Nanocarriers in neuroscience

Shima Tavaol

Iran University of Medical Sciences, Tehran, Iran

Abstract

The advancement of nanotechnology and the convergence of research disciplines have overcome many medical obstacles. However, developing an efficient therapeutic approach for neurogenerative disorders and diseases is complicated and problematic due to the extensive axonal loss at the moment of injury and neuronal regeneration restrictions of the human central nervous system. Drugs are encapsulated into the nanocarriers to enhance drugs' therapeutic efficacy to pass Blood-Brain-Barrier with higher cellular uptake and bioavalibity. The critical key question is which size of nanocarrier has a promising neurotherapeutic effect. In this presentation, the impact of particle size in the up-regulation of tyrosine hydroxylase, an important gene in Parkinson's Disease, and the recovery of spinal cord injury are studied. Notably, the type of neurodegenerative diseases and disorders will define the efficient particle size. The efficient particle sizes in the recovery of the spinal cord and Parkinson's Disease are different together. The present study discloses a pharmaceutical strategy to design drugs based on their particle size efficiency..

Biography:

Shima Tavakol is assistant professor of medical nanotechnology working at the Iran University of Medical Sciences. She is also a member of the board of directors of the Iranian Society of Nanomedicine (ISNM). She was commended as the highest-ranking Ph.D. student of Tehran University of Medical Sciences and the best medical nanotechnology Ph.D. graduate in Iran by the Iranian Nanotechnology Society. She was commended as the best young faculty member by the Iran Ministry of Health and Medical Education and by the Iran University of Medical Sciences in 2016. Her US patent made her "Chosen US inventor" of Iran University of Medical Sciences in 2019. She started her osteogenic cocktail's clinical trial, including designed self-assembling peptide nanofibers for sinus augmentation in 2021.

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