

ALZHEIMER'S SCIENCE NEWS

SUMMER 2023



MOLECULE FOUND IN GREEN TEA BREAKS UP TAU TANGLES

Using a molecule found in green tea, a team of biochemists has identified new molecules that can destroy protein tangles in the brain associated with Alzheimer's.

The study's lead author, Paul Seidler, PhD, at UCLA, received a grant from Alzheimer's Disease Research to study how tau is structurally assembled to prevent dysfunctional aggregation of the protein.

The researchers' goal was to mimic the chemical structure of EGCG, a molecule found in green tea known to dissolve tau tangles, to develop more effective molecules that better reach the brain. Tau, along with amyloid beta, is linked to Alzheimer's, and many scientists believe tau may play an even greater role as it is associated with rapid progression of the disease.

Although EGCG is known to break up tau fibers, it's not an effective dementia treatment because it doesn't enter cells or the brain easily. But knowing EGCG could disrupt tau helped scientists identify other molecules with more promise, including two, CNS-11 and CNS-17, which also stopped tau fibers from spreading from cell to cell.



A green tea molecule discovery could lead to new therapies to prevent Alzheimer's.

These molecules are candidates for drugs that could be developed to treat Alzheimer's and related diseases. Dr. David Eisenberg, a co-author of the study, said, "By studying variations of this, we may go from this lead into something that would be a really good drug."

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PRESIDENT'S CORNER

Alzheimer's is relentless. Every 65 seconds, another person in the U.S. develops this disease.

But Alzheimer's Disease Research is relentless too. We're committed to stopping this disease that robs people of their minds and memories.

With your help, we fund some of the most innovative scientists in the world who are tackling this disease on multiple fronts. From identifying molecules that can prevent tau tangles to developing a new blood test that could lead to earlier diagnosis and treatment, the progress being made against this disease is deeply heartening.

Thank you for supporting breakthrough research and helping provide mind-saving information to the public. Together, we will find a cure!

Stacy Pagos Haller

NEW BLOOD TEST DETECTS UNIQUE BIOMARKER FOR ALZHEIMER'S



A new blood test could enable more people to benefit from earlier diagnosis and treatment for Alzheimer's.

Early detection of Alzheimer's can help delay its onset, but there is a lack of definitive and affordable tests to do so, according to Alzheimer's Disease Research grantee Thomas Karikari, PhD, at the University of Pittsburgh.

The holy grail has been a blood test for Alzheimer's, of which a handful are now available in the U.S. Dr. Karikari and his colleagues developed an innovative new blood test to detect a less frequently measured biomarker of Alzheimer's neurodegeneration: brain-derived tau or BD-tau. Specific to Alzheimer's, it outperforms existing blood tests used to detect Alzheimer's-related neurodegeneration.

Dr. Karikari and his colleagues designed a special antibody that selectively binds to BD-tau and validated it in 600 patient samples. The levels of BD-tau in their samples matched levels of tau in cerebrospinal fluid, which is the gold standard for diagnosing Alzheimer's. Moreover, in brain autopsies, the levels of BD-tau correlated with the severity of amyloid plaques and tau tangles in the brain tissue.

Next, Dr. Karikari and his team will conduct large-scale clinical validation of BD-tau in blood across a range of research groups, including those that recruit participants from diverse racial and ethnic backgrounds, memory clinics, and the community. Older adults with no biological evidence of Alzheimer's disease will be included, as well as individuals at different stages of the disease.

"The most important utility of blood biomarkers is to make people's lives better and to improve clinical confidence and risk prediction in Alzheimer's disease diagnosis," Dr. Karikari said.

RESEARCHER SPOTLIGHT: KEVIN BEIER, PHD

Little is known about how brain connectivity changes during Alzheimer's disease, and even less is known about what changes occur early on.

Now that may be changing. Alzheimer's Disease Research grantee Kevin Beier, PhD, at the University of California, Irvine, is mapping the brain to identify key brain connections that change early on in Alzheimer's in order to identify at-risk individuals before they develop the disease.

