MICRORNA-29A SUPPRESSES GROWTH, MIGRATION AND INVASION OF LUNG ADENOCARCINOMA BY TARGETING CARCINOEMBRYONIC ANTIGEN-RELATED CELL ADHESION MOLECULE 6

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Aim: Carcinoembryonic antigen-related cell adhesion molecule (CEACAM)6 is the important regulator in cell adhesion, invasion and metastasis. MicroRNAs (miRNAs), a group of small non-coding RNAs that regulate the expression of many genes can act as oncogenes and tumor suppressors. The aim of this study was to evaluate the functional roles of CEACAM6 in lung adenocarcinoma and to identify miRNAs that could inhibit the growth, migration and invasion of lung adenocarcinoma by targeting CEACAM6.

Methods: The expression of CEACAM6 in lung adenocarcinoma tissues was detected by immunohistochemistry. Cell proliferation, migration and invasion assays in A549 cell lines were performed in vitro and the A549 xenograft models were used for in vivo analysis. Bioinformatics prediction, western blot and luciferase assay were identified the target of miRNA.

Results: Patients with low expression of CEACAM6 protein had significant longer overall survival, compared with those with high expression of CEACAM6 protein. The knockdown of CEACAM6 suppressed cell proliferation, migration and invasion, whereas CEACAM6 overexpression increased proliferation, migration and invasion in vitro. These findings are consistent with results of in vivo xenograft experiments. The relative luciferase activity was significantly decreased by miR-29a that was potentially targeting CEACAM6 using miRNA target predicting program in A549 cells co-transfected with wild type CEACAM6-3’-UTR, whereas the luciferase activity was not suppressed by the vector containing the mutant 3’-UTR or negative vector. Furthermore, miR-29a suppressed cell proliferation, migration and invasion in vitro and inhibited tumor growth of lung adenocarcinoma in vivo.

Conclusions: miR-29a can suppress tumor growth, migration and invasion of lung adenocarcinoma by targeting CEACAM6, which may provide a potential therapeutic target for treatment of lung adenocarcinoma.

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