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MicroRNA106a regulates matrix metalloprotease 9 in a sirtuin-1 dependent mechanism

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Abstract

Cellular migration is important during many physiological as well as pathological conditions and is regulated very tightly by an intricate network of signaling and effector molecules. One of the important players during cellular migration are matrix metalloproteases and their levels have been reported to be important in determining the cellular migratory properties during metastasis. MMPs and regulators of MMPs therefore, present themselves as potent candidates for manipulation, to control conditions where they get dysregulated. Micro RNAs are a group of micro regulators that can modulate expression of a gene through transcriptional and post transcriptional regulations. Owing to the fact that many microRNAs have already been reported to regulate MMPs and that miR106a, a member of oncomir17 family has been implicated in metastatic conditions, the present study intended to analyze if miR106a can regulate levels of MMP9, an important inducible matrix metalloproteinase. The results of the in vitro experiments demonstrated that under conditions of migration cells showed elevated levels of miR106a, which could regulate the expression of major MMP9 regulator, SIRT-1. Decreased levels of SIRT1thus resulted in an increase in the expression and activity of MMP9. Over expression and mRNA stability studies carried out also suggested regulatory role of miR106a. The overall results thus suggested that the levels of miR106a gets modulated during cellular migration, causing a change in the levels of SIRT-1 mRNA by affecting its stability and the levels of SIRT-1 in turn can regulate the levels of MMP9.

Keywords: SIRT1; matrix metalloprotease 9; miRNA 106a; migration.

Related information

GEO Profiles
Gene
Gene (GeneRIF)
MedGen
Nucleotide (RefSeq)

Nucleotide (RefSeq)
Nucleotide (Weighted)
Protein (RefSeq)
Protein (Weighted)
PubChem Compound (MeSH Keyword)
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