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# What Do We Know About Diet and Prevention of Alzheimer's Disease?

Can eating a specific food or following a particular diet help prevent or delay dementia caused by Alzheimer's disease? Many studies suggest that what we eat affects the aging brain's ability to think and remember. These findings have led to research on general eating patterns and whether a person's diet might make a difference.

[Healthy eating patterns](#) have been associated with cognitive benefits in studies, but more research is needed — and is underway — to determine if what we eat can prevent or delay Alzheimer's or age-related cognitive decline.

How could what we eat affect our brains? It's possible that eating a certain diet affects biological mechanisms, such as [oxidative stress](#) and inflammation, that underlie Alzheimer's. Eating a certain diet might increase specific nutrients that may protect the brain through anti-inflammatory and antioxidant properties. It may inhibit beta-amyloid deposits, which are found in the brains of people with Alzheimer's, or improve cellular metabolism in ways that protect against the disease.

Or perhaps a person's diet works indirectly by affecting other Alzheimer's risk factors, such as diabetes, obesity, and heart disease. For example, the typical Western diet increases cardiovascular disease risk, possibly contributing to faster brain aging. A growing area of research focuses on the relationship between gut microbes — tiny organisms in the digestive system — and aging-related processes that lead to Alzheimer's. The important role of [physical activity and exercise](#), and how this interacts with diet, cardiovascular health, and brain health must also be considered.

## Understanding the Mediterranean and MIND diets

Before starting any dietary change, it's important to talk with your health care provider. They can provide personalized advice that accounts for your health history and medical conditions.

With that in mind, there are two diets that research has shown may hold potential benefits for cognitive health, but the evidence is mixed.

- The **Mediterranean diet** emphasizes fruits, vegetables, whole grains, legumes, fish and other seafood, unsaturated fats such as olive oils, and low amounts of red meat, eggs, and sweets.
- The **MIND (Mediterranean–DASH Intervention for Neurodegenerative Delay) diet** is a hybrid of the Mediterranean and the [DASH](#) (Dietary Approaches to Stop Hypertension) diet. Several studies have shown that [treating and reducing high blood pressure](#) may help reduce the risk of dementia. Similar to the Mediterranean diet, the MIND diet features vegetables, especially green leafy vegetables; berries over other fruit; whole grains; beans;



nuts; one or more weekly servings of fish; and olive oil. It also limits servings of red meat, sweets, cheese, butter/margarine, and fast/fried food.

Some, but not all observational studies have shown that the Mediterranean and MIND diets are associated with a lower risk for dementia compared to a Western-style diet, which typically contains more red meat, saturated fats, and sugar.

However, a [recent clinical trial](#) assigned 600 older adults with a family history of dementia to either a MIND-diet group or a control-diet group. Results showed that participants who followed the MIND diet had only small improvements in cognition that were similar to those who followed a control diet of mild caloric restriction.

Previous research on these diets points to their potential to slow cognitive decline, lower risk for dementia, and reduce related damage to the brain. Here's a look at the evidence:

To find out more on the diet and dementia connection, scientists continue to conduct clinical trials to shed more light on any cause and effect. (View a list of trials currently recruiting participants at the end of this article.)

- Observational studies of more than 900 dementia-free older adults found that closely following the MIND diet was associated with a [reduced risk of Alzheimer's](#) and a [slower rate of cognitive decline](#).
  - In March 2023, scientists completed [a study](#) of the brains of about 600 older adults who died at an average age of 91. Brain autopsies found that people who had reported sticking to a Mediterranean or MIND diet showed less evidence of Alzheimer's pathologies, including tau tangles and amyloid plaques.
  - In one observational study of 116 cognitively normal adults, those who followed a Mediterranean diet had [thicker cortical brain regions](#) than those who did not. These brain regions shrink in people with Alzheimer's, so having thicker regions could mean there's a cognitive benefit.
  - A follow-up observational study showed [lower glucose metabolism and higher levels of beta-amyloid protein](#) — both seen in Alzheimer's — in people who did not follow the Mediterranean diet closely, compared to those who did.
  - An analysis of diet and other factors found that, after an average of 4.5 years, people who adhered most closely to the MIND diet had a 53% [reduced rate of Alzheimer's](#) compared to those who did not follow the diet closely.
  - In a similar study, following the MIND diet was associated with a [substantial slowing of cognitive decline](#) during an average of almost five years.
  - The [Age-Related Eye Disease Studies](#) originally looked at diet and eye disease. Further analysis by the researchers showed that people who followed the Mediterranean-style diet had a lower risk of developing cognitive problems while maintaining a higher level of cognitive function.

## What do we know about individual foods?

Many foods — blueberries, leafy greens, and curcumin (found in the spice turmeric), to name a few — have been studied for their potential cognitive benefit. These foods have been thought to have anti-inflammatory, antioxidant, or other properties that might help protect the brain. However, so far, there is no evidence that eating or avoiding a specific food can prevent Alzheimer's or age-related cognitive decline.

Still, scientists continue to look for clues. [A recent study](#) showed that a molecule in green tea breaks apart tangles of the protein tau, which builds up in the brain due to Alzheimer's. Based on this finding, the team identified other potential Alzheimer's drug candidates. Another study, based on older adults' reports of their eating habits, found that eating a daily serving of [leafy green vegetables](#) such as spinach or kale was associated with slower age-related cognitive decline, perhaps due to the neuroprotective effects of certain nutrients.

Research has also shown that a diet that includes regular fish consumption is associated with higher cognitive function and slower cognitive decline with age. Another recent study, in mice, found that [consuming too much salt](#) increased levels of the protein tau, found in the brains of people with Alzheimer's, and caused cognitive impairment.

