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Abstract

ULTRASOUND ENHANCES THE THERAPEUTIC EFFECT OF EXOSOMES IN AGING MODEL OF MICE

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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 damages 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:

4. Mujib Ullah has completed his PhD from Humboldt University and postdoctoral studies from Stanford University School of Medicine. He is the medical investigator in the department of regenrative medicine. Organization and editor in chief for Artificial Intelligence in Cancer Journal. He has published more than 50 papers in reputed journals and has been serving as an editorial

board member of American Journal of Bioscience and Bioengineering.

Publication of speakers:

- Mujib Ullah; Stem cells and anti-aging genes: double-edged sword-do the same job of life extension, 2018 Jan 10.
- Mujib Ullah; An emerging role of CD9 in stemness and chemoresistance.., 2019 Jun 18
- Mujib Ullah ; Stem cell-derived extracellular vesicles: role in oncogenic processes, bioengineering potential, and technical challenges, 2019 Nov 26.
- Mujib Ullah; Mesenchymal Stromal Cell Homing: Mechanisms and Strategies for Improvement., 2019 May 31.
- Mujib Ullah ; Emerging role of stem cell-derived extracellular microRNAs in age-associated human diseases and in different therapies of longevity., 2019 Nov 5

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