



Mediterranean Diet: The Right way to Longevity?

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Editorial

The Mediterranean Diet (MD) is not a trendy diet to lose weight in a few days or weeks but a set of knowledge, social habits and cultural traditions historically handed down by the populations that overlook the Mediterranean basin, which since November 2010 UNESCO, for its historical roots and proven scientific bases, it has recognized as "the intangible heritage of humanity". This important recognition is based on the principle that: "this simple and frugal way of eating meals has favored intercultural contacts over time and conviviality, giving life to a formidable body of knowledge, social customs and traditional celebrations of many populations of the Mediterranean". The Mediterranean Diet is a set of skills, knowledge, practices and traditions ranging from the landscape to the table [1]. That is to say, an anthropological model that revolves around the complex culture of food that the Mediterranean countries have created and transmitted over the centuries. Traditions handed down from generation to generation and knowledge preserved and elaborated over time. An anthropological unicum that deserves to be known, imitated, innovated and delivered to future generations, based on elements of a food code that transforms the table into a metaphorical space constantly rebuilt and refounded, because if it is true that the Mediterranean diet has been brought into table for millennia, it is true that only in the last twenty years has been identified as a strategic asset to develop health and economy that makes food the signal of a general transformation of attitudes, feelings and collective responsibility towards not only the individual but also of nature and living species [1,2].

It is also the recognition of a "Mediterranean lifestyle", which involves different cultural, ethnic and religious baggage, which involves different social and economic status, with a diversified agricultural production with different food choices [1-3]. The first scholar who brought the concept of "Mediterranean Diet" to the attention of science was Ancel Keys (1904-2004) expert in epidemiology and nutritionist at the University of Minnesota School of Public Health. To the American Ancel Keys should be recognized the great merit of having demonstrated, with the Seven Countries Study - the largest epidemiological research project in the history of nutrition started in the '50s - the health benefits of this lifestyle, as well as having invented (in the Latin sense of the word *invenire*, which means discovering, recognizing, finding), together with his wife, biologist of the Mayo Foundation, Margaret Haney, the term Mediterranean diet [4]. And since he appoints *sunsequentiarerum*, precisely the fact of having baptized this lifestyle with a proper name, has triggered a process of recognition and identification of this specific cultural heritage, without which the Mediterranean peoples would have continued to live following this style of life, but continuing to ignore its uniqueness [1].

Ancel Keys was the promoter of the largest epidemiological study ever done in the field of nutrition fifty years ago: the Seven Countries Study. In seven countries (the United States, the Netherlands, Greece, Finland, Japan, Italy and the former Yugoslavia) selected across the globe, the diet of about 12,000 people was compared [5-7]. An important conclusion of this study, with the reduction of blood cholesterol, a recognized major risk factor for this disease (lipoprotein cholesterol) was not known at that time. Later work, however, has been shown to be a cholesterol-lowering diet, but has a range of beneficial health effects [3]. The results of this impressive research led Keys to baptize the Mediterranean Diet as the best way of life to live better and longer. Not surprisingly, in fact, Ancel and Margaret Keys published, after their shared scientific experience, two very successful books: *Eat Well and Stay Well* in 1959 [8] and *How to Eat Well and Stay Well: The Mediterranean Way* in 1975 [9].

In these pages the general public read for the first time the expression Mediterranean Diet, used by them with the purpose of countering the fashion of slimming diets, senseless and hyper-protein. While scientific journals had to wait until 1985, because this term entered the scientific lexicon, thanks to an article written by Anna Ferro Luzzi and Mario Mancini [10]. All processed data were

