N-Procalcitonin modulating agents for the prevention and treatment of neurodegenerative diseases

A research group of the Andalusian Public Health System, in collaboration with the University of Seville, the Hospital Universitario 12 de Octubre and the CIBERNED, has developed a new modulator of the activity of N-Procalcitonin (N-PCT) for the prevention and treatment of neurodegenerative diseases.

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Description

Alzheimer's disease (AD) is a progressive neurodegenerative disease, of unknown origin which affects between 5-7% of those over sixty-five years. An estimated 8 million Europeans are affected by AD and, given the aging of the population, it is expected that the number of sufferers will triple by 2050.

Current treatments offer only slight improvements for a limited period of time (12-14 months). Nevertheless, AD market is currently estimated at $5 bn annually and expected to rise to $20 bn by 2020, with sales expectations for the first disease modifying-treatment between $3-$5 bn. Nowadays, there is a lack of alternative therapies: a new drug able to delay the progression of the disease is expected to favorably compete for this AD market.

Increasing evidence has suggested that inflammation in the brain is closely associated with several neurodegereative diseases, including AD. Aminoprocalcitonin (N-PCT) is a 57-aminoacid neuroendocrine peptide derived from the prohormone procalcitonin (ProCT) which is able to block inflammatory effects induced by inflammatory agents diminishing plasma levels of pro-inflammatory cytokines. N-PCT is expressed in several cell populations including neurons, astrocytes and microglia and its expression is up-regulated by amyloid β (Aβ).

The present product is a peptide or antibody which inhibits the biological activity of N-PCT/PCT. Anti-N-PCT induces *in vitro* neuroprotection through the regulation of Aβ42 induced citotoxicity in SK-SY-5Y neuroblastoma cells as well as *in vivo* neuroprotection in domoic acid animal model, improves of abnormal behaviour in treated APP/PS1 mice and decreases pro-inflammatory cytokines release in APP/PS1 mice.

Advantages

1. High affinity and specificity on (the) antigen (s) described, so that bind specifically to the free N-PCT and not to the whole molecule of PCT.
2. These peptides and antibodies are characterized not only by their ability to bind to N-PCT, but also for their ability to inhibit the biological activity of the N-PCT, and thus, indirectly regulate or inhibit, on a transient or temporary basis, the activity of NF-kB.
3. Safe and well tolerated due to their high specifity.
4. Small monoclonal antibodies (7-13 aa.) which facilitates their scaled-up production.

Intellectual Property

This technology is covered by a Spanish Patent Application with possibility of international extension.

Aims

We are looking for a partner interested in a license and/or a collaboration agreement to further develop and exploit this innovative technology.

Classification

Area: Biotech – Pharma (Therapy)
Technology: Biologics
Pathology: Neurodegenerative diseases