He will use a chemical-genetic method to test if combatting these changes can slow or prevent the development of Alzheimer's-related behavioral changes, and he will test memory and cognitive behaviors over time during disease development. His research could provide potential biomarkers as well as targets for improved therapeutic interventions.



Kevin Beier, PhD

MEDICATIONS THAT CAN MIMIC DEMENTIA

Some medications can interfere with attention, memory, language, or other cognitive faculties. Here are some common examples:

Anticholinergic Medications

Anticholinergic medications block the neurotransmitter acetylcholine and can lead to confusion, memory disturbance, agitation, and even delirium. They include tolterodine, often used to treat urinary incontinence; some antidepressants (especially tricyclics such as amitriptyline); antipsychotics; cardiac medications; antispasmodics; antivertigo medications; and antiparkinsonian medications.

Anxiety and Insomnia Medications

Benzodiazepines can result in sedation and mental slowing. These include anti-anxiety medications such as lorazepam (Ativan) and alprazolam (Xanax), or sleeping pills such as temazepam (Restoril).

Corticosteroids

Corticosteroids can induce delirium, mood changes, or even psychotic symptoms. Prednisone, for instance, can lead to clinical symptoms that mimic various mental disorders.

Chemotherapy Drugs

Anticancer chemotherapeutic agents can sometimes result in cognitive changes. "Chemo brain" affects attention, working memory, and executive function, and it sometimes leaves lasting changes.

Pain Medications

Pain-relieving medications, particularly opioids, can impact short-term memory. Their cognitive effects, like the other medications listed here, are reversible after the medications are stopped.



If you're concerned that a medication is impacting your cognitive functioning, discuss it with your health care provider.

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MEDICATIONS THAT CAN MIMIC DEMENTIA

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Statins

Cholesterol-lowering statins have been suspected of creating mental slowing and memory problems in some people, but the research results are divided. The current consensus is that these aren't common complications.

The Impact of Aging

Aging itself can impact how an older person metabolizes drugs. The aging liver and kidneys are less efficient in reducing toxic drug effects, and the aging brain has less protective cognitive reserve. Moreover, older adults often take multiple prescriptions, which can create interactions that amplify adverse effects. Additionally, alcohol, even in moderate amounts, can increase harmful side effects.

In summary, if you believe a medication is causing memory loss or affecting your other cognitive functions, discuss it with your health care providers. They will examine your symptoms' history to understand the most likely causes and may eliminate specific medications or replace them with alternate drugs that possess different properties.

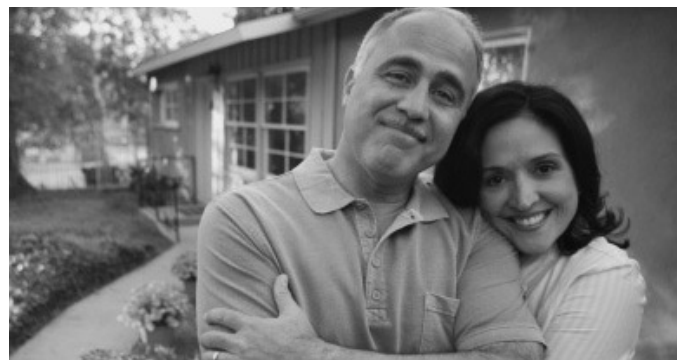
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DAFs help simplify your charitable giving and put you in control of your philanthropic endeavors. They allow you to:

- Recommend grants as you choose
- Give on your own schedule
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If you have a DAF with Fidelity Charitable, Schwab Charitable, or BNY Mellon, you can conveniently log in to your DAF at brightfocus.org/DAF-ADR to make your grant recommendation to Alzheimer's Disease Research.



DAFs help simplify your charitable giving and offer immediate tax benefits.

To learn more about DAFs, contact Charlie Thomas, our Planned Giving Manager, at 301-556-9362 or plannedgiving@brightfocus.org.



brightfocus.org/stopAD

Please share this newsletter with someone you know who might be interested in learning about some of the latest advancements in research to diagnose, prevent, treat, and cure Alzheimer's disease.

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