

Green Mediterranean diet promotes proximal aortic destiffening better than healthy Mediterranean diet, finds study

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Credit: Lawrencekhoo / Wikipedia.

The green Mediterranean, high-polyphenols diet substantially regresses proximal aortic stiffness (PAS), a marker of vascular aging and increased cardiovascular risk. The green Mediterranean diet was pitted against the healthy Mediterranean diet and a healthy guideline-recommended control diet in the DIRECT PLUS, a large-scale clinical intervention trial. Researchers found that the green Mediterranean diet regressed proximal aortic stiffness by 15%, the Mediterranean diet by 7.3%, and the healthy dietary guideline-directed diet by 4.8%.

The study was recently published in *JACC (Journal of the American College of Cardiology)*. This is the first time that scientists have presented a powerful, potent effect of diet on the age-related proximal aortic stiffness.

DIRECT PLUS was a large-scale, long-term clinical trial over 18 months among 300 participants, which used MRIs to measure aortic stiffness, the most accurate non-invasive measure.

Aortic stiffness is a measure of the elasticity of the blood vessel wall, and it occurs when the elastic fibers within the arterial wall (elastin) begin to fray due to mechanical stress. Proximal aortic stiffness (PAS) reflects the aortic stiffness from the ascending to the proximal-descending thoracic aorta; the section of the aorta, the largest artery in the body that carries oxygen-rich blood away from the heart. Proximal aortic stiffness is a distinct marker of vascular aging and an independent cardiovascular risk factor to predict morbidity and mortality.

The research was led by Prof. Iris Shai of Ben-Gurion University of the Negev, Israel, an adjunct Professor from the Harvard School of Public Health and an honorary professor at the University of Leipzig, Germany, along with her Ph.D. student Dr. Gal Tsaban, a cardiologist from Soroka

University Medical Center, and colleagues from Harvard and Leipzig Universities.

The DIRECT-PLUS trial research team was the first to introduce the concept of the green-Mediterranean, high-polyphenols diet. This modified Mediterranean diet is distinct from the traditional Mediterranean diet because of its more abundant dietary polyphenols (phytochemicals, secondary metabolites of plant compounds that offer various health benefits) and lower red/processed meat. On top of a daily intake of walnuts (28 grams), the green-Mediterranean dieters consumed 3-4 cups of green tea and 1 cup of Wolffia-globosa (Mankai) plant green shake of duckweed per day over 18 months. The aquatic green plant Mankai is high in bioavailable iron, B12, 200 kinds of polyphenols and protein, and is therefore a good substitute for meat.

The team has shown in previous studies that the green Mediterranean, high-polyphenols diet has various salutary effects ranging from reshaping the microbiome to halting brain atrophy and regressing hepatosteatosis and visceral adiposity.

"A healthy lifestyle is a strong basis for improving cardiometabolic health. We learned from the results of our experiment that the quality of the diet is crucial for mobilizing atherogenic adipose tissues, lowering cardiometabolic risk, and improving one's adiposity profile. Dietary polyphenols, substituting red meat with equivalent plant-based protein, show promise for improving various aspects of human health. However, to date, no dietary strategies have been shown to impact vascular aging physiology," says Prof. Shai.

"Maintaining a [healthy diet](#) alone is associated with PAS regression. The green Mediterranean diet provides a 15% dramatic reduction in PAS, which is gained by making simple and feasible changes to your diet and lifestyle. The results of our study highlight, once again, that not all diets

provide similar benefits and that the green Mediterranean [diet](#) may promote vascular health," notes Dr. Tsaban.

Additional researchers include: Aryeh Shalev, Amos Katz, Anat Yaskolka Meir, Ehud Rinott, Hila Zelicha, Alon Kaplan, Arik Wolak, Matthias Bluher, and Meir J Stampfer.

More information: Gal Tsaban et al, Effect of Lifestyle Modification and Green Mediterranean Diet on Proximal Aortic Stiffness, *Journal of the American College of Cardiology* (2023). [DOI: 10.1016/j.jacc.2023.02.032](#)

Provided by Ben-Gurion University of the Negev

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