

Nutritional and Health Benefits Some of the Foods in Mediterranean Countries: A mini-review

Amer Mahdi^{1,2}, Anwar Noman^{1,3}, Waleed Al-Ansi^{1,2}, and Ammar Al-Farga¹

¹State key Laboratory of Food Science and Technology & School of Food Science and Technology, Jiangnan University, 1800 Lihu Avenue, Wuxi 214122, P. R.

²Department of Food Science and Technology, Faculty of Agriculture, Sana'a University, Sana'a, Yemen. ³Department of Agricultural Engineering, Faculty of Agriculture, Sana'a University, Sana'a, Yemen.

Corresponding author: Tel: +86 13405760751, E-mail address: ziyadamer2@yahoo.com

Abstract – The nutrition is the most important environmental factors effect on human health. The functional foods have an effect on well-being and health or result in a reduction in disease risk. The Mediterranean Diet is largely vegetarian in nature. MD can have a positive effect on the well-being of individuals. The MD provides an abundance of plant foods (fruits, vegetables, bread, cereal products, legumes, nuts, and seeds), favoring the consumption of locally grown, seasonally fresh and minimally processed foods. The review touched on briefly to some of the nutritional and health benefits of food used in the food pattern of the Mediterranean countries, and its functional properties.

Keywords – Mediterranean, Nutritional, Health, Food, Functional Properties.

I. INTRODUCTION

The health of the individual and the population is the result of interactions between genetics and a number of environmental factors. Nutrition appears to be an environmental factor of major importance [1]. Hence, the advances in understanding the relationship between nutrition and health, often at the molecular level, led to the concept of “functional foods,” i. e., foods that should have a relevant effect on well-being and health or result in a reduction in disease risk. The functional component of a functional food can be an essential macronutrient or micronutrient, a nutrient that is not considered essential or a non-nutritive component [2, 3]. In this respect, fruit, vegetables, and whole grains delivering “packages” of constituents that may promote health (e. g., vitamins, fiber, and plant chemicals) could be designated as functional foods [4, 5].

The Mediterranean Diet is largely vegetarian in nature. Scientific evidence indicates, that a high consumption of plant-based foods, such as fruit, vegetables, nuts, whole grains, and legumes, is associated with a significantly lower risk of chronic diseases. The protective effects of these foods are probably mediated through multiple beneficial nutrients contained in these foods [6]. The Mediterranean Diet (MD) has been evolving for thousands of years hand-in-hand with the economic development, as well as the scientific and technological progress of the countries which form this region, and has been continually shaping both choices of foods and methods of cooking. Although the MD is common to a large geographical area, identifying a single food which is common to the multifarious cultures, it contains, is certainly not easy [7]. In fact, several studies demonstrate that the MD can have a

positive effect on the well-being of individuals and in particular, in the prevention of heart disease [8].

The MD is generally described as providing an abundance of plant foods (fruits, vegetables, bread, cereal products, legumes, nuts, and seeds), favoring the consumption of locally grown, seasonally fresh and minimally processed foods [9]. Fish consumption is also increased, depending on proximity to the sea. Additionally, since olive cultivation is a symbolic feature of the traditional Mediterranean agriculture [10]. Despite the regional variability and disparities, the philosophy of the food culture is a common denominator in the Mediterranean region. The principles governing cooking are the same in every place and encompass the use of olive oil, herbs, and fresh vegetables. Thus, the functional benefits of the individual ingredients are maximized through effective combinations improving the capacity to resist disease and enhancing health [11]. Given the broad geographical region, including at least 16 countries that border the Mediterranean Sea [12]. A regional variability should be expected. Thus, the Italian variant of the MD is characterized by higher consumption of pasta, whereas in Spain, fish consumption is particularly high [9]. The objective of this study was to review the nutritional and health benefits some of the foods in Mediterranean countries.

