

New research supports repurposing sildenafil (Viagra) for Alzheimer's treatment

March 5 2024



New Cleveland Clinic-led research points to sildenafil (Viagra) as a potential treatment for Alzheimer's disease. Credit: Cleveland Clinic

New Cleveland Clinic-led research points to sildenafil (Viagra) as a potential treatment for Alzheimer's disease. The study provides evidence

from computational models, insurance claims data and observations from brain cells in Alzheimer's patients.

Sildenafil is the main component of drugs used to treat [erectile dysfunction](#) (Viagra) and pulmonary arterial hypertension (Revatio).

"Our findings provide further weight to re-purposing this existing FDA-approved drug as a novel treatment for Alzheimer's, which is in great need of new therapies," said Feixiong Cheng, Ph.D., who led the research. "We used [artificial intelligence](#) to integrate data across multiple domains which all indicated [sildenafil](#)'s potential against this devastating neurological disease."

Alzheimer's disease currently affects over 6 million Americans and incidence is expected to triple by 2050, underscoring the need for rapid development of new prevention and treatment strategies. Drug repurposing—use of an existing drug for new therapeutic purposes—offers a practical alternative to the costly and time-consuming traditional drug discovery process.

Published in *Journal of Alzheimer's Disease*, [the study](#) builds upon the researchers' [earlier findings](#) in 2021 that used computational models to initially identify sildenafil as a promising drug candidate to help prevent and treat Alzheimer's disease.

In the new study, Dr. Cheng, director of the Cleveland Clinic Genome Center, and his team analyzed millions of de-identified insurance claims from two independent patient databases, which revealed a 30–54% reduced prevalence in Alzheimer's disease diagnoses among patients who took sildenafil compared to those who did not after adjusting various possible confounding factors.

In [brain cells](#) from Alzheimer's patients, researchers also showed that

sildenafil lowers levels of neurotoxic tau proteins, which are known to be associated with Alzheimer's disease when they build up. They also found that neurons treated with sildenafil expressed genes related to [cell growth](#), improved brain function, reduced inflammation and other processes known to protect against the neural degeneration associated with Alzheimer's disease.

Dr. Cheng's findings demonstrate the feasibility of using computer models to identify potential new drug candidates in a fast, reliable way, representing a significant step forward in Alzheimer's drug discovery.

"After integrating this large amount of data computationally, it is rewarding to see sildenafil's effects in human neurons and real-world patient outcomes," said Dr. Cheng. "We believe our findings provide the evidence needed for [clinical trials](#) to further examine the potential effectiveness of sildenafil in patients with Alzheimer's disease."

Dr. Cheng's co-authors include Andrew A. Pieper, M.D., Ph.D., of Louis Stokes Cleveland VA Medical Center, Case Western Reserve University and University Hospitals Cleveland Medical Center; and Jeffrey Cummings, M.D., Sc.D., director emeritus of the Cleveland Clinic Lou Ruvo Center for Brain Health in Las Vegas.

Dhruv Gohel, Ph.D., and Amit Gupta, Ph.D., postdoctoral research associates in Dr. Cheng's laboratory, are co-first authors.

More information: Dhruv Gohel et al, Sildenafil as a Candidate Drug for Alzheimer's Disease: Real-World Patient Data Observation and Mechanistic Observations from Patient-Induced Pluripotent Stem Cell-Derived Neurons, *Journal of Alzheimer's Disease* (2024). [DOI: 10.3233/JAD-231391](#)

Provided by Cleveland Clinic

Citation: New research supports repurposing sildenafil (Viagra) for Alzheimer's treatment (2024, March 5) retrieved 27 April 2024 from <https://medicalxpress.com/news/2024-03-repurposing-sildenafil-viagra-alzheimer-treatment.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.