

Novel Therapies Targeting Cardioprotection and Regeneration

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Abstract

Cardiovascular disease is the leading cause of death worldwide. The heart is susceptible to pathologies that impact the myocardium directly, such as myocardial infarction and consequent heart failure, as well as conditions with indirect cardiac effects, such as cancer treatment-related cardiotoxicity. As the contractile cells of the heart, cardiomyocytes are essential for normal cardiac function. Various stress stimuli may result in transient damage or cell death in cardiomyocytes through apoptosis, necrosis or maladaptive autophagy. Moreover, cardiomyocytes are unable to regenerate; thus, lost cells are replaced with fibrotic tissue, with a potentially severe impact on myocardial function. Several therapeutic agents and strategies to reduce cardiomyocyte damage are currently available. This manuscript reviews the state of the art regarding novel cardioprotective endogenous peptides, such as neuregulin-1, angiotensin-(1-9), growth/differentiation factor-11, growth/differentiation factor15 and insulin-like growth factor-1. We discuss their protective effects and therapeutic potential in cardiovascular diseases and the current challenges to harnessing their full cardioprotective power. We also explore targeting of exosomes as a cardioprotective approach along with the therapeutic potential of cardiac regeneration strategies. Further advances associated with these molecules and cardioprotective approaches may provide more effective therapies to attenuate or prevent cardiomyocyte death, thereby preserving the myocardium.

Palabras clave

Palabras clave de autor:[Cell death](#); [cardio-oncology](#); [neuregulin-1](#); [angiotensin-\(1-9\)](#); [growth differentiation factor](#); [insulin-like growth factor-1](#); [exosomes](#); [cardiac regeneration](#); [cardiovascular diseases](#).

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