II. OLIVE OIL

With different degrees of evidence, many of the health-promoting effects of the Mediterranean diet have been attributed to olive oil consumption. Apart from oleic acid, the particular minor components present in olive oil, such as hydrocarbons, tocopherols, fatty alcohols, triterpenic compounds, and polyphenols, some of which are known to be anti-inflammatory, make it the quintessential functional food. The World Health Organization (WHO) statistics (1960–1990) indicate that life expectancy increased in Mediterranean countries compared to that in more developed Western countries, an effect that was related to adherence to the Mediterranean diet, and it is highly likely that olive oil is at least partly responsible [13]. Olive oil is the principal source of fat. Usually, more of some foods means that less of other foods are being consumed [14]. In this respect, the Mediterranean food culture comprises a low proportion of animal fat, little meat and a moderate intake of milk and dairy products [9]. Olive oil also contains significantly higher amounts of squalene than

seed oils. Since squalene is to a large extent transferred to the skin, its major protective effect is thought to be against skin cancer. This is supported by studies showing inhibition of this neoplasm in rodents and low incidence within Mediterranean populations. The mechanism is probably by scavenging singlet oxygen generated by ultraviolet light [15].

III. FIBERS

Dietary fiber can be defined as non-digestible carbohydrates with a degree of polymerization ≥ 3 [16]. Additionally, a list of beneficial physiological effects of dietary fiber was developed including a reduction in blood total and/or LDL cholesterol; attenuation of postprandial blood glucose and/or insulin levels; increased stool bulk and/or decreased transit time; and fermentation by colon microflora. It is noteworthy that additional fiber attributes, such as weight loss/reduced adiposity and increased satiety were not included in the list of beneficial effects [17].

The Mediterranean eating pattern includes the consumption of legumes and cereals, foods rich in dietary fiber as well. The relatively high soluble fiber content of peas and beans was shown to lower blood cholesterol concentrations in feeding studies [18]. There is a substantial body of literature showing that dietary fibers, in particular soluble fibers, decrease blood cholesterol concentrations and may thereby modify the risk of coronary artery disease. Additionally, they may affect the risk of large bowel cancers through mechanisms such as altering bile acid metabolism, increasing fecal bulk, or decreasing gut transit time [18]. The cereals form the basis of the Mediterranean food pyramid. Oats, rye, and barley contain about one-third soluble fiber and two-thirds insoluble fiber, but wheat is lower in soluble fiber [19]. The Oligosaccharides are thought to have effects similar to those of soluble dietary fibers in the human gut. In addition, studies consistently showed that they are able to alter the human fecal flora. Many human studies found that consumption of fructooligosaccharides increased bifidobacteria in the gut while decreasing concentrations of *Escherichia coli*, *Clostridia*, and *Lactobacillales* [20].

IV. VITAMINS

Vitamins are organic compounds essential for a proper functioning of the human body and include biotin, folic acid, niacin, pantothenic acid, riboflavin, thiamin, vitamin A, vitamin B6, vitamin B12, vitamin C, vitamin D, vitamin E and vitamin K. They are required in small amounts and are obtained from a correct diet [21]. The vitamins A, D, E, and K are fat-soluble, and can be stored in the body, while the vitamins C and those of the B-complex, such as vitamins B6, B12, niacin (B3), riboflavin (B2), biotin (B7), thiamine (B1), pantothenic acid (B5) and folic acid (B9), are water soluble, and can't be stored in the body because the excess ingested is eliminated through the human fluids like urine and transpiration, being necessary to ingest a daily amount of these vitamins [22, 23]. Undoubtedly, plant products offer high amounts of

vitamins. Whole cereals are rich in vitamins of the B group. Fruit and vegetables are good sources particularly of vitamin A in the form of β -carotene and vitamin C [24]. Vitamin E is present in whole grains and nuts; it is a potent intracellular antioxidant that protects polyunsaturated fatty acids in cell membranes from oxidative damage [19]. Green leafy vegetables are good sources of folate, a nutrient with apparent significance in the cancer process. The essential role in the *de novo* biosynthesis of purines and pyrimidines, and thus in DNA replication and cell division, and for the synthesis of S-adenosylmethionine, a methyl donor for more than 100 biochemical reactions, including methylation of DNA, places it in a unique position relative to DNA stability [25].

