

Diet's effect on gut bacteria could play role in reducing Alzheimer's risk

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Could following a certain type of diet affect the gut microbiome—the good and bad bacteria that live in the gastrointestinal tract—in ways that decrease the risk of Alzheimer's disease?

According to researchers at Wake Forest School of Medicine, that is a fair possibility.

In a small pilot study, the researchers identified several distinct [gut microbiome](#) signatures—the chemicals produced by bacteria—in study participants with [mild cognitive impairment](#) (MCI) but not in their counterparts with normal cognition, and found that these bacterial signatures correlated with higher levels of markers of Alzheimer's disease in the cerebrospinal fluid of the participants with MCI.

Through cross-group dietary intervention, the study

also showed that a modified Mediterranean-ketogenic diet produced changes in the gut [microbiome](#) and its metabolites that correlated with reduced levels of Alzheimer's markers in the members of both study groups.

The study appears in the current issue of *EBioMedicine*, a journal published by *The Lancet*.

"The relationship of the gut microbiome and diet to neurodegenerative diseases has recently received considerable attention, and this study suggests that Alzheimer's disease is associated with specific changes in gut bacteria and that a type of ketogenic Mediterranean diet can affect the microbiome in ways that could impact the development of dementia," said Hariom Yadav, Ph.D., assistant professor of molecular medicine at Wake Forest School of Medicine, who co-authored the study with Suzanne Craft, Ph.D., professor gerontology and geriatric medicine at the medical school and director of Wake Forest Baptist Health's Alzheimer's Disease Research Center.

The randomized, double-blind, single-site study involved 17 older adults, 11 with diagnosed MCI and six 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](#). Gut microbiome, fecal short-chain fatty acids and markers of Alzheimer's, including amyloid and tau proteins, in [cerebrospinal fluid](#) were measured before and after each dieting period.

The study's limitations include the subject group's size, which also accounts for the lack of diversity in terms of gender, ethnicity and age.

"Our findings provide [important information](#) that future interventional and clinical studies can be based on," Yadav said. "Determining the specific

role these gut microbiome signatures have in the progression of Alzheimer's disease could lead to novel nutritional and therapeutic approaches that would be effective against the disease."

Provided by Wake Forest University Baptist
Medical Center

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