Energy-restricted Mediterranean diet could impact genes and improve health

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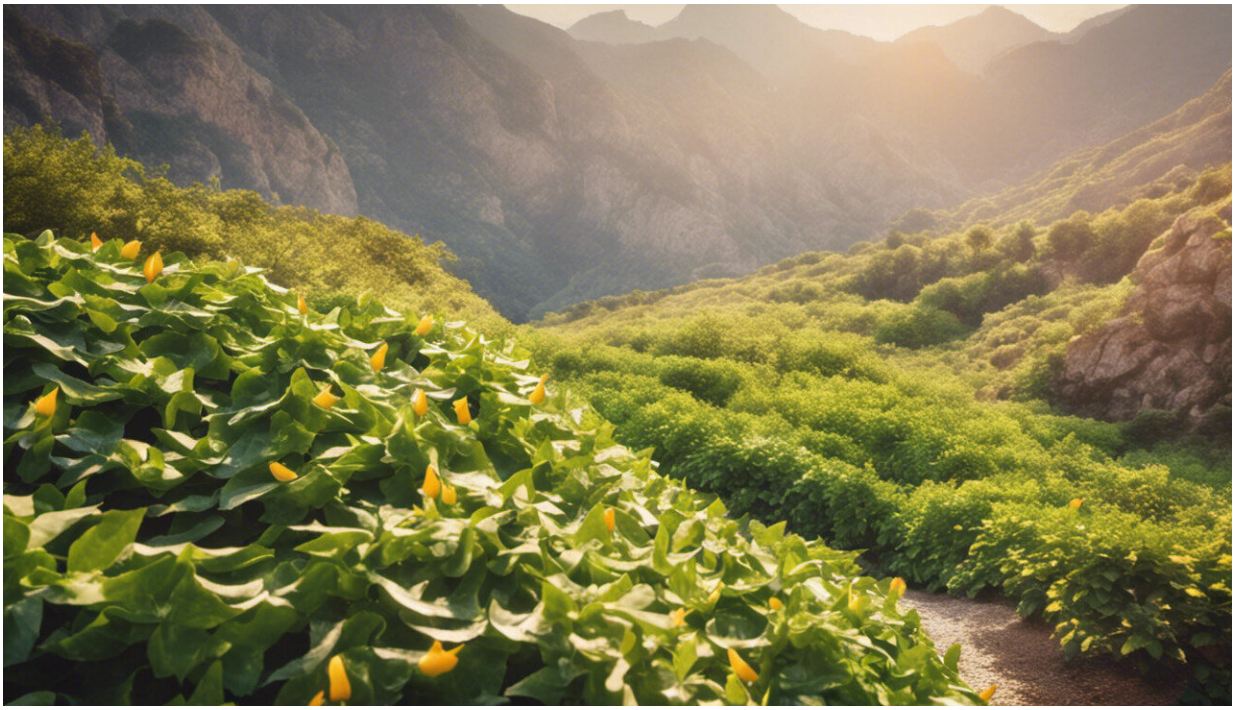

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New research shows that a high-fat Mediterranean diet with nuts and extra virgin olive oil could modify the function of specific cell genes. This should help in the fight against several conditions, especially cardiovascular disease.

The smooth running of methylation is crucial for the proper functioning of almost all of the human body's systems. DNA methylation is a natural process involved in controlling the correct expression of genes in the body's cells so that it works properly and remains healthy.

A team of researchers supported by the EU-funded PREDIMED PLUS project analysed whether an intervention with two Mediterranean diets – one rich in extra virgin olive oil (EVOO) and the other in nuts – had an impact on the methylation status of genes of peripheral white blood cells (PWBCs).

They published their findings in the journal *Nutrients*, focusing on three intervention groups in high cardiovascular-risk volunteers: Mediterranean Diet (MedDiet) + EVOO, MedDiet + nuts, and a low-fat control group. The team argued that specific components of MedDiet, particularly nuts and EVOO, were able to induce methylation changes in several PWBC genes. "These changes may have potential benefits in health; especially those changes in genes related to intermediate metabolism, diabetes, inflammation and signal transduction, which may contribute to explain the role of MedDiet and fat quality on health outcomes," the researchers noted.

The current study was conducted within the framework of the PREDIMED trial. Prevención con Dieta Mediterránea was a multicentre, nutritional intervention randomised clinical trial carried out in Spain from 2003 to 2011 to assess the effects of the MedDiet on the prevention of cardiovascular diseases. The participants were men aged 55 to 80 years and women 60 to 80 without any previous history of cardiovascular disease.

The ongoing PREDIMED PLUS (Long-term effects of an energy-restricted Mediterranean diet on mortality and cardiovascular disease: The PREDIMED PLUS Study) project addresses the cardiovascular

effect of an intensive weight-loss lifestyle intervention based on an energy-restricted traditional MedDiet in comparison with a less intensive programme using MedDiet, but with no energy restriction, behavioural intervention or physical activity programme.

The rationale of the research is to provide a new, affordable and sustainable approach to reduce excess cardiovascular morbidity and mortality among overweight or obese adults, beyond what was already observed in the PREDIMED I trial. The researchers found significantly greater weight loss in intervention than in the control group, and greater reductions in waist circumference. Stronger reductions were also observed in the intervention group for blood pressure, fasting blood glucose and total cholesterol levels. They concluded that the energy-restricted MedDiet together with physical activity was "superior to the control diet in achieving sustained weight loss, a higher reversion rate of the metabolic syndrome than the control group."

Some 6,919 participants in over 20 field centres across Spain were recruited for the PREDIMED PLUS project.

More information: Project website: www.predimedplus.com/en/

Ana Arpón et al. Impact of Consuming Extra-Virgin Olive Oil or Nuts within a Mediterranean Diet on DNA Methylation in Peripheral White Blood Cells within the PREDIMED-Navarra Randomized Controlled Trial: A Role for Dietary Lipids, *Nutrients* (2017). DOI: 10.3390/nu10010015

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