

Experimental drug shows promise in treating Alzheimer's disease

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An experimental drug shows promise in treating Alzheimer's disease by preventing inflammation and removing abnormal protein clumps in the brain that are associated with the disease, suggests a study in mice presented at the Anesthesiology 2016 annual meeting.

A key characteristic of Alzheimer's disease is the development of [abnormal protein](#) clumps called amyloid plaques and tangled bundles of fibers in the [brain](#). These changes cause [inflammation](#) in the brain and damage to the neurons. This progressive damage leads to memory loss, confusion and dementia. The new drug, known as NTRX-07, appears to decrease this inflammation in the brain, while preserving neurons and regenerative cells in the brain.

"This drug may reduce inflammation in the brain, which is linked to Alzheimer's disease," said lead researcher Mohamed Naguib, M.D., a physician anesthesiologist in the Department of General Anesthesiology at the Cleveland Clinic and professor of anesthesiology at the Cleveland Clinic Lerner College of Medicine. "NTRX-07 uses a different mechanism than many other Alzheimer's drugs currently available, as it targets the cause of the disease, not just the symptoms."

The authors discovered NTRX -07's memory-restoring abilities while studying the drug's potential to treat a complex, chronic pain condition called [neuropathic pain](#). "Patients who have neuropathic pain have chronic neuroinflammation," said Dr. Naguib. "This is a compound that blunts that inflammation."

Researchers tested NTRX -07 on mice bred to have similar brain neurodegenerative issues as seen in Alzheimer's. They found that inflammation produced in response to the disease caused changes in the brain's microglia cells - [immune cells](#) that typically remove dangerous amyloid plaques (protein clumps) in the brain. As the amyloid plaques accumulated in the mice, the microglia (immune cells) were unable to remove them, leading to inflammation and damage to nerve cells, which caused decreased cognitive ability.

Microglia cells have receptors on the surface called CB2 receptors, which when activated can produce an anti-inflammatory response. NTRX -07 targets CB2 receptors, which leads to decreased inflammation and prevents damage to the brain tissue. The new drug improved removal of abnormal amyloid plaques and improved memory performance and other cognitive skills.

The drug also increased levels of a protein called SOX2, which has been shown to help new brain cells develop and protect the brain in people with Alzheimer's disease. The study found in mice treated with NTRX-07, the levels of SOX2 were restored to normal levels. In contrast, mice treated with a placebo showed decreased levels of SOX2, active inflammation in the brain, poor removal of [amyloid plaques](#), and poor memory performance.

Provided by American Society of Anesthesiologists

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