

PREDIMED & THE *Mediterranean* DIET:

..... A LANDMARK STUDY

“PREDIMED”: WHAT DOES IT MEAN?

PREDIMED is the acronym for a landmark study aimed at assessing the efficacy of the Mediterranean diet in the primary prevention of cardiovascular diseases. It is a parallel group, multi-center, single-blind, randomized clinical trial that was conducted by 16 research groups in seven communities in Spain. The acronym stands for PREvención con DIeta MEDiterránea (Prevention with Mediterranean Diet). The complete title of the trial is “Effects of the Mediterranean diet on the primary prevention of cardiovascular diseases.” The study began in 2003 and was completed in 2011.

WHAT IS THE MEDITERRANEAN DIET?

The Mediterranean diet is a pattern of eating similar to the traditional dietary habits of people living in the countries bordering the Mediterranean Sea. Fresh fruits and vegetables, seafood, whole grains and nutritious fats including olive oil and nuts, such as walnuts, serve as staples of this eating style which result in delicious and tasty cuisine. The Mediterranean diet not only tastes great, but extensive research has suggested various health benefits associated with this style of eating.

WHAT WERE THE OBJECTIVES OF PREDIMED?

The aim of PREDIMED was to determine whether a Mediterranean diet supplemented with extra-virgin olive oil (50 ml/day) or 30 grams (g) tree nuts (15g walnuts, 7.5g almonds and 7.5g hazelnuts), compared to a low-fat diet, can help prevent cardiovascular diseases – cardiovascular death, myocardial infarction (heart attack) and stroke. The preventive efficacy of the Mediterranean diet was also assessed on secondary variables including death from all causes, and incidence of heart failure, diabetes, cancer, dementia and other neurodegenerative diseases. Blood pressure, fasting blood glucose, lipid profile, and inflammatory markers were also evaluated.

WHO WERE THE PARTICIPANTS AND HOW MANY WERE INCLUDED IN THE STUDY?

The study included 7,447 individuals (aged 55-80 years) at high risk of cardiovascular disease, but with no symptoms at baseline.

HOW LONG WERE THEY FOLLOWED?

Participants were followed for an average of 4.8 years.



WHAT DID EACH OF THE DIETS INCLUDE?

All participants were given dietetic support and quarterly education sessions to ensure compliance. Energy intake was not specifically restricted in any intervention group. Participants were randomly assigned to one of three groups:

- 1) Mediterranean diet supplemented with 30g mixed nuts per day (15g walnuts, 7.5g almonds and 7.5g hazelnuts).
- 2) Mediterranean diet supplemented with extra virgin olive oil (50ml per day); or
- 3) Low-fat diet (control group).

WHAT WERE THE FINDINGS?

A Mediterranean diet including nuts, primarily walnuts, reduced the risk of cardiovascular diseases (myocardial infarction, stroke or cardiovascular death) by 30% and specifically reduced the risk of stroke by 49% when compared to a reference diet consisting of advice on a low-fat diet (American Heart Association guidelines). The Mediterranean diet enriched with extra-virgin olive oil also reduced the risk of cardiovascular diseases by 30%.

The results support the two Mediterranean diets for beneficial effects on a number of intermediate outcomes, including body mass index¹, blood pressure², insulin resistance³, blood lipids⁴, lipid oxidation⁵, and systemic inflammation⁶. Two seminal reports of sizable PREDIMED sub groups include a reduced prevalence of the metabolic syndrome⁷ (pre-diabetes) by the Mediterranean diet supplemented with nuts after a one year follow-up, as well as a reduction of incident diabetes⁸ associated with the two Mediterranean diets after follow-up for four years.



WHERE CAN I FIND ADDITIONAL INFORMATION?

PREDIMED: predimed.onmedic.net/eng/

California Walnuts: walnuts.org/health-professionals/published-research/predimed/

New England Journal of Medicine: nejm.org/doi/full/10.1056/NEJMoa1200303

¹Casas-Agustench P, Bulló M, Ros E, Basora J, Salas-Salvadó J; on behalf of the Nureta-PREDIMED investigators. Cross-sectional association of nut intake with adiposity in a Mediterranean population. *Nutr Metab Cardiovasc Dis.* 2011 Jul; 21(7):518-25.

²Casas-Agustench P, López-Uriarte P, Ros E, Bulló M, Salas-Salvadó J. Nuts, hypertension and endothelial function. *Nutr Metab Cardiovasc Dis.* 2011; 21(Suppl 1):S21-33.

³Bulló M, Lamuela-Raventós R, Salas-Salvadó J. Mediterranean diet and oxidation: nuts and olive oil as important sources of fat and antioxidants. *Curr Top Med Chem.* 2011;11(14):1797-810.

⁴Estruch R, Ros E, Salas-Salvadó J, Covas MI, D'Elia M, Corella D, Arós F, Gómez-García E, Ruiz-Gutiérrez V, Fiol M, Lapetra J, Lamuela-Raventós RM, Serra-Majem L, Pintó X, Basora J, Muñoz MA, Sorlí JV, Martínez JA, Martínez-González MA; the PREDIMED Study Investigators. Primary Prevention of Cardiovascular Disease with a Mediterranean Diet. *N Engl J Med.* 2013 Feb 25.

⁵Fitó M, Guxens M, Corella D, Sáez G, Estruch R, de la Torre R, Francés F, Cabezas C, López-Sabater Mdel C, Marrugat J, García-Arellano A, Arós F, Ruiz-Gutiérrez V, Ros E, Salas-Salvadó J, Fiol M, Solà R, Covas MI; for the PREDIMED Study Investigators. Effect of a traditional Mediterranean diet on lipoprotein oxidation: a randomized controlled trial. *Arch Intern Med.* 2007; 167:1195-203.

⁶Salas-Salvadó J, García-Arellano A, Estruch R, Marquez-Sandoval F, Corella D, Fiol M, Gómez-García E, Viñoles E, Arós F, Herrera C, Lahoz C, Lapetra J, Perona JS, Muñoz-Aguado D, Martínez-González MA, Ros E; PREDIMED Investigators. Components of the Mediterranean-type food pattern and serum inflammatory markers among patients at high risk for cardiovascular disease. *Eur J Clin Nutr.* 2008;62(5):651-9.

⁷Salas-Salvadó J, Fernández-Ballart J, Ros E, Martínez-González MA, Fitó M, Estruch R, Corella D, Fiol M, Gómez-García E, Arós F, Flores G, Lapetra J, Lamuela-Raventós R, Ruiz-Gutiérrez V, Bulló M, Basora J, Covas MI; PREDIMED Study Investigators. Effect of a Mediterranean diet supplemented with nuts on metabolic syndrome status: one-year results of the PREDIMED randomized trial. *Arch Intern Med.* 2008;168(22):2449-58.

⁸Salas-Salvadó J, Martínez-González MA, Bulló M, Ros E. The role of diet in the prevention of type 2 diabetes. *Nutr Metab Cardiovasc Dis.* 2011;21(Suppl 2):B32-48.

