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Current Trends in Regenerative Medicine: From Cell to Cell-Free Therapy

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Abstract

© 2016, Springer Science+Business Media New York.One of the most promising approaches to stimulate regeneration and angiogenesis in traumatic or ischemic tissue damage is stem cell therapy. Embryonic and fetal stem cells have the greatest potential of differentiation into different cell types; however, at the same time, they carry the highest risk of teratoma formation. Adult stem cells have the potential risk of transformation during prolonged cultivation in vitro, or as a result of genetic changes during gene-cell therapy applications. In this regard, technologies that can reduce the potential risks of cell and gene-cell therapy are of particular interest. According to the paracrine hypothesis, the beneficial effect of stem cell therapy is due to stimulation of resident cells by cell-to-cell contacts, secretion of bioactive molecules, and release of extracellular vesicles. In this review, we discuss the development of regenerative medicine from cell to cell-free therapy based on extracellular vesicles.

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Keywords

Cell-free therapy, Cytochalasin B, Extracellular vesicles, Paracrine hypothesis

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