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Molecular Therapy May Reduce Parkinson's

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Reviewed by: John M. Grohol, Psy.D.
on November 26, 2007

Monday, Nov
26 (Psych
Central) --
Laboratory
researchers
have

successfully reversed 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.

Rush University scientists, supported by grants from Michael J. Fox Foundation for Parkinson's Research and National Institutes of Health, injected a peptide (a small group of proteins) into the abdomen of mice genetically programmed to carry a brain protein associated with Parkinson's disease.

"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. Dr. Pahan and colleagues published their findings in the *Proceedings of the National Academy of Sciences*.

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

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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. Understanding how the disease works is important to developing effective drugs that protect the brain and stop the progression of PD," Pahan said.

"Now we need to translate this finding to the clinic and test this peptide in patients with PD. If 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.

Source: [Rush University Medical Center](#)

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Site last updated: 23 Jul 2008