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THE ROLE OF MICRO-RNA IN FIBRINOLYSIS

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Introduction

Micro-RNAs (miRNAs) were defined as small endogenous non-coding RNAs consisting of 18-24 nucleotides, responsible for the gene expression and involved in many cellular processes (Figure 1). The expression of the enzyme plasminogen activator inhibitor-1 (PAI-1), the main modulator of thrombosis, fibrinolysis, inflammation, angiogenesis and atherogenesis, encoded by SERPINE-1 locus, has been recently discovered to be inhibited or stimulated by different miRNAs [1]. The exact role of miRNA as biomarkers and treatment targets of fibrinolysis disorders remains the subject of continuous research.

Keywords

fibrinolysis, miRNA.

Purpose

To study the literature data regarding the role of miRNA in the processes of fibrinolysis for identifying the possible diagnostic and therapeutic strategies.

Material and methods

There were analyzed: Wiley Online library, Crossref, Google Scholar databases, using the combination of the terms “miRNA in fibrinolysis”, “regulation of plasminogen activator inhibitor-1” in the articles published between years 2012-2020.

Results

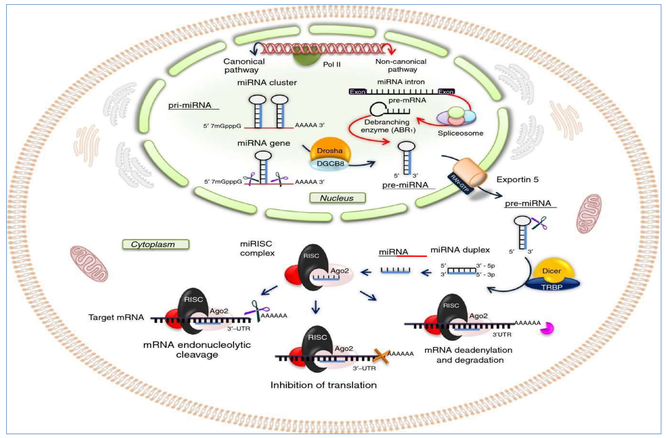

Figure 1. Micro-RNA (miRNA) mechanisms of target regulation [2]

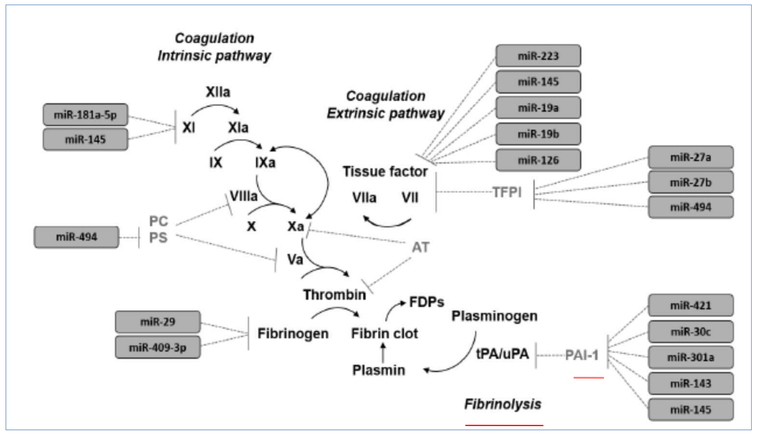

Figure 2. Micro-RNAs reported to regulate coagulation and fibrinolysis pathways [3]

Table 1. miRNAs as biomarkers and treatment targets

miRNAs activity	The effect descovered
miR-421 and miR-30c, by exerting direct inhibition in the 3-UTR of SERPINE-1 mRNA	Inhibition of PAI-1 in human umbilical vein enothelial cell (HUVECs) and pulmonary endothelial cells [4]
Serum elevation of miR-320a, miR-320b, miR-424-5p, miR-532 in deep vein thrombosis (DVT)	Potential biomarker of DVT [5]
Overexpression of miR-150, miR-126, miR-21	Resolution of experimental venous thrombosis [6, 7, 8]
Inhibition of miR-483-3p	

Conclusions

A number of miRNAs were suggested both as potential biomarkers for the diagnosis of thrombotic disorders, and as a treatment perspective for venous thrombosis.

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