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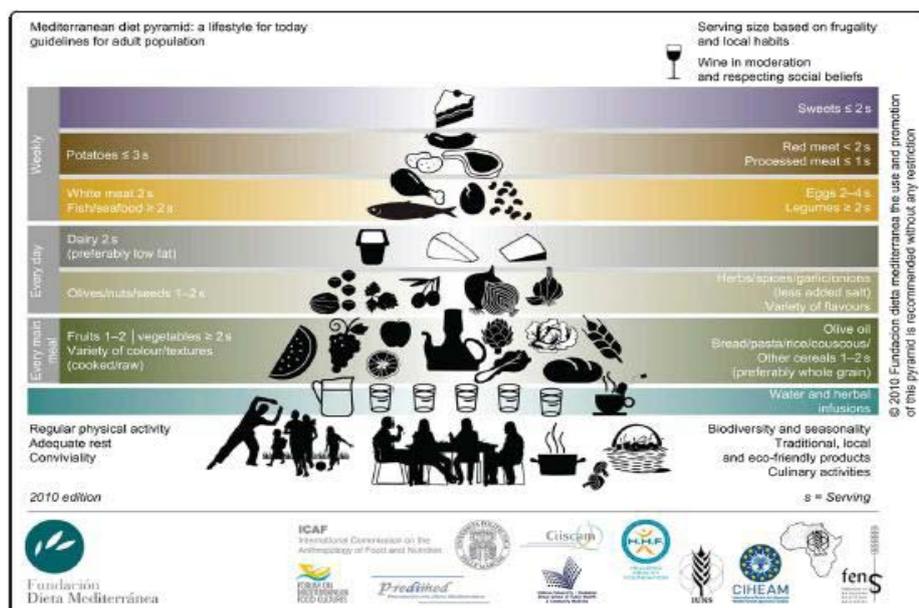


Figure 1: The Mediterranean diet pyramid reproduced from Bach-Faig A. 2011, who encourages the use of this image without restriction [14].

then confirmed in subsequent research by Keys himself and Mancini [11,12]. Among the populations of the Mediterranean basin, which mainly fed pasta, fruit and vegetables, moderate quantities of fish and used almost exclusively olive oil as a condiment, the mortality rate for ischemic heart disease was much lower than in countries such as Finland and the United States, where the daily diet included many saturated fats of animal origin (butter, lard, milk, cheese, red meat) and led Ancel Keys to define the Mediterranean Diet as the best "lifestyle" to live better and more for a long time, making it popular all over the world [6,7].

There is not in fact a single Mediterranean diet, but a common "Mediterranean" diet and cultural pattern, a model highlighted and theorized in a path that has lasted for sixty years, which has these main characteristics:

- Plenty of fresh and seasonal vegetable foods, such as: vegetables, vegetables, fresh and dried fruit, legumes, bread and pasta from non-reconstituted wholemeal flour and other whole grains such as barley, spelled, oats that ensure both a low Index Glycemic (IG) that a high balancing and satiating factor;
- Use of olive oil as the main source of fats;
- Fish, white meat and eggs, consumed a few times a week;
- Reduced intake of red meat and sausages;
- Daily but moderate consumption of cheese and dairy yoghurt from grazing animals, rich in omega 3 fatty acids and antioxidant vitamins;
- Moderate intake of wine, mainly red, during meals;
- Very low consumption of sweets and refined sugars (Figure 1) [3,13-16].

These food and nutritional choices determine, substantially, a modest intake of proteins, mainly of vegetable origin, low-index carbohydrates and glycemic load, with simple almost absent sugars, beta carotene, tocopherols, vitamin C very abundant,

calcium, magnesium and high potassium with low sodium, high polyphenols, high monounsaturated/saturated fatty acids ratio, with very high quantity and ratio of omega 3/omega 6 fatty acids. Furthermore, cooking mainly at low temperatures for a long time and the addition of raw olive oil in particular also determines a diet with a low AGE content (Advanced Glycation End-products) which are molecules dangerous to the body, because they have effects related to inflammation and aging and are involved in the pathogenesis of many degenerative diseases [17].

The almost exclusive use of olive oil in DM, rich in monounsaturated fatty acids and in particular of oleic acid (70-86%), allows to keep under control the serum concentrations of very Low Density Lipoproteins (LDL), rich in cholesterol which tend to remain in the blood and to settle on the walls of the arteries. Moreover, the relatively high concentration of oleic acid in the membrane phospholipids, makes the cell less susceptible to oxidation, reducing the formation of pro-inflammatory molecules [18]. The presence in olive oil of polyphenols and flavonoids, substances with antioxidant characteristics, induce significant effects in the prevention of chronic diseases, such as cardiovascular diseases, some types of tumors, premature aging, metabolic syndrome, unipolar depression and the degenerative diseases of the nervous system [3,13,16,19-26].

