

Korea develops nanoparticle-based deep brain stimulation therapy to treat Parkinson's Disease

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This study presents a novel therapy approach for non-invasive treatment of brain diseases



One of the various therapeutic approaches for neurodegenerative diseases such as Parkinson's disease, that is garnering attention is deep brain stimulation, a technique that employs electrical stimulation to directly trigger communication between nerve cells.

Activation of nerve cells through electrode implantation is a treatment option for neuronal disorders, made possible by deep brain stimulation. However, this therapy necessitates a surgical procedure in which leads are deeply implanted into the brain, potentially leading to side effects that can make clinical application challenging.

Recently, a research team at Pohang University of Science and Technology (POSTECH), in South Korea, has developed a new technique for administering electrical stimulation to the brain without the need for implanted electrodes.

Researchers have created a nanomedicine material that uses piezoelectricity to produce electrical signals in response to non-invasive and biocompatible ultrasonic waves. These nanoparticles have been found to relieve Parkinson's disease symptoms in a mouse model, without causing any toxicity.

Professor Won Jong Kim of POSTECH stated that the newly created piezoelectric nanoparticle has the potential to non-invasively stimulate deep brain tissues. He further suggested that this strategy could establish a new paradigm for other minimally invasive therapies in the treatment of neurodegenerative diseases.