Piperidine derivatives for the control of Parkinson’s and Alzheimer’s

CSIC has synthesized a series of piperidine derivatives that are capable of inhibiting the activity of the enzyme phosphodiesterase-8 (PDE8). This inhibitory activity makes them useful for the treatment of neurodegenerative diseases in which this enzyme is overexpressed. The compounds developed are, therefore, a new therapeutic alternative for Alzheimer’s disease, and Parkinson, among others.

Industrial partners from pharmaceutical industry are being sought to develop and commercialized the compounds through a patent licence agreement.

An offer for Patent Licensing

Control of neurodegenerative diseases

Given the difficulty in finding an effective treatment against neurodegenerative diseases, the search for new molecules that have viable pharmacological activity is a priority objective in the research on these pathologies.

Phosphodiesterases (PDEs) are the only enzymes that hydrolyze the cyclic nucleotides, cyclic guanosine monophosphate and cyclic adenosine monophosphate (cGMP and cAMP). These nucleotides mediate the response of cells to a wide variety of hormones and neurotransmitters modulating many metabolic processes. That is why PDEs play crucial roles in the physiological processes that involve the signaling pathway of these nucleotides. Phosphodiesterase-8 (PDE8) is a cAMP-specific enzyme involved in many biological processes, including T-cell activation, testosterone production, adrenocortical hyperplasia and thyroid function, as well as neurodegenerative processes.

The new synthesized compounds, piperidine derivatives, are inhibitors of the PDE8A enzyme, in micromolar order, and are potential drugs for treatment and prevention of diseases in which this enzyme is overexpressed, such as Alzheimer’s disease, Parkinson’s disease and amyotrophic lateral sclerosis (ALS).

Main innovations and advantages

- They are able to cross the blood brain barrier, which is an additional advantage of the compounds when used in therapeutic treatments of diseases related to the central nervous system, such as neurodegenerative and / or neurological diseases.
- They can be presented in the most suitable pharmaceutical formulation for each treatment.

Patent Status
Priority patent application filed

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