Novel Therapies Targeting Cardioprotection and Regeneration

Por: Garrido, V (Garrido, Valeria)[1 2 3]; Mendoza-Torres, E (Mendoza-Torres, Evelyn)[1 3 4]; Riquelme, JA (Riquelme, Jaime A.)[1 2 3]; Diaz, A (Diaz, Ariel)[1 2 3]; Pizarro, M (Pizarro, Marcela)[1 2 3]; Bustamante, M (Bustamante, Mario)[1 2 3 5]; Chavez, MN (Chavez, Myra N.)[1 2 3 5]; Ocaranza, MP (Ocaranza, Maria Paz)[5]; Mellado, R (Mellado, Rosemarie)[7]; Corbalan, R (Corbalan, Ramon)[5]; Allende, ML (Allende, Miguel L.)[8]; Lavandero, S (Lavandero, Sergio)[1 2 3 8]...Menos

CURRENT PHARMACEUTICAL DESIGN

Volumen: 23
Número: 18
Páginas: 2592-2615
DOI: 10.2174/1381612823666170112122637
Fecha de publicación: 2017
Tipo de documento: Review

Ver impacto de la revista

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.

KeyWords Plus: GROWTH-FACTOR-I; ISCHEMIA-REPERFUSION INJURY; CHRONIC HEART-FAILURE; MACROPHAGE INHIBITORY CYTOKINE-1; ANGIOTENSIN TYPE-2 RECEPTOR; DIFFERENTIATION FACTOR 11; ACUTE CORONARY SYNDROME; PERMEABILITY TRANSITION PORE; NECROPTOTIC CELL-DEATH; ADULT MAMMALIAN HEART

Información del autor
Dirección para petición de copias: Lavander, S (autor para petición de copias)

Direcciones:
- Univ Chile, Adv Ctr Chron Dis ACCDiS, Fac Chem & Pharmaceut Sci, Olivos 1007, Santiago 8380492, Chile
- [1] Univ Chile, Adv Ctr Chron Dis ACCDiS, Santiago, Chile
- [2] Univ Chile, Ctr Mol Studies Cell CEMC, Fac Chem & Pharmaceut Sci, Santiago, Chile
- [3] Univ Chile, Fac Med, Santiago, Chile
- [4] Univ Libre, Fac Hlth Sci, Barranquilla, Colombia
- [6] Univ Chile, Fac Sci, Dept Biol, Ctr Genome Regulat, Santiago, Chile
- [7] Pontificia Univ Catolica Chile, Fac Chem, Santiago, Chile
- [8] Univ Texas Southwestern Med Ctr Dallas, Dept Internal Med, Cardiol Div, Dallas, TX USA

Direcciones de correo electrónico: slavander@uchile.cl

Financiación

<table>
<thead>
<tr>
<th>Entidad financiadora</th>
<th>Número de concesión</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fondo Nacional de Desarrollo Científico y Tecnologico: FONDAP</td>
<td>FONDAP 15130011</td>
</tr>
<tr>
<td></td>
<td>FONDAP 15090007</td>
</tr>
<tr>
<td>FONDEF</td>
<td>D11/1122</td>
</tr>
<tr>
<td>FONDECYT</td>
<td>1141137</td>
</tr>
<tr>
<td>FONDECYT postdoctoral fellowships</td>
<td>3160298</td>
</tr>
<tr>
<td></td>
<td>3160287</td>
</tr>
<tr>
<td></td>
<td>3160086</td>
</tr>
<tr>
<td>PhD fellowships from CONICYT</td>
<td>21140239</td>
</tr>
<tr>
<td></td>
<td>63140060</td>
</tr>
</tbody>
</table>
Editorial
BENTHAM SCIENCE PUBL LTD, EXECUTIVE STE Y-2, PO BOX 7917, SAIF ZONE, 1200 BR SHARJAH, U ARAB EMIRATES

Información de la revista
- Impact Factor: Journal Citation Reports

Categorías / Clasificación
Áreas de investigación: Pharmacology & Pharmacy
Categorías de Web of Science: Pharmacology & Pharmacy

Información del documento
Idioma: English
Número de acceso: WOS:000405678800005
ID de PubMed: 28079007
ISSN: 1381-6128
eISSN: 1873-4286