

Metal Nanoparticles for the Treatment and Diagnosis of Neurodegenerative Brain Diseases

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Resumen

This review focuses on the application of metal nanoparticles in the diagnosis and treatment of Alzheimer's and Parkinson's diseases. Metal nanoparticles present interesting physicochemical properties that can be applied to increase biomarker detection sensitivities in vitro and in vivo. Furthermore, these nanoparticles could be used in different strategies for the treatment of central nervous system diseases, particularly in regards to drug delivery. Herein, specific potential applications of metal nanoparticles are separately discussed for the contexts of in vitro diagnoses and treatments. Briefly, research using surface plasmon resonance methodologies has mainly used these nanoparticles for the in vitro detection of A beta and, to a lesser extent, of alpha-synuclein. Regarding treatment approaches, in vitro studies have focused on using metal nanoparticles to manipulate the A beta aggregation, thus reducing toxicity. Furthermore, in vivo applications of metal nanoparticles are also discussed, with many of the existing studies focusing on a magnetic nanoparticle-detection of A beta through magnetic resonance imaging and, to a lesser degree, extension fluorescence techniques. Finally, conclusions and perspectives are provided regarding the real potential for using metal nanoparticles in the treatment and diagnosis of central nervous system diseases.

Palabras clave

Palabras clave de autor: [Theranostic](#); [imaging](#); [neurodegenerative disorders](#); [drug delivery](#); [physicochemical properties](#); [nanoparticle-detection](#)

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