

Reversing cognitive deficits: Injectable antibody may attack source of problem

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A special protein can be injected into the body to reverse learning problems in mice that have an animal version of Alzheimer's disease, Saint Louis University researchers have found.

The protein -- part of the immunoglobulin M (IgM) class -- is an antibody that grabs onto the amyloid beta protein in the brain and prevents it from changing into the toxic substance believed to cause Alzheimer's disease.

“Our research in an animal model showed that antibodies can be developed rationally for treating Alzheimer's disease,” says William A. Banks, M.D. professor of geriatrics and pharmacological and physiological science at Saint Louis University. “It's a major thing that people have been trying to do -- get antibodies into the brain in the right amount to treat illnesses. This antibody does that.”

Banks says the findings are surprising because IgM is five times bigger than the antibody immunoglobulin G (IgG), which has already been studied as a potential therapy for Alzheimer's disease.

Because it is larger, scientists didn't believe it could cross the blood-brain barrier, a protective membrane that keeps foreign substances out of the brain.

“We collaborated with Michael Steinitz from Hebrew University in Jerusalem, who developed an antibody that is part of the IgM class of

antibodies that would stick better to amyloid beta protein,” says Banks, who also is a staff physician at Veterans Affairs Medical Center in St. Louis Banks says.

“This compound had better entry to the brain than IgG, even though they are smaller.”

A single intravenous dose of IgM reversed cognitive impairment in aged mice that have a genetic mutation that causes deficits similar to those found in patients with Alzheimer’s disease, Banks says.

The findings were published in the August issue of *Experimental Neurology*.

Source: Saint Louis University

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