The Mediterranean Diet in Hypercoagulable States and Cancer

Miguel Ángel Martínez-González, MD, PhD, MPH
Professor & Chair, Preventive Medicine & Public Health
University of Navarra Medical School
Navarra, Spain

What are the characteristics of the Mediterranean diet?

The traditional Mediterranean diet refers to the dietary pattern that was typical until the mid-1960s of people living in the areas of the Mediterranean basin where olive trees grow, such as Greece, Southern Italy, and Spain. It is characterized by the use of olive oil as the main culinary fat; high consumption of vegetables, fruits, nuts, legumes, and unprocessed cereals; moderate consumption of poultry, eggs, and dairy products—which include yogurt and cheese but not whole milk, butter, or cream—and low consumption of sweet desserts, red meat, and processed meat. It is traditional to consume a moderate amount of alcohol during meals, especially wine.

The total intake of lipids can be moderate or high. The traditional Italian diet has a moderate lipid content—approximately 30% of calories come from fat. In Greece, calories from fat may account for more than 40% of total energy intake. In all instances, the ratio of monounsaturated to saturated lipids is high because of the use of olive oil, which is rich in monounsaturated fat. As for fish consumption, this used to correlate with distance from the sea but tends to be moderate overall.

What is the mechanism by which the Mediterranean diet might mitigate the predisposition to develop hypercoagulability tendencies?

The Mediterranean diet has been shown to be very effective at decreasing blood pressure, lipid profiles, and markers of inflammation. These markers of inflammation include C-reactive protein (CRP), proinflammatory cytokines such as interleukin 6 (IL-6), and adhesion molecules such as intracellular adhesion molecule 1 (ICAM-1). Low-grade, chronic inflammation is a key contributor to atherosclerosis, and therefore to coronary heart disease and stroke.

How effective is the Mediterranean diet at reducing the risk for developing cardiovascular disease?

Numerous cohort studies have supported a link between the Mediterranean diet and a reduction in cardiovascular disease risk. According to a meta-analysis of cohort studies that Dr Francesco Sofi and colleagues published in Public Health Nutrition in 2014, each 2-point increase in a score assessing adherence to the Mediterranean diet was associated with a significantly reduced risk of cardiovascular disease (relative risk [RR], 0.90; 95% CI, 0.87-0.92).

One of the few randomized controlled trials to examine the use of the Mediterranean diet is PRE-DIMED (Prevención Con Dieta Mediterránea). In this primary prevention trial, more than 7000 men and women at elevated risk for cardiovascular disease were randomly assigned to one of 3 diets: a Mediterranean diet supplemented with extra-virgin olive oil, a Mediterranean diet supplemented with nuts, and a control diet in which participants received advice on eating a low-fat diet. After a median of 4.8 years, the rate of cardiovascular events—myocardial infarction, stroke, or death from cardiovascular disease—was significantly lower with the Mediterranean/olive oil diet (hazard ratio [HR], 0.70; 95% CI, 0.53-0.91) and the Mediterranean/nut diet (HR, 0.70; CI, 0.53-0.94) than with the control diet, as reported in Progress in Cardiovascular Diseases in 2015.
Is there evidence that the Mediterranean diet can affect the development of venous thromboembolic disease?

We do not have good evidence at this time for an association between the Mediterranean diet and venous thrombosis.

What studies have looked at the use of the Mediterranean diet for secondary prevention of cardiovascular disease?

The landmark trial for secondary prevention of cardiovascular disease is the Lyon Diet Heart Study by Dr Michel de Lorgeril and colleagues, which was published in 1994. This was the first randomized trial to show that a dietary intervention could offer strong cardiovascular protection. A total of 605 patients who had experienced a prior myocardial infarction were randomly assigned to either a Mediterranean-type diet or a “prudent” diet that was consistent with the American Heart Association.

What studies have looked at the Mediterranean diet as a way to reduce the risk for cancer?

The largest study is the EPIC (European Prospective Investigation Into Cancer and Nutrition) trial, a cohort study of nearly half a million people. In a 2011 analysis of this study, Dr Elisabeth Couto and colleagues concluded that following a Mediterranean diet could avoid 4.7% of cancers among men and 2.4% of cancers among women.

The first randomized trial to find an effect of the Mediterranean diet on breast cancer incidence is the PRE-DIMED study. In a 2015 analysis, Dr Estefanía Toledo and colleagues found that the rate of breast cancer was significantly lower with the Mediterranean/olive oil diet (HR, 0.32; 95% CI, 0.13-0.79) than with the control diet after a median of 4.8 years.

Another meta-analysis, which Dr Lukas Schwingshackl and Dr Georg Hoffmann published in the International Journal of Cancer in 2014, included 21 cohort studies and 12 case-control studies. This study found that people who adhered most closely to a Mediterranean diet were at significantly reduced risk of developing or dying of all types of cancer (RR, 0.90; 95% CI, 0.86-0.95; P<.0001), colorectal cancer (RR, 0.86; 95% CI, 0.80-0.93; P<.0001), prostate cancer (RR, 0.96; 95% CI, 0.92-0.99; P=.03), and esophageal/pharyngeal cancer (RR, 0.44; 95% CI, 0.26-0.77; P=.003).

Have studies looked at whether the Mediterranean diet can reduce the risk for cancer recurrence?

An ongoing randomized controlled trial called DIANA (Diet and Androgens)-5 by Dr Anna Villarini...
and colleagues is looking at whether a diet based on Mediterranean and macrobiotic principles can reduce recurrences of breast cancer in women with early-stage invasive disease, but we do not have any data at this time.

**Suggested Readings**


