

.....

Dietary Fat Intake of European Countries in the Mediterranean Area: An Update

Franca Marangoni, Antonella Martiello, Claudio Galli

Department of Pharmacological Sciences, University of Milan, Milan, Italy

The pattern of the diet which was typical during the early 1960s in countries in the Mediterranean basin has been extensively described in several meetings and publications, and the complexity of the topic has recently raised the issue of updating the definition of this diet [1]. In essence, the main points are:

- (1) Countries bordering the Mediterranean belong to three different continents (Europe, Asia and Africa) making a total of 21 (European: Gibraltar, Spain, France, Monaco, Italy, Slovenia, Croatia, Bosnia and Herzegovina, Albania, Greece; Asian: Turkey, Cyprus, Syria, Israel, Lebanon; African: Egypt, Libya, Malta, Tunisia, Algeria, Morocco).

The most relevant contribution to the concept of the Mediterranean diet arises from the features of the diets, which were most extensively studied, i.e. those in typical Southern European countries (e.g. Greece, Cyprus, Malta) and in the Mediterranean regions of Spain, Italy and France. The contributions of diets in the major North African countries, predominantly located along the Mediterranean Coast (Egypt, Libya, Algeria, Tunisia), and also from the diet of countries on the Eastern shores of the Mediterranean are relevant although less studied. Significant differences occur also in the diet of different areas in the same country (e.g. Southern vs. Northern Italy). As a general consideration, differences in dietary habits are related to the availability of food items, especially of plant origin, in relation to specific characteristics of climates, environmental features, cultures, etc.

- (2) There were certain common characteristics in the various diets throughout the different countries, deriving from the features of local food production and consumption, as a combination of the agricultural traditions and of the consumption of wild foods obtained from noncultivated plants and wild, unbred animals. Common features of the diets in the Mediterranean basin can be summarized as follows [2, 3]:

- High consumption of fresh fruits, vegetables, legumes, herbs and garlic, bread and other cereals, potatoes, nuts and seeds.
- Olive oil is the key fat source, rich in monounsaturated fatty acids.
- Dairy products, fish and poultry are consumed in low-to-moderate amounts.
- Little red meat is eaten, from different sources, with an appreciable contribution from grass-fed animals, e.g. sheep and goat meat, and their milk and derived products.
- Eggs are eaten zero to four times a week.
- Wine is drunk in moderate (or low) amounts daily.

A general concept that can be applied in considering the Mediterranean diet is that there is a prevalence of unprocessed or natural foods. Consumption of natural, unprocessed foods implies the ingestion of parts (cells, tissues, organs) of plants and animal organisms that spontaneously and actively adapted to local environmental conditions, rather than the intakes of separated or extracted molecules. In these types of foods, a physiological balance between various components of biological (structural and functional) relevance has been reached through adaptive processes and these complex mixtures of structured ingredients, which would include bioactive components, is then transferred to the organism that is ingesting the food. This process has naturally taken place throughout the course of evolution of animal species, including humans (hunters and gatherers), before the appearance and development of agriculture. The ingestion of natural foods involves also dilution of their components into a relatively high food mass and this would increase their bioavailability.

In addition, a certain level of physical exercise associated with working activities completed the life style profile in the Mediterranean countries.

Major differences between the features of the diets in North African countries and Southern European countries concern the type of carbohydrates, e.g. pasta, rice and polenta (cornmeal) in European countries, couscous (a semolina grain) in North Africa and rice, bulgur and chick peas in Eastern Mediterranean.

(3) Significant changes in the traditional dietary patterns occurred during the last decades in Mediterranean countries and these should be taken into consideration when evaluating the present situation. However, the growing evidence that the association of several components of the Mediterranean diet leads to protective effects vs. various pathologies requires more detailed assessments of the quantitative aspects, i.e. the contents of specific nutrients, in this case, types of fatty acids, in the various food items that are representative of the diet. This is an essential information in order to design complex meals that will provide the optimal intakes of the nutrients that have been shown to be protective by various studies, and to formulate practical recommendations.

