

Nanoformulation of Herbal Extracts in Treatment of Neurodegenerative Disorders

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Abstract: *Nanotechnology is one of the methods that influenced human life in different ways and is a substantial approach that assists to overcome the multiple limitations of various diseases, particularly neurodegenerative disorders (NDs). Diverse nanostructures such as polymer nanoparticles, lipid nanoparticles, Nano liposomes, nano-micelles, and carbon nanotubes (CNTs); as well as different vehicle systems including poly lactic-co-glycolic acid, lactoferrin, and polybutylcyanoacrylate could significantly increase the effectiveness, reduce the side effects, enhance the stability, and improve the pharmacokinetics of many drugs. The central nervous system (CNS) encompasses the brain and spinal cord and is considered the processing center and the most vital part of human body. The central nervous system (CNS) barriers are crucial interfaces between the CNS and the periphery. Among all these biological barriers, the blood-brain barrier (BBB) strongly impede hurdle for drug transport to brain. It is a semi-permeable diffusion barrier against the noxious chemicals and harmful substances present in the blood stream and regulates the nutrients delivery to the brain for its proper functioning. Neurological diseases owing to the existence of the BBB and the blood-spinal cord barrier have been terrible and threatening challenges all over the world and can rarely be directly mediated. There are some main possible reasons for failure in the treatment of neurodegenerative diseases such as limitations introduced by the blood-brain barrier (BBB), the Blood-Cerebrospinal Fluid Barrier (BCFB) and P-glycoproteins. Current advances in nanotechnology present opportunities to overcome mentioned limitations by using nanotechnology and designing nanomaterial improving delivering active drug candidates.*

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