

عنوان مقاله:

A method for macromolecule transport to the spinal cord nervous system trauma with a combination of ultrasound and magnetic fields

محل انتشار:

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نویسندگان:

.Fatemeh Mokhtari - Department of Biomedical Engineering, Science and Research Branch, Islamic Azad University, Tehran, Iran

.Majid Poladian - Department of Biomedical Engineering, Science and Research Branch, Islamic Azad University, Tehran, Iran

.Amir Shamloo - Department of Mechanical Engineering, Sharif University of Technology, Tehran, Iran

خلاصه مقاله:

Damage to the central nervous system causes severe consequences for patients and increases medical costs. In spinal cord injuries, due to sensitive nerves, there is a need for a high-precision and non-invasive method to transfer macromolecules to the damaged area of the spinal cord for nerve repair. The main objective of this study is a high-impact strategy for optimal delivery of macromolecules to spinal cord injuries using ultrasound and magnetic fields. Several permanent magnets and transducers of ultrasound waves with different arrangements, sizes, and angles are used. Their effect on the efficiency of delivering macromolecules to the target area is analyzed. The results determined that utilizing three or four magnets along with the transducer of ultrasound waves could have a precise performance in the delivery of macromolecules. Advances in combining ultrasound and magnetic fields in delivering macromolecules to the target area are associated with increased efficiency and accuracy. The interaction between ultrasound and magnetic forces balances the rotation of macromolecules and their useful movement toward the destination.

کلمات کلیدی:

Central Nervous System, delivery, Magnet, Spinal Cord, ultrasound

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