(4) In the above perspective, this chapter is specifically devoted to selectively consider fats in the Mediterranean diet, updating the data presented in the previous volume of the series on the same topic [4], to the latest available information. In essence, focus will be on the contribution of various components of the diets in European Mediterranean countries to the overall fat consumption. More specifically, the following dietary components will be considered in selected Mediterranean countries versus Northern European countries:

- 1 Total fat consumption, animal versus vegetable.
- 2 Visible fats used for cooking or dressing, of animal versus vegetable origin.
- 3 Consumption of plant foods, e.g. vegetables and legumes, widely consumed in the Mediterranean diet, including some consideration to selected vegetable foods particularly rich in certain fatty acids.
- 4 Consumption of various animal foods: fish, bovine meat and dairy products, and other relevant animal foods, including consideration to some locally consumed wild animals, e.g. snails, frogs.
- 5 Fatty acid composition of invisible fats in major foods. In addition, data on the quantitative and qualitative aspects of the contribution to fat intakes by minor sources will be presented.

Further, the protective effects of the consumption of a fatty acid typical of Mediterranean diets, namely oleic acid in olive oil, and of selected fatty acids, such as the omega-3 fatty acids, with special attention to the land based alpha-linolenic acid (ALA), and their interactions, will be discussed.

Finally, practical recommendations will be provided on how to formulate menus providing certain amounts of health promoting fatty acids, based on the quantitative and qualitative data, and conclusions will be drawn.

Fats in the Mediterranean Diet

The consumption of fats in 2002, subdivided into total, vegetable and animal, in various European countries, comparing selected Northern European (NE) countries with Southern European (SE), North African (NA) and Eastern Mediterranean (EM), are shown in figure 1. It appears that the total fat consumption of SE populations tend to be higher than those of the other population groups, especially those in NA, reflecting somehow the generally higher use of visible fats for salad dressings and cooking, that contributes significantly to total fat consumption.

As to the proportions between vegetable and animal fat consumption (fig. 1; table 1) the ratios of vegetable versus animal fats are higher in SE, being generally higher than 1.0 with the exception of France, than in NE countries

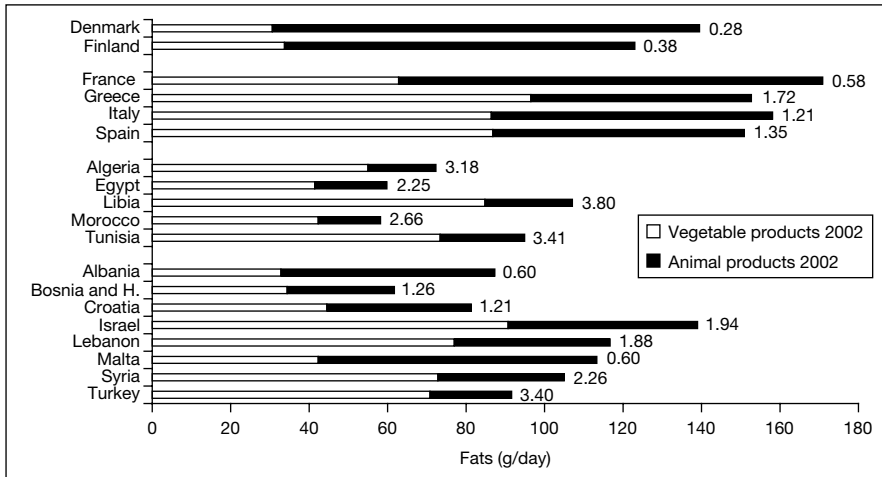


Fig. 1. Total fat intake (g/day per person), from animal and vegetable products, in Mediterranean countries and, as comparison, in Denmark and in Finland. Values at the right side of the bars represent the vegetable/animal fat ratios. Data from FAOSTAT 2002.

under consideration (less than 0.4). In France, the Southern part of the country, with expected significant dietary differences versus the Northern part, contributes only partly to the overall national situation. In the NA and EM areas the ratios are quite different, being rather high in NA (>2), mainly due to the lower animal fat intakes, and ranging between 0.6 (Albania and Malta) and over 3 (Turkey) in EM. No major changes in the vegetable/animal (V/A) fat ratios occurred between the periods 1990–1998, 1998–2002 and the year 2002.

Vegetable Fats

Visible

When the consumption of visible fats are considered in NE, SE, and EM countries (table 2), it appears that the intakes of all types of vegetable oils are higher in SE. In these countries, as previously mentioned, oils are widely used for salad dressing and similar applications, and this results in relatively high consumption rates, assessed as disappearance data, than in NE. Olive oil is by far the most abundant in Greece, Italy and Spain, but appreciable consumption of other vegetable oils also takes place in certain SE countries, e.g. sunflower oil in France and Spain, corn oil in Greece, soybean oil in Italy and Spain.