## What about vitamins and supplements?

Observational study and clinical trial researchers have contemplated whether some over-the-counter vitamins and dietary supplements, including vitamins B and E and ginkgo biloba, might help prevent Alzheimer's or cognitive decline. The speculation is that these dietary add-ons might attack oxidative damage or inflammation, protect nerve cells, or influence other biological processes involved in Alzheimer's.

But despite early findings of possible benefits for brain health, no vitamin or supplement has been proven to prevent Alzheimer's in people. Overall, evidence remains weak because many studies were too small or too brief to be conclusive.

For example, studies of DHA (docosahexaenoic acid) in mice showed that this omega-3 fatty acid, found in salmon and certain other fish, reduced beta-amyloid plaques, a hallmark of Alzheimer's. However, clinical trials in humans have had mixed results. In a [study of 485 older adults](#) with age-related cognitive decline, those who took a DHA supplement daily for 24 weeks showed improved learning and memory compared to those who took a placebo. Another [study of 4,000 older adults](#) — conducted primarily to study eye disease — concluded that taking omega-3 supplements, alone or with other supplements, did not slow cognitive decline.

At this time, no vitamin or supplement is recommended for preventing Alzheimer's or cognitive decline. However, [a 2023 study](#) showed that multivitamins helped boost memory test scores in older adults compared to participants who took a placebo. Additionally, [a 2022 study](#) showed that participants who took a daily multivitamin did better on a wide range of cognitive tests, and had significant improvements in memory and executive function (attention, planning, and organization) compared to those who did not take a daily multivitamin. Even so, these findings are still preliminary and more research is needed.

Despite ample availability, a broad range of other vitamins and supplements have not been tested for their effects on thinking. Their safety and effectiveness are largely unknown, and they may interact with other medications.

For more information, visit the National Center for Complementary and Integrative Health's [page on dietary supplements and cognitive function](#). The U.S. Food and Drug Administration also has [consumer information on diet and Alzheimer's disease](#).

## The connection between the digestive system and the brain

There is growing evidence for connections between the brain and the gut microbiome — the community of viruses, bacteria, and other microbes in the digestive system. NIA-funded investigators are analyzing how factors such as aging, diet, and the environment can change the conduit of neurons, proteins, and chemicals linking the digestive system and the brain, and

how those changes may impact cognitive health. You can learn more about the latest research on how the gut microbiome relates to brain health in our recent feature article, “[Beyond the brain: The gut microbiome and Alzheimer's disease](#).”

## Researchers continue to seek answers

Investigators continue to expand explorations into potential diet and cognitive health connections. There is growing interest in the idea of Alzheimer's as a metabolic disease that affects the brain, and the role of Alzheimer's biomarkers — measurable indicators of biological processes in the body — such as glucose metabolism. In addition to the Mediterranean diet and its variations, investigators are looking at other diets as well as individual foods and nutrients.

For example, the ketogenic diet is a high-fat, low-carbohydrate diet that prompts the production of ketones, chemicals that help brain cells work. [A study](#) in animal models and human tissue models showed that a ketogenic diet may help brain cells better use energy, improving their overall function. A recent, [small pilot study](#) of 10 participants who followed a keto diet for three months showed a statistically significant improvement in cognitive test scores among participants.

There is also ongoing scientific interest in the potential health and lifespan benefits of [intermittent fasting or caloric restriction](#). More research is needed to better understand how these eating patterns may affect insulin resistance, and brain/cognitive health as we age.

These clinical trials are recruiting participants to test dietary interventions:

- [Therapeutic Diets in Alzheimer's Disease \(TDAD\)](#) — Tracking the impact of a ketogenic diet on cognition in adults age 50 to 90.
- [Enhanced Mediterranean Diet for Alzheimer's Disease Prevention](#) — Cognitively normal adults age 65 and older in Kansas City, Kansas, are randomly assigned to either a Mediterranean diet or a low-fat diet to gauge the impact on cognitive function, brain volume, and other measures.
- [Multicultural Healthy Diet to Reduce Cognitive Decline](#) — This 18-month trial will investigate whether an anti-inflammatory diet tailored to a multicultural population in Bronx, New York, can improve cognitive functioning.
- [Brain Energy for Amyloid Transformation in Alzheimer's Disease](#) — Older adults with mild cognitive impairment in Winston-Salem, North Carolina, are randomly assigned to follow either a modified Mediterranean ketogenic (low-carbohydrate/high-fat) diet or an American Heart Association high-carb/low-fat diet for 16 weeks, with follow-up to assess effects on cognition and Alzheimer's biomarkers.

To learn more or to find a trial near you, visit the [Alzheimers.gov Clinical Trials Finder](#).

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The NIA ADEAR Center offers information and free print publications about Alzheimer's and related dementias for families, caregivers, and health professionals. ADEAR Center staff answer telephone, email, and written requests and make referrals to local and national resources.

### Alzheimers.gov

[www.alzheimers.gov](http://www.alzheimers.gov)

Explore the Alzheimers.gov website for information and resources on Alzheimer's and related dementias from across the federal government.

### Alzheimer's Association

800-272-3900

866-403-3073 (TTY)

[info@alz.org](mailto:info@alz.org)

[www.alz.org](http://www.alz.org)

### Alzheimer's Foundation of America

866-232-8484

[info@alzfdn.org](mailto:info@alzfdn.org)

[www.alzfdn.org](http://www.alzfdn.org)

### ClinicalTrials.gov

[www.clinicaltrials.gov](http://www.clinicaltrials.gov)

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