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The Mediterranean Diet and Your Heart Part I

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Defining and understanding the Mediterranean Nutrition and Diet is not easy because there are sixteen countries bordering the Mediterranean Sea. Diets vary between these countries and also between regions within a country. Many differences in culture, ethnic background, religion, economy and agricultural production result in different diets. But the common Mediterranean dietary pattern has these characteristics:

- high fruits, vegetables, bread and other cereals, potatoes, beans, nuts and seeds
- olive oil is an important monounsaturated fat source
- dairy products, fish and poultry in low to moderate amounts, and little red meat is eaten
- eggs zero to four times a week

Mediterranean-style diets are often close to the American Heart Associations (AHA) dietary guidelines, but they don't follow them exactly. In general, the diets of Mediterranean peoples contain a relatively high percentage of calories from fat. This is thought to contribute to the increasing obesity in these countries, which is becoming a concern.

People who follow the average Mediterranean diet eat less saturated fat than those who eat the average American diet. In fact, their saturated fat consumption is well within the AHA dietary guidelines. More than half the fat calories in a Mediterranean diet come from monounsaturated fats (mainly from olive oil). Monounsaturated fat doesn't raise blood cholesterol levels the way saturated fat does. In 2001, the AHA endorsed many of the characteristics of the Mediterranean diet.

The traditional diets from the people living in countries like Greece, and Southern Italy have been studied extensively over the past several years. This is due to the notably low incidence of chronic diseases and high life-expectancy rates attributed to these populations who ate traditional Mediterranean-diet foods. While the incidence of heart disease in Mediterranean countries is lower than in the United States and death rates are lower, too, this may not be entirely due to the diet.

Lifestyle Factors

Lifestyle factors such as more physical activity and extended social support systems may also play a part. Physical activity is an important component of the "recipe" too. Consider that the Mediterranean dietary pattern is based on food patterns typical in many regions in Greece and southern Italy in the early 1960s, within the frame of a lifestyle that

mirrored social and cultural habits of a very physically active people. The Mediterranean diet seems to connote a particularly healthy lifestyle rather than just a dietary inclination.

Research and the Mediterranean Diet

The Mediterranean diet has been shown to improve cardiovascular risk and to improve the negative effects of the Metabolic Syndrome. (See the Metabolic Syndrome Part I & II at www.jameslhollymd.com (<http://www.jameslhollymd.com/your-life-your-health/metabolic-syndrome-part-i>) “Endothelium Dysfunction” is the result of oxidative stress in the body. (See Oxidative Stress at www.jameslhollymd.com) The lining of arteries is called “endothelium.” It is affected by diet, exercise and toxins. “Inflammatory markers” such as C - reactive protein and others indicate a level of endothelium stress or damage.

A study published in the *Journal of the American Medical Association* in September, 2004 (*JAMA* 2004;292:1433-1439) stated:

“During the 10-year follow-up, men and women between the ages of 70 and 90 years who had adhered to a Mediterranean diet, were nonsmokers or had stopped smoking more than 15 years ago, were physically active, and used alcohol moderately had less than half the mortality rate from all causes, cardiovascular heart disease, cerebrovascular disease, and cancer, and mortality from other causes than those who did not.”

In another study (*JAMA*. 2004;292:1440-1446), published in the same issue of *JAMA*, the following conclusion was reached:

“...consumption of a Mediterranean-style diet by patients with the metabolic syndrome was associated with improvement of endothelial function and a significant reduction of markers of systemic vascular inflammation...participants...showed a reduction in the number of the components of the syndrome such that the overall prevalence of the metabolic syndrome was reduced by approximately one half...Taken together, these findings suggest that a Mediterranean-style diet is a safe strategy for treatment of the metabolic syndrome and for helping to reduce the associated cardiovascular risk.”

In a previous study (*JAMA*. 2002; 288:2569-2578), *JAMA* reported the following:

“Compelling evidence...converges to indicate that at least three dietary strategies are effective in preventing CHD:

- substitute unsaturated fats (especially polyunsaturated fat) for saturated and *trans*-fats;
- increase consumption of omega-3 fatty acids from fish oil or plant sources; and
- consume a diet high in fruits, vegetables, nuts, and whole grains and low in refined grains.

A combination of these approaches can confer greater benefits than a single approach. However, simply lowering the percentage of energy from total fat in the diet is unlikely to

improve lipid profile or reduce CHD incidence.”

The Mediterranean Diet and Fat

The Mediterranean diet does not regard all fat as bad. In fact, the focus of the diet is not to limit total fat consumption, but rather to make wise choices about the type of fat in the diet. Our modern diet contains at least five types of fat. Like the AHA diet, the Mediterranean diet is low in saturated fat. However, it views two types of fat:

- omega-3 fatty acids and
- monounsaturated fats

as healthy and places no restrictions on their consumption. The omega-3 fatty acids are found in fatty fish such as salmon, trout, sardines, tuna – all are cold-water fish -- and in some plant sources such as walnuts and other tree nuts, flaxseed, various vegetables. Monounsaturated fat is abundant in olive oil, nuts such as almonds and avocados.

