

Researchers discover the mechanism that links a diet rich in fats with Alzheimer's disease

April 29 2024



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A study led by the Universitat Rovira i Virgili (URV) has revealed the mechanism behind the link between a diet high in saturated fats and

Alzheimer's disease. The research focused on how this kind of diet affects certain molecules found in the blood and in other tissues such as the brain that act as markers and regulators of the disease.

The study was headed by Mònica Bulló, professor at the Department of Biochemistry and Biotechnology and member of the Metabolic Health and Nutrition unit and the Environmental, Food and Toxicological Technology Centre (TecnATox) of the URV, in collaboration with the Pere Virgili Health Research Institute (IISPV), CIBERObn and the University of Barcelona. The results have been [published](#) in the journal *Nutrients*.

The research was conducted on mice models who developed Alzheimer's disease in adulthood. Previous studies in these animals had already shown that after a diet high in saturated fats the mice developed Alzheimer's much earlier than mice on a conventional diet. However, the mechanisms that led to the onset of Alzheimer's remained unknown. That is, until now.

The researchers analyzed the expression of 15 miRNAs, small molecules of RNA that play a crucial role in genetic regulation in both plasma and brain tissues. The team examined changes in insulin-related miRNAs in mouse models predisposed to Alzheimer's not on a diet low in saturated fats.

The results demonstrated that their metabolism worsened after being on this diet for six months: their [body weight](#) increased significantly and their response to glucose and insulin decreased. These same characteristics can also be found in people with obesity or type 2 diabetes.

Furthermore, researchers found changes to various miRNAs in both the blood and the brain. These changes were related to processes that can

cause [brain damage](#), such as the accumulation of β -amyloid plaques (protein deposits that form in the brain and which are markers of Alzheimer's), excessive production of the tau protein (which can damage brain cells when it gets out of control) and inflammation in the brain.

"The results of this study are a step forward in our understanding of this disease and may explain the relationship between obesity, type 2 diabetes and the onset of Alzheimer's. The findings also offer new targets for the possible prevention and treatment of the disease," said researcher Bulló.

The study not only provides new data on how a [high-fat diet](#) can affect the health of the brain, but also opens the door to future research into dietary strategies as a means of treating Alzheimer's. The results underline the importance of a balanced diet in preventing [neurodegenerative diseases](#) and highlight miRNAs as targets for therapeutic interventions.

More information: Melina Rojas-Criollo et al, Effects of a High-Fat Diet on Insulin-Related miRNAs in Plasma and Brain Tissue in APPSwe/PS1dE9 and Wild-Type C57BL/6J Mice, *Nutrients* (2024).
[DOI: 10.3390/nu16070955](https://doi.org/10.3390/nu16070955)

Provided by University of Rovira i Virgili

Citation: Researchers discover the mechanism that links a diet rich in fats with Alzheimer's disease (2024, April 29) retrieved 17 May 2024 from <https://medicalxpress.com/news/2024-04-mechanism-links-diet-rich-fats.html>

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