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Hsa-miR-329 Functions as a Tumor Suppressor through Targeting MET in Non-Small Cell Lung Cancer

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Abstract : MicroRNAs (miRNAs) act as key regulators of multiple cancers. Hsa-miR-329 (miR-329) functions as a tumor suppressor in some malignancies. However, its role on lung cancer remains poorly understood. In this study, we investigated the role of miR-329 on the development of lung cancer. The results indicated that miR-329 was decreased in primary lung cancer tissues compared with matched adjacent normal lung tissues and very low levels were found in a non-small cell lung cancer (NSCLC) cell lines. Ectopic expression of miR-329 in lung cancer cell lines substantially repressed cell growth as evidenced by cell viability assay, colony formation assay and BrdU staining, through inhibiting cyclin D1, cyclin D2, and up-regulatiing p57(Kip2) and p21(WAF1/CIP1). In addition, miR-329 promoted NSCLC cell apoptosis, as indicated by up-regulation of key apoptosis gene cleaved caspase-3, and down-regulation of anti-apoptosis gene Bcl2. Moreover, miR-329 inhibited cellular migration and invasiveness through inhibiting matrix metalloproteinases (MMP)-7 and MMP-9. Further, oncogene MET was revealed to be a putative target of miR-329, which was inversely correlated with miR-329 expression. Furthermore, down-regulation of MET by siRNA performed similar effects to over-expression of miR-329. Collectively, our results demonstrated that miR-329 played a pivotal role in lung cancer through inhibiting cell proliferation, migration, invasion, and promoting apoptosis by targeting oncogenic MET.

Keywords : hsa-miRNA-329(miR-329), MET,non-small cell lung cancer (NSCLC), proliferation, apoptosis
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