

## **Increasing brain enzyme may slow Alzheimer's disease progression**

February 16 2011



Stanislav Karsten, an LA BioMed principal researcher, is the lead author of a new study on Alzheimer's disease. Credit: LA BioMed

Increasing puromycin-sensitive aminopeptidase, the most abundant brain peptidase in mammals, slowed the damaging accumulation of tau proteins that are toxic to nerve cells and eventually lead to the neurofibrillary tangles, a major pathological hallmark of Alzheimer's disease and other forms of dementia, according to a study published online in the journal, *Human Molecular Genetics*.

Researchers found they could safely increase the puromycin-sensitive aminopeptidase, PSA/NPEPPS, by two to three times the usual amount in animal models, and it removed the tau proteins in the neurons. Removing the tau proteins restored neuronal density and slowed down disease progression. Researchers detected no abnormalities caused by



the increase in PSA/NPEPPS, suggesting that elevating PSA/NPEPPS activity may be a viable approach to treat Alzheimer's disease and other forms of dementia, known a tauopathies.

"Our research demonstrated that increasing the brain enzyme known as PSA/NPEPPS can effectively block the accumulation of <u>tau protein</u> that is toxic to <u>nerve cells</u> and slow down the progression of neural degeneration without unwanted side effects," said Stanislav L. Karsten, PhD, the corresponding author for the study and a principal investigator at Los Angeles Biomedical Research Institute at Harbor-UCLA Medical Center (LA BioMed). "These findings suggest that increasing this naturally occurring brain peptidase, PSA/NPEPPS, may be a feasible therapeutic approach to eliminate the accumulation of unwanted toxic proteins, such as tau, that cause the neural degeneration associated with the devastating effects of Alzheimer's disease and other forms of dementia."

Alzheimer's disease affects 2 million to 4 million Americans, and their ranks are expected to grow to as many as 14 million by the middle of the 21st century as the population ages.

The potential for PSA/NPEPPS to protect neurons from degeneration was first reported in a 2006 issue of the journal, Neuron. At that time, researchers hypothesized that PSA/NPEPPS may be a natural mechanism for protecting neurons. Dr. Karsten, who was the lead author of the 2006 study, said the new study is the first to provide the data confirming the neuroprotective role of PSA/NPEPPS in mammals.

**More information:** The research paper may be accessed at <u>hmg.oxfordjournals.org/content ... ddr065.full.pdf+html</u>



## Provided by Los Angeles Biomedical Research Institute at Harbor

Citation: Increasing brain enzyme may slow Alzheimer's disease progression (2011, February 16) retrieved 3 May 2024 from https://medicalxpress.com/news/2011-02-brain-enzyme-alzheimer-disease.html

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