



MICRO-RNA (miRNA) ASPECTS IN CARDIOVASCULAR DISEASES

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Introduction

MiRNA is involved in the evolution of heart diseases through regulation of gene expression with the development of pathological phenotype. Deviations of miRNA expression were described in various cardiovascular conditions, including cardiac hypertrophy, coronary heart disease, myocardial infarction.

Keywords

Biomarker, miRNA/miR, antagomiR, expression.

Purpose

Studying the types, location, role of intracellular miRNA and blood microparticles, as well as identifying their correlations with the development of cardiac pathological processes.

Material and methods

The references in the international scientific literature, such as the databases of the PubMed and Springer Link electronic libraries were examined.

Results

MiRNAs are found in circulating vesicles and serve as potential biomarkers for various cardiovascular pathologies. The most expressed miRNAs in the heart diseases are *miR-1*, *miR-133*, *miR-208* and *miR-499*, such as follows:

| miR type | Targets | Associated diseases |
|----------|--------------------------------------|---|
| miR-1 | Heat shock protein HSP-60 | Cardiac hypertrophy, myocardial infarction, arrhythmias |
| miR-133 | 3' UTR of mRNAs | Cardiac hypertrophy |
| miR-208 | Programmed cell death protein PDCD-4 | Coronary heart disease, myocardial infarction |
| miR-499 | Transcription factor SOX-6 | Acute myocardial infarction |

Table 1. Type of miR and associated heart diseases

Increased miRNA expression is reduced by the administration of chemical competitive inhibitors (*antagomiR*) specific to these molecules, that prevent the binding of a desired situs on a mRNA molecule.

Conclusions

MiRNA regulates gene expression in cells and ensures intercellular communication. Circulating miRNAs are used as *biomarkers* in the diagnosis and prognosis of cardiovascular pathologies.