Fats typically present in the American diet

Type of fat	Effect on heart	Sources
Saturated	Atherogenic	Red meat, butter, cheese, milk
Monounsaturated	Cardioprotective	Olive oil, canola oil, nuts
Polyunsaturated		
Omega-3 fatty acids	Cardioprotective	Fish, vegetables, nuts
Omega-6 oils	Neutral	Cooking oils (eg, corn, soybean, sunflower)
Trans-unsaturated		

Trans-fatty acids	Atherogenic	Processed foods containing partially hydrogenated oil
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“Atherogenic” means that these fats promote clogging of arteries and heart disease. “Cardioprotective” means that these fats help protect the heart from clogging and damage.

Because the Mediterranean diet emphasizes eating whole, natural foods, it is extremely low in *trans*-fatty acids, which are increasingly recognized as important contributors to CAD risk. Eating a variety of fruits and vegetables has been shown to decrease the risk of CAD. Five important dietary factors may contribute to the cardioprotective effect of this eating pattern. These are: the inclusion of fish rich in omega-3 fatty acids, olive oil, nuts, and moderate amounts of alcohol and the exclusion of *trans*-fatty acids.

Fish and omega-3 fatty acids

Fish consumption has long been recognized as important in the prevention of CAD. Protective effects are most likely related to the cardiovascular benefits of omega-3 fatty acids--especially docosahexaenoic acid and eicosapentaenoic acid. Both epidemiologic studies and clinical trials of fish consumption and risk of CAD have demonstrated improved outcomes in patients with higher intakes of omega-3 fatty acids (from food or from supplements).

In the *Diet and Reinfarction Trial* (DART), 2,033 men with prior myocardial infarction were randomly assigned to receive different kinds of dietary advice. After 2 years, the group that was advised to increase omega-3 fatty acid intake by eating fish or taking a fish oil supplement had a 29% reduction in mortality from any cause.

In the *GISSI-Prevenzione* study, a 3 1/2-year trial involving more than 11,000 patients, a supplement containing 850 mg of omega-3 fatty acids decreased the risk of sudden cardiac death by 45% and improved all-cause mortality by 20%, even in patients who were already receiving standard therapies (including beta-blockers, statins, and aspirin). Concerns have been raised about toxic contaminants (eg, mercury) in large carnivorous fish, such as swordfish and mackerel. This potential problem can be avoided by choosing smaller fish, such as sardines, or using purified and concentrated fish oil (containing >60% omega-3 fatty acids by weight).

Mechanisms of benefit for omega-3 fatty acids are under investigation. Several studies have shown that in addition to lowering triglycerides and providing a possible anti-inflammatory effect, omega-3 fatty acids improve parameters of autonomic function, including heart rate variability. In prospective studies, the benefits of the Mediterranean diet are specifically correlated with high omega-3 fatty acid content, and cardiovascular outcomes are improved predominantly by preventing sudden cardiac death.

The role of olive oil

An important source of fat in the Mediterranean diet is olive oil, which is mostly monounsaturated fat (oleic acid). It can be used to provide a delicious flavoring for cooking or in salad dressings or as a healthy substitute for butter or margarine. Several dietary trials have shown that diets enriched with monounsaturated fat reduce total cholesterol and LDL-C levels to the same degree as low-fat, high-carbohydrate diets (such as the AHA Step I and Step II diets). However, the olive oil-enriched Mediterranean diet has a more favorable effect on triglyceride and HDL-C levels.

In a recent study, participants were randomly assigned to one of three diets:

- a diet enriched with olive oil,
- an AHA Step II diet (low in fat, high in carbohydrate), or
- an average American control diet.

The olive oil and Step II diets decreased total cholesterol and LDL-C levels to the same degree. Triglyceride levels fell an average of 13% in patients on the olive oil diet but increased, on average, 11% in the Step II diet. HDL-C levels were unchanged in the olive oil group and decreased 4% in the Step II diet. The investigators calculated that the overall risk of cardiovascular disease was decreased 25% by the olive oil diet and only 12% by the Step II diet.

In addition to improving the lipid profile, olive oil may contribute to the cardioprotective effect of the Mediterranean diet in several other ways, including lowering blood pressure, inhibiting oxidation of LDL-C, providing antithrombotic effects (anti-blood clotting), and improving insulin sensitivity. A recent randomized double-blind study found that olive oil reduced blood pressure in patients with hypertension; the improvement was enough to allow for a 50% decrease in antihypertensive drug dosage.

The strong taste of extra-virgin olive oil is partly caused by the presence of significant quantities of flavonoids, which are polyphenolic antioxidants that have been shown to inhibit LDL-C oxidation. The importance of dietary antioxidant flavonoids was demonstrated in the Zutphen Elderly Study, which showed a decreased risk of CAD-related mortality for the highest versus the lowest tertile of flavonoid intake. Foods rich in flavonoids (including berries, apples, onions, tea, and red wine) are also part of the Mediterranean diet.

Next week, we will continue with our discussion of the Mediterranean diet. Remember, it has been said, “you are what you eat,” and it is your life and your health.