

ULTRASOUND ENHANCES THE THERAPEUTIC EFFECT OF EXOSOMES

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Abstract

Exosomes are extracellular vesicles that carry a cargo of therapeutic proteins, which have shown promising potential in regenerative medicine applications. However, there remains an unmet need to optimize their therapeutic effect. One potential avenue of optimization lies in ultrasound, a non-invasive technique where sound waves are focused onto a tissue-of-interest. It has previously been demonstrated that ultrasound can enhance the therapeutic effect of stem cell therapies. However, the effect of ultrasound on exosome therapy remains largely unexplored. In the present study, we analyzed the effect of exosome therapy, combined with ultrasound. Exosomes significantly improved the repair process of damaged tissues. This protective effect was mediated by a reduction in inflammation, increased cell proliferation, and decreased apoptosis. We identified several pathways through which exosomes and ultrasound synergistically exert their therapeutic effect, including upregulation of CD9 signaling. Thus, ultrasound may be a promising strategy for enhancing the therapeutic efficacy of exosome treatment.



Biography:

Mujib Ullah has special expertise in Stem Cells. 2016: Institute for Regenerative Medicine, College of Medicine, Texas A&M University System Health Science Center & working as a professor in Interventional Regenerative Therapies lab, Department of Medicine, Stanford University, Palo Alto, California

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