Researchers study mitochondrial function, potential new therapeutic target for Alzheimer's disease

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Researchers at Rush University Medical Center are conducting an early phase clinical trial of a novel drug therapy for patients with dementia due to Alzheimer's disease. The drug is a new compound called MSDC-0160, which is an insulin sensitizer that modulates mitochondrial metabolism.

Mitochondria are known as the powerhouses of cells, including brain cells. Mitochondria help convert glucose, which is thought to be the main fuel source for brain cells, into energy.

Mitochondrial function may play an important role in brain cell survival. Reduced mitochondrial function in converting glucose into energy seems to occur early in Alzheimer's disease.

"In this initial study, we are trying to determine if MSDC-0160 improves the brain's use of glucose," said Dr. Raj C. Shah, director of the Rush Memory Clinic at the Rush Alzheimer's Disease Center and principal investigator of the study. "We can measure brain cell glucose use using fluordeoxyglucose positron-emission tomography (FDG-PET), a special brain imaging test."

MSDC-0160 also is being developed as a treatment for diabetes by Metabolic Solutions Development Company, a Kalamazoo, Michigan-based developer of new therapeutics to treat metabolic diseases

associated with age-related mitochondrial dysfunction.

An earlier mouse model study indicated that MSDC-0160 may reduce Alzheimer's like pathology in mouse brains.

As a result of this finding, Rush is conducting a Phase IIa trial that will help determine if the drug therapy affects glucose utilization in specific regions of the brain. Rush is the only medical center in the U.S. conducting the double-blind, placebo-controlled study.

Patients who are 55-85 years of age, who do not have diabetes, and who have been diagnosed with mild dementia due to Alzheimer's disease are being enrolled in the clinical trial. Forty patients in the study will be randomized to receive either MSDC-0160 or a placebo once daily for 90 days.

The study was awarded a grant by the Alzheimer's Drug Discovery Foundation (ADDF). The mouse model study was conducted by Doug Feinstein, PhD, at the University of Illinois at Chicago.

Provided by Rush University Medical Center