



20. THE INVOLVEMENT OF micro-RNAs IN CARDIOVASCULAR PATHOLOGIES

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Introduction. Micro-RNAs are short molecules of ribonucleic acid with significant regulatory functions in controlling gene expression within eukaryotic cells. These small molecules play a crucial role in post-transcriptional regulation, influencing various cellular processes. Currently, circulating miRNAs are recognized as potential diagnostic biomarkers and emerging therapeutic targets for cardiovascular diseases. Their stability in body fluids and differential expression patterns in various cardiac conditions make them promising candidates for further research and clinical applications in the field of cardiology.

Aim of study. Understanding the involvement of miRNAs in cardiovascular disease development is crucial for enhancing diagnostic precision, predicting disease progression, and pinpointing effective therapeutic targets. This exploration aims to refine diagnosis, prognosis, and therapeutic strategies in the managing cardiovascular conditions.

Methods and materials. A comprehensive literature review has been performed, covering the past decade and incorporating information from 30 sources. These sources encompassed materials from the Scientific Medical Library of "*Nicolae Testemitanu*" State University of Medicine and Pharmacy. Additionally, electronic libraries, including PubMed, Elsevier, Cambridge Journals Online, Hinari, Medline and MedScape have been utilized to gather relevant data.

Results. Several studies have underscored the pivotal role of micro-RNAs in both diagnosing and treating cardiovascular diseases. Notably, elevated levels of miRNA-636, miRNA-380, and miRNA-17 have been observed in the plasma of individuals experiencing acute myocardial infarction (AMI). Additionally, miRNA-126, miRNA-37, and miR-221 show increased levels in heart failure patients. Furthermore, the prognostic efficacy of miRNA-182 surpasses that of natriuretic peptide and high-sensitivity C-reactive protein in heart failure (HF). Other studies have shown that MiR-499 had a more precise and significantly higher predictive value than the most reliable biomarkers for AMI: c troponin I (cTnI) and creatinkinase MB (CK-MB). In mouse models, intramyocardial injection of vesicles containing miRNA-99 has demonstrated a preventive effect on hypoxia-induced apoptosis and promoted autophagy. This intervention has resulted in improved left ventricular function and increased survival during four weeks after AMI.

Conclusion. Presently, miRNAs have the potential to be employed for diagnostic and therapeutic purposes in various cardiovascular diseases. They exert their influence on specific cellular pathways or processes through structures like liposomes, vesicles, or viral vectors designed for intracellular miRNA delivery.