V. MINERALS

Dietary minerals are inorganic elements essential for life present in the soil and water, which are absorbed by plants or ingested by animals. There are two classes of dietary minerals according to the human body demands: bulk minerals – those that are required in relatively large amounts (calcium, magnesium, phosphorus, potassium, sodium, sulfur), and trace minerals needed only in very small amounts (chromium, cobalt, copper, fluorine, iodine, iron, manganese, molybdenum, selenium, zinc [21, 23]. Products of plant origin are good sources of minerals as well. In fact, diets rich in potassium, magnesium, and cereal fiber reduce the risk of stroke, particularly among hypertensive men [26]. Furthermore, adequate intake of minerals such as calcium and potassium specifically derived from foods, where they coexist with other essential nutrients contributes to cardiovascular as well as overall health [27].

VI. PHYTOESTROGENS

The word phytoestrogen from “phyto” meaning plant, and “estrogen” due to their ability to affect estrogenic activity in the body. It describes a property that has been identified in some foods, plants, and herbs. These have gained much interest in recent years because of their potential protective effect against hormone-dependent cancers and age-related diseases and conditions [28]. Phytoestrogens plant-derived compounds that structurally or functionally mimic mammalian estrogens, are considered to play an important role in the prevention of cancers, heart disease, menopausal symptoms and osteoporosis [29, 30]. There are several classes of phytoestrogens. The more ubiquitous are the phenolic estrogens, isoflavones, coumestans, and lignans. For the Mediterranean population, food sources of isoflavones are oilseeds, such as the sunflower seed and nuts from different botanical families. Lignans are widespread in foodstuffs such as cereals, fruit, and vegetables [31].

VII. FUNCTIONAL PROPERTIES OF THE MD

The functionality of the MD, in other words, it's healthy and preventive dimensions, has so far been attributed to the increased consumption of fruit, vegetables, cereals, and legumes. However, the cardinal characteristic of this diet is that olive oil serves as the principal source of dietary fat [32]. The health promoting properties of olive oil are conferred by the monounsaturated oleic acid, the high intake of squalene and the unique profile of the phenolic fraction [15]. In addition, a positive health contribution comes from the content of α -tocopherol, the tocopherol with the highest vitamin E activity [33]. Historically, the MD has been associated with a lower rate of cardiovascular disease in those populations that consume it [34], as this dietary model, enriched in monounsaturated fat (MUFA), decreases the level of LDL-cholesterol in the plasma when replacing a saturated fat (SFA) enriched diet. Current dietary guidelines suggest replacing SFA with complex carbohydrates. Substantial evidence exists that high-density lipoprotein cholesterol levels are higher and triglycerides are lower on a high-MUFA than a low-fat/carbohydrate-rich, blood cholesterol-lowering diet [35].

The traditional MD is a dietary approach, which, by encouraging a general increase in the consumption of plant foods, ensures the built-in redundancy of multiple agents with independent overlapping and perhaps interactive mechanisms [20]. Moreover, the abundant consumption of plant foods provides palatability and promotes satiety, resulting in a dietary pattern that incorporates animal foods in small amounts. The MD is rich in bioprotective nutrients such as oleic acid, omega-3 fatty acids, fiber, vitamins of the B group and various antioxidants, and low in saturated and trans fatty acids. Therefore, the expected benefits for the prevention of CHD go far beyond an antioxidant effect and include lipid and blood pressure lowering effects, anti-inflammatory effects and the prevention of arterial plaque rupture and thrombosis, as well as protection against malignant ventricular arrhythmia and heart failure [36]. Furthermore, many of the components have been shown, when studied separately, to potentially prevent cancer initiation or metastasis, prevent angiogenesis and induce apoptosis [1]. To simplify the picture, think of a classical Mediterranean meal consisting of fish just caught from the Mediterranean Sea, wild greens with drops of pure olive oil and yogurt with nuts, honey, and succulent fresh fruit as a dessert [11].

VIII. CONCLUSION

Mediterranean Diet countries have a common denominator and recognized them all to be high in cereals (more than 60% of total energy), low in total fats (less than 30%), with a predominant use of olive oil, which represents more than 70% of total lipids, and relatively rich in a variety of fruits and vegetables, which provide at least half of the total amount of dietary fiber. We review some nutritional, health benefits and functional properties

of food are used in MD as the Olive oil, Fibers, Vitamins, Minerals, and Phytoestrogens.

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