

# Weight-loss drug may slow Alzheimer's decline

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Credit: Anna Shvets from Pexels

A drug prescribed for diabetes and weight loss has been shown to reduce brain shrinkage in Alzheimer's patients by almost 50%.

The drug, called liraglutide, is one of the glucagon-like peptide receptor (GLP-1) agonists which also includes semaglutide—known as Wegovy or Ozempic—which are licensed for managing overweight and obesity and for type 2 diabetes. However, scientists are discovering further applications for these drugs beyond their original purpose.

In a study involving 200 patients with Alzheimer's disease, led by Professor Paul Edison at Imperial College London, the brains of patients who had taken liraglutide showed a significant reduction in shrinkage and reduction in cognitive decline compared to patients who had taken a placebo.

The shrinkage was seen by brain imaging of the frontal, temporal, [parietal lobes](#) and total gray matter of the brain. These are the parts that control memory, learning, language and decision-making—all critical functions often affected by Alzheimer's disease.

The new research, presented at the Alzheimer's Association International Conference ([AAIC 2024](#)) in Philadelphia and which is yet to be peer-reviewed, suggests liraglutide may protect the brains of people with mild Alzheimer's disease and reduce [cognitive decline](#) by as much as 18% after one year of treatment.

The researchers say that although it's not clear exactly how liraglutide is working on the brain, they believe its protective effect is due to the ability of the drug to influence multiple processes happening in the brain like inflammation, tau protein aggregation, insulin resistance and amyloid leading to a slowing of reduction in brain volume. This could be analagous to statins protecting the heart by reducing cholesterol levels.

Professor Paul Edison, Professor of Neuroscience at Imperial's Department of Brain Sciences, said, "We think liraglutide is protecting the brain possibly by reducing inflammation, lowering [insulin resistance](#)

and the toxic effects of Alzheimer's biomarkers or improving how the brain's nerve cells communicate."

## Reducing brain shrinkage

Loss of brain volume is a common marker of Alzheimer's disease. As the disease progresses and damage spreads through the brain, additional areas and lobes become affected, and the brain gradually shrinks.

The randomized, double-blind, placebo-controlled trial included 204 patients with mild Alzheimer's disease seen at 24 clinics throughout the United Kingdom. Half were given a daily injection of up to 1.8 mg of liraglutide, while the other half received a placebo injection.

Before the study began, all patients had [magnetic resonance](#) imaging (MRI) of their brains to evaluate structure and volume, as well as having glucose metabolism PET scans and detailed memory testing. These tests were repeated at the end of the study.

Although the study's primary endpoint, which focused on changes in the glucose metabolism in the brain, was not met, the secondary endpoint of changes in scores for clinical and cognitive measures, as well as the exploratory endpoint of [brain volume](#), showed a statistically significant improvement.

Those in the study who received liraglutide had nearly 50% less volume loss in several areas of the brain, as measured by MRI. Researchers also conducted cognitive testing in the patients—before treatment and at 24 and 52 weeks. Although the study was not originally powered to assess cognitive changes, researchers found that patients who received liraglutide had an 18% slower decline in cognitive function over the course of one year compared to those who received the placebo.

Professor Edison explained that because [liraglutide](#) and other GLP-1 analogs are already licensed for managing obesity and diabetes, its path to treatment for Alzheimer's could be swift.

He added, "If scientists are able to further demonstrate that this is working in patients with Alzheimer's disease phase 3 trials, and the FDA approves it for Alzheimer's, this drug could then be immediately available."

Two independent phase 3 trials are already underway, with findings due at the end of 2025.

**More information:** Paul Edison et al, Proposal ID: 89799, Evaluation of Novel GLP-1 analogue in the treatment of Alzheimer's disease, 30 July, Alzheimers Assocation International Conference

Provided by Imperial College London

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