

Modified Mediterranean ketogenic diet may benefit adults at risk for Alzheimer's disease

April 5 2023



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Following a Mediterranean-based ketogenic diet may decrease the risk of Alzheimer's disease, according to a new study from scientists at Wake Forest University School of Medicine.

In the study, researchers compared a low-fat [diet](#) with a diet consisting of healthy fats/protein and low carbohydrates—the modified Mediterranean ketogenic diet—and found that the modified diet showed robust changes in a biological pathway that is linked to Alzheimer's disease.

The findings were published online today in *Alzheimer's & Dementia: The Journal of the Alzheimer's Association*.

According to the Alzheimer's Association, more than 6.5 million Americans are living with Alzheimer's disease, and 1 in 3 seniors die with the disease or another form of dementia.

"We hope that better understanding this complex relationship between diet, cognitive status and gut health will lead to new interventions to prevent and treat Alzheimer's disease," said Suzanne Craft, Ph.D., professor of gerontology and geriatric medicine at Wake Forest University School of Medicine.

This study builds upon [previous research](#) from Craft's team showing that a modified ketogenic diet may prove beneficial in the prevention of cognitive decline.

The randomized, single-site study involved 20 adults, nine diagnosed with [mild cognitive impairment](#) (MCI) and 11 with normal cognition. These participants were randomly assigned to follow either the low-carbohydrate modified Mediterranean-ketogenic diet or a low-fat, higher carbohydrate diet for six weeks then, after a six-week "washout" period, to switch to the other diet.

Stool samples were collected from participants at the beginning and end of each diet period, and six weeks after the washout of the second diet to analyze changes in [gut microbiome](#)—the good and bad bacteria that live

in the gastrointestinal tract.

Researchers found that participants with MCI on the modified Mediterranean ketogenic diet had lower levels of gamma-aminobutyric acid (GABA) and of GABA-producing microbes. Participants on this diet also had higher levels of GABA-regulating bacteria. GABA is the primary inhibitory neurotransmitter in the central nervous system, and GABA dysfunction is associated with neuropsychiatric conditions including Alzheimer's disease.

"Our study is the first to show that diet modulates GABA differently in MCI," Craft said.

The study also showed that participants with MCI who had curcumin in their diets also had lower levels of BSH-containing bacteria. These bacteria regulate [bile acids](#) produced by the liver and gut. Lower levels suggest reduced gut motility, a phenomenon in which food and waste take longer to transit the gut. Abnormal bile acid profiles have been observed in adults with Alzheimer's [disease](#).

"These findings provide crucial insight into how diet may affect the microbiome and improve brain health," Craft said. "Larger studies are needed to assess the role diet interventions play in patients with cognitive impairment."

More information: Amanda Hazel Dilmore et al, Effects of a ketogenic and low-fat diet on the human metabolome, microbiome, and foodome in adults at risk for Alzheimer's disease, *Alzheimer's & Dementia* (2023). [DOI: 10.1002/alz.13007](https://doi.org/10.1002/alz.13007)

Provided by Atrium Health Wake Forest Baptist

Citation: Modified Mediterranean ketogenic diet may benefit adults at risk for Alzheimer's disease (2023, April 5) retrieved 21 November 2023 from <https://medicalxpress.com/news/2023-04-mediterranean-ketogenic-diet-benefit-adults.html>

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