation、Metastasis、Invasion、EMT、Microarray

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