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Peptide Therapy Can Prevent Progression Of Parkinson's Disease, Study Suggests

ScienceDaily (Nov. 25, 2007) — Researchers have successfully used a peptide to reverse biochemical, cellular and anatomical changes that occur in the brains of mice with Parkinson's disease (PD), and report success in preventing the disease from progression.

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"This could be a new approach to halt disease progression in PD patients," said study author Kali Pahan, PhD, professor of neurological sciences at Rush University Medical Center.

The authors have shown that one protein, NF-kB, is increased in the midbrain of PD patients and mice with PD pathology, and the researchers used a novel peptide (small proteins) to block this protein in mice with PD-like symptoms.

Pahan explained that after intraperitoneal injection (injection into the abdomen of the mouse) this peptide enters into the brain and blocks protein NF-kB and other associated toxic molecules, and goes on to protect neurons, normalizes neurotransmitter levels, and improves motor functions in mice with PD. Peptides, proteins and

certain drugs usually do not enter into the brain after crossing the blood-brain barrier.

Therefore, at present, peptides, proteins or genes are injected into the brain which is risky and painful. "To overcome this problem, we have added a tag in front of that peptide that is helping the peptide enter into the brain. Therefore, there is no need to inject these peptides into the brain. This is an important discovery.

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these results can be replicated in PD patients, it would be a remarkable advance in the treatment of this devastating neurodegenerative disease.”

Parkinson's is a slowly progressive disease that affects a small area of cells within the mid-brain known as the substantia nigra. Gradual degeneration of these cells causes a reduction in a vital chemical neurotransmitter, dopamine. The decrease in dopamine results in one or more of the classic signs of Parkinson's disease that includes: resting tremor on one side of the body; generalized slowness of movement; stiffness of limbs; and gait or balance problems. The cause of the disease is unknown. Both environmental and genetic causes of the disease have been postulated.

Parkinson's disease affects about 1.2 million patients in the United States and Canada. Although 15 percent of patients are diagnosed before age 50, it is generally considered a disease that targets older adults, affecting one of every 100 persons over the age of 60. This disease appears to be slightly more common in men than women.

Dr. Pahan and colleagues from Rush, along with researchers at the University of Nebraska Medical Center, Omaha, and Yale University, New Haven, published these findings in the Proceedings of the National Academy of Sciences, November 13, 2007.

This research was supported by grants from Michael J. Fox Foundation for Parkinson's Research and National Institutes of Health.

Adapted from materials provided by [Rush University Medical Center](#), via [Newswise](#).

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