

Descarga Normal

Descarga Premium

Home

Earth

Heavens

Body

Brain

Culture

Tech

Researchers design new substances that might help fight Alzheimer's and Parkinson's disease

posted on: june 13, 2012 - 2:00pm



Me gu

This enzyme is also involved in other conditions as inflammatory bowel disease or rheumatoid arthritis, as well as in neurodegenerative conditions as Huntington's disease and amyotrophic lateral sclerosis.

University of Granada researchers have tested melatonin analogues in rats as it inhibits the enzyme nitric oxide synthase (NOS), which is involved in the development of conditions as inflammatory bowel disease, septic shock or rheumatoid arthritis, as well as in neurodegenerative conditions as Huntington's disease, Alzheimer's disease, Parkinson's disease and amyotrophic lateral sclerosis.

Some of the new analogues developed by the University of Granada have been tested in vivo in rats and present "very interesting pharmacological properties, as they are much more efficient than melatonin" in inhibiting NOS activity in Parkinson models. Most of the results obtained in this study have been published in *Journal of Medicinal Chemistry*.

Melatonin is a hormone secreted by the pineal gland that inhibits the central nervous system in rats and humans. Therefore, it is said to have neuroprotective and anticonvulsant properties. These properties give melatonin the ability to inhibit nitric oxide production, as NO is involved in numerous physiological and pathological processes. Therefore, it is necessary to regulate NO production. At present, researchers are trying to "develop powerful and selective inhibitors of each NOS isoform, which would allow clinicians to control specific pathologies, and would help determine the role of the different isoforms in the biological system".

New Inhibitors

The University of Granada researchers that participated in this study work at the Department of Pharmaceutical and Organic Chemistry and the Institute of Biotechnology of the University of Granada. Taking melatonin as a model, the researchers designed and synthesized several families of complexes (kynurenines, kynurenamines and phenyl pyrazolines), which act as NOS inhibitors. The comparative analysis of the structures of these three families of complexes "allows us to determine structure-activity relationships to inhibit the enzyme NOS and develop a model that might be used to design new inhibitors of this enzyme", the researchers state.

Nitric oxide is a very reactive enzyme, has a relatively long mean life and is a non-polar substance, i.e. it easily passes through cell membranes to spread to other tissues and reacts with many different molecules. In addition, it is an important signaling molecule involved in many physiological processes as neurotransmission, blood circulation and pressure, platelet aggregation and inflammation.

A number of studies have confirmed that each NOS isoform is involved in different biological roles. Thus, nNOS is mainly expressed in neural tissue and plays a major role in the production of NO as neurotransmitter; eNOS is mainly found in the vascular endothelium, where it regulates blood pressure and vascular tone. The enzyme iNOS –which expression is mainly induced by activated macrophages and other types of cells is involved in the body defense system. Finally, the mitochondrial isoforms c-mtNOS and i-mtNOS are involved in NO production within the cell and control cell bioenergetics.

Source: **University of Granada**

Post new comment

Your name: *

Anonymous

E-mail: *

The content of this field is kept private and will not be shown publicly.

Homepage:

Comment: *

Similar Articles On This Topic:

- New research helps explain genetics of Parkinson's disease
- Drug that lowers blood pressure might help prevent Alzheimer's disease
- Experimental Alzheimer's disease drugs might help patients with nerve injuries
- Activating your ABCs might help prevent AD (Alzheimer disease)
- New research to help fight widespread potato disease

Popular Today:

- Who knows you best? Not you, say psychologists
- Child care subsidies boost quality of care for some but not all
- Marital problems in childhood affect teen adjustment
- Virtual sailing gives competitors the edge
- Childhood obesity found linked to math performance



- Recent Results Of CMS
- KELT North - The Little Telescope That Could
- Criminalizing Choice Is 'Leading The Way' - When It Is Your Pet Belief
- Science 2.0 Tools Focus: New Functionality Added To SciVal Strata Performance Evaluation Tool
- Internet Study: Americans Too Trusting, Spanish Too Superficial And Germans Are Annoyed