The very modest presence of saturated animal fats and margarines in the DM, or relatively rich trans fats (trans Fatty Acid), ie hydrogenated fats, leads to a reduction in LDL (Low Density Lipoproteins), favoring in parallel a increase in HDL (High Density Lipoproteins). Conversely, a diet rich in trans fatty acids may represent a potent risk factor for cholesterol dyslipidemia and cardio-vascular complications. Consumption of foods with a low glycemic index tend to be associated with higher values of HDL anti-atherogeniccholesterolemia, reduced plasma values of some inflammation indicators, and more favorable plasma triglyceride levels [15].

The robust intake of whole grains (corn, barley, rice, wheat - soft and hard wheat and spelled) is an important contribution of nutritive

energy in the form of starch, a satisfying source of protein, iron, B vitamins and of fibers that facilitate intestinal transit and limit the contact of some harmful elements with the gastrointestinal mucosa [27,28]. Foods made from whole grains substantially reduce the risk of cardiovascular disease, diabetes and cancer and also play a part in managing body weight and digestive health [16]. Also for the risk of type 2 diabetes mellitus has been demonstrated an inverse association with the intake of whole grains; the beneficial effects may be due to the structure of whole grains and nutrients present in whole grains, such as magnesium and antioxidants such as vitamin E, phytic acid and selenium [3,16,29].

Even the regular intake of fish allows an optimal intake of nutrients of high nutritional quality, such as proteins, vitamin D, long-chain omega-3 polyunsaturated fatty acids and some mineral salts such as selenium, phosphorus and potassium that interact with the enzymatic cascades of membranes mobile phones. Particularly useful is the presence in fish products of omega-3 fatty acids, which include Eicosapentenoic Acid (EPA) and Docosahexaenoic Acid (DHA), essential fatty acids because our body is not able to produce them independently and must therefore be necessarily taken with the diet. Regular consumption of omega-3 protects the cardiovascular system, decreasing the risk of coronary heart disease, hypertension, atherosclerosis, thrombosis [30,31].

Even the moderate intake of wine, which contains effective antioxidant substances such as resveratrol and quercetinase has proved useful in DM. The presence of these antioxidants substances protect proteins, lipids and nucleic acids of the cells from the attack of free radicals. A small glass of red wine, with meals, can help to exercise actions not only for the reduction of cardiovascular risks, but also for the improvement of lipids, hemostatic balance, blood pressure, insulin sensitivity and HDL cholesterol level [3,32].

Prospective studies show that higher adherence to the Mediterranean diet is associated with a 20-23% reduced risk of developing type 2 diabetes, while the results of randomized controlled trials show that Mediterranean diet reduces glycosylated hemoglobin levels by 0.30-0.47%, and is also associated with a 28-30% reduced risk for cardiovascular events. The mechanisms by which Mediterranean diet produces its cardiometabolic benefits in type 2 diabetes are, for the most, anti-inflammatory and antioxidative: increased consumption of high-quality foods may cool down the activation of the innate immune system, by reducing the production of proinflammatory cytokines while increasing that of anti-inflammatory cytokines. This may favor the generation of an anti-inflammatory milieu, which in turn may improve insulin sensitivity in the peripheral tissues and endothelial function at the vascular level and ultimately act as a barrier to the metabolic syndrome, type 2 diabetes and development of atherosclerosis [16].

Among the characteristic cultural values of the MD we must also underline the fundamental importance of regular physical activity, characterized by movements mainly on foot and by sharing and socialization, as beyond the nutritional aspect, the conviviality amplifies the social value and cultural heritage. Cooking and sitting around the table in the company of family and friends fosters a powerful sense of belonging to a community.

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