Therapy

Compositions for endogenous GDNF stimulation for the treatment of neurodegenerative diseases

A research group of the Institute of Biomedicine of Seville (IBiS) has identified a series of modulating agents that allow stimulating the production of endogenous GDNF-derived neurotrophic factor as potential therapies for Parkinson's disease and other neurodegenerative diseases.

Oficina de TRANSFERENCIA DE TECNOLOGÍA
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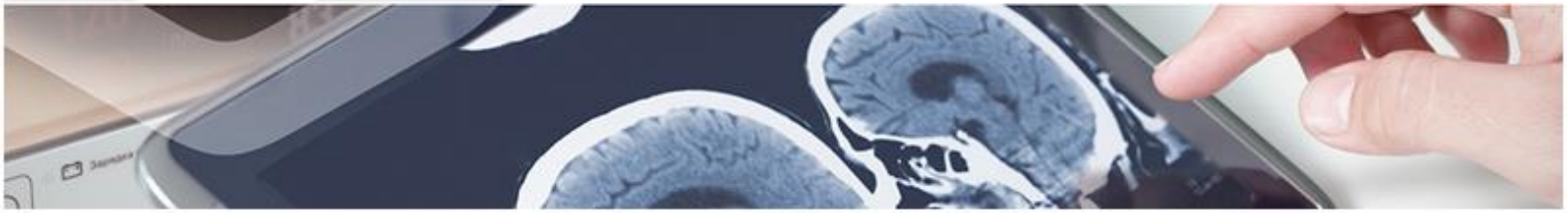

Description

The most disabling motor symptoms in Parkinson's disease (PD) are derived from the progressive death of nigrostriatal dopaminergic (DA) neurons. Because there are limited treatment options for PD, neuroprotective agents are currently being evaluated as a means to slow the progression of the disease.

Specifically, the neurotrophic factor derived from the glial cell line (GDNF) is a potent trophic factor that promotes the survival, maintenance and repair of DAs in the mature nervous system and participates in the maintenance of the neuronal morphological and neurochemical phenotype. These properties have supported the proposal of using GDNF in the treatment of PD. However, treatment based on the administration of GDNF is hampered by the blood-brain barrier. Thus, the numerous methods developed to deliver exogenous GDNF in the brain, such as striatal delivery, gene and cell therapy, or intrastriatal transplantation of carotid body cells, have failed in the clinical trial phase.

Therefore, a new approach would be to use therapeutic agents that increase the endogenous levels of GDNF. In this context, our research group has identified a series of therapeutic targets, and modulating agents thereof, expressed very selectively by the positive parvalbumin (PV) interneurons of the striatum which are the cells that produce 95% of the GDNF and which, presumably, maintain the survival of the DA neurons of the *substantia nigra*. First preclinical tests in mice show that the stimulation of certain receptors induces a significant increase in the expression of the endogenous *Gdnf* gene. Thus, activation of endogenous GDNF is a feasible clinical method to protect dopaminergic neurons and slow the progression of motor symptoms in PD.

Advantages of the offer

1. Endogenous GDNF production stimulation for the PV + neurons aims to reduce and/ or eliminate the adverse effects observed with the exogenous GDNF.
2. The use of pharmacological compounds that stimulate the production of GDNF by the PV + interneurons could be administered peripherally (orally, intravenously) avoiding surgery (intracranial delivery).
3. The therapeutic targets identified are expressed very selectively by the PV+ of the striatum.
4. The expression of specific genes by PV+/ GDNF+ neurons constitutes an important advance to design a selective method of endogenous GDNF stimulation in order to overcome the problems encountered with exogenous GDNF.

Intellectual property

Technology protected by a Spanish patent application with the possibility of international extension.

Objectives

Looking for a partner interested in a license and/ or a collaboration agreement to further develop and exploit this technology.

Classification

Area: Therapy
Pathology: Parkinson’s disease; Neurosciences.

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