The Mediterranean Diet: The Greeks Had It Right!

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Variety of Eating Patterns

• Foods have historically been limited to what could be cultivated or caught from the sea, depending on specific location.

• Limited in processed foods until recent times. So chemical additives and nutrient fortificants have only newly been used. No fast foods!

• Emphasis on fresh fruits, vegetables, whole grains, olives and olive oil, and seafoods—fish, mollusks, and arthropods. Wine was traditional.

• Home preparation and family-eating was customary. Cheese (feta) and desserts were commonly consumed, but not so rich or excessive.

• No concerns about high fat intakes, high salt, or junk food.

• A Mediterranean food pyramid is shown to illustrate recommended intake.
Mediterranean Diet Pyramid—A Lifestyle for Today! Guidelines for Adults

• Every Main Meal
  • Fruits 1-2 Servings  Also, Breads/Cereals 1-2 Servings
  • Vegetables (Varied Colors) >2 Servings Also, Legumes 2+ Servings

• Daily
  • Low-fat Milk/Cheese 2 Servings Also, Herbs/Garlic/Onions
  • Olives (oil)/Fruits/Seeds 1-2 Servings

• Weekly
  • Potatoes ~3 Servings
  • White Meat 2 Servings
  • Fish/seafood >2 Servings
  • Eggs 2-4 Servings
A Healthy Diet Coupled with Healthy Lifestyle

• High quality diet—vegetables cooked raw; minimal processed foods; minimal sweets, red meats (not processed meats)
• Regular physical activity
• Adequate rest
• Water and pot liquor—plenty of fluids (~1.5 to 2 liters per day)
• Home culinary skills (few store-bought processed foods); seasonal foods
• Family eating and conviviality
Critical Points about the Mediterranean Diet

• Adherence to Med Diet reduces risks of many chronic diseases—non-communicable—in our nations today.

• Emphasis on plant foods, but not elimination of animal foods, reduces risk of becoming overweight and helps maintain a healthy weight.

• Little concern about how much fat is ingested; plant foods provide a healthy supply of polyunsaturated fatty acids, esp. the omega-3 Fas.

• Adequate intakes of all vitamins and minerals from a diet based on plant-rich foods and some animal products.

• Adequate intakes of dietary fiber and polyphenols from the plant foods.

• Lifestyle based on behaviors that promote health and reduce disease risk.
A Few References on the Mediterranean Diet


Mediterranean Diet Pyramid -- Consensus
Polyphenols and Health: Mediterranean Diet

Presentation based on the publication:

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• Polyphenols = colorful, plant-based, phenolic organic compounds.
• Flavonoids, the major polyphenolic subgroup, comprise more than 8,000 compounds classified into six subgroups.
• Only 100 polyphenols are in foods humans typically eat, and flavonoids represent 40%.
Top 40 Foods for Polyphenols (mg in a typical serving)

<table>
<thead>
<tr>
<th>FLAVONOIDS</th>
<th>Sample Polyphenols</th>
<th>Food Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Simple Flavonoids</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flavan-3-ols</td>
<td>(+)-catechins, (-)-epicatechin, (-)-epigallocatechin-3-gallate</td>
<td>Green tea, chocolate, tree fruits, grapes, red wine</td>
</tr>
<tr>
<td>Flavanones</td>
<td>Hesperetin, Naringenin, Eriodictyol</td>
<td>Citrus fruits and juices</td>
</tr>
<tr>
<td>Flavones</td>
<td>Luteolin, Apigenin</td>
<td>Parsley, celery seed, oregano</td>
</tr>
<tr>
<td><strong>Isoflavones</strong></td>
<td>Daidzein, Genistein, Glycitein</td>
<td>Soybeans, soy-based foods, legumes</td>
</tr>
<tr>
<td><strong>Flavonols</strong></td>
<td>Quercetin, Kaempferol, Myricetin, Isorhamnetin</td>
<td>Onions, apples, tea, berries</td>
</tr>
<tr>
<td><strong>Anthocyanidins</strong></td>
<td>Cyanidin, Delphinidin, Malvidin, Pelargonidin, Peonidin, Petunidin</td>
<td>Most berries, stone fruits</td>
</tr>
<tr>
<td><strong>Complex Flavonoids</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condensed Tannins</td>
<td>Procyanidins, Prodelphinidins, Propelargonidin</td>
<td>Chocolate, stone fruit (apples, pears), grapes, strawberries, cranberries, nut skins, cinnamon, beer, wine, barley, legumes</td>
</tr>
</tbody>
</table>
Quercetin Content (mg/100 gm edible portion)

Flavonoids: US Adult Intake; Health Benefits

- Dietary flavonoid intake = 251 mg/day (tea 80% of intake). Only 29% consume tea on a given day, and without, total flavonoid intake = 50 mg/day, reflecting the low intake of fruits and vegetables by US adults (~2 servings/day). (J Nutr 145:1239-1248, 2015; Public Health Nutr 31:1-5, 2016).

- Strong linkage between long-term, high dietary polyphenol intake and reduced risk for:
  - mortality
  - neurodegenerative diseases
  - weight gain
  - systemic inflammation and oxidative stress
  - diabetes
  - cardiovascular disease
  - hypertension
  - acute respiratory illness.

High diet consumption of flavonoids is associated with reduced risk (60%) of mortality in older women. *Am J Clin Nutr* 2015;101:1012–20
Polyphenol Metabolism

1. Dietary polyphenol intake (majority to colon)

2. Converted by colon bacteria to simple phenolics

3. Absorbed and translocated via portal vein to liver

4. Phase-2 conjugation

5. Released into circulation, exerts bioactive effects, and then eliminated in urine

- Most ingested polyphenols reach the colon.
- Microbial degradation transforms into simple phenols (and improve colon health and microbiome).
- Phenols can be reabsorbed into the portal vein (augmented with exercise), and undergo phase II biotransformation in the liver.
- Then enter the blood and exert beneficial effects.
- Finally excreted in the urine.
High urine phenolic content reflects high diet intake of polyphenols, and is linked to 30% lower mortality. 

Conclusion

• The high consumption of unprocessed plant foods by inhabitants of countries bordering the Mediterranean Sea has been linked to multiple health and disease prevention benefits that are in large part due to a varied intake of polyphenols/flavonoids.

• Do all you can to add “color” to your daily diet (each meal).