学位論文内容の要旨

Dissertation Abstract

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学 位 論 文 題 名

Functional analysis of miR-199a-3p in tumor endothelial cells

（ 腫瘍内皮細胞における miR-199a-3p の機能解析 ）

Keywords(5) miR-199a-3p , Tumor endothelial cells , CD151 , angiogenesis , Cell migration and invasion

Tumor endothelial cells (TECs) are known to play a key role in tumor growth and metastasis, exhibiting distinct phenotypic and functional features compared to normal endothelial cells (NECs). Although microRNAs (miRNAs) have been reported to play diverse roles in tumor progression, the differences in miRNA expression profiles between TECs and NECs and their roles in TEC phenotype remain unclear.

In this study, we isolated NECs and TECs from non-tumor and tumor regions of human renal cancer tissues and conducted miRNA array analysis. Among 13 differentially expressed miRNAs, miR-199a-3p was the most highly expressed in TECs. Overexpression of miR-199a-3p in NECs significantly enhanced their proliferation, migration, and invasion.

Target gene analysis using four databases identified CD151 as a potential target of miR-199a-3p. CD151 expression level was downregulated in TECs compared to NECs, and miR-199a-3p–transfection decrease CD151 expression level in NECs. CD151 knockdown by siRNA promoted cell proliferation, migration, invasion, and reduced cell adhesion to extracellular matrix. In addition, both miR-199a-3p overexpression and CD151 silencing upregulated MMP2 expression in TECs.

These results suggest that miR-199a-3p is involved in proangiogenic phenotype in TECs by suppressing CD151 expression.