

# The Mediterranean Diet

*Reducing inflammation for a longer life*

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## Italy, Portugal, Spain, Morocco, Greece, France



## Mediterranean Diet

- ▶ The Mediterranean Diet is a *way of eating* based on the traditional foods (and drinks) of the countries surrounding the Mediterranean Sea.
- ▶ The Mediterranean Diet is not a diet, as in “go on a diet,” even though it is a great way to lose weight or improve your health.
- ▶ Rather, it is a lifestyle – including foods, activities, meals with friends and family, and wine in moderation with meals.

## Mediterranean Diet

- ▶ It has been studied and noted by scores of leading scientists as *one of the healthiest diets in the world*
- ▶ Just as important, the Mediterranean Diet is full of wonderfully *delicious, flavor-filled* dishes and meals.



## Mediterranean Diet

- ▶ Research has shown that the traditional Mediterranean diet **reduces the risk of heart disease**.
- ▶ In fact, an analysis of more than 1.5 million healthy adults demonstrated that following a Mediterranean diet was associated with a **reduced risk of death from heart disease and cancer, as well as a reduced incidence of Parkinson's and Alzheimer's diseases**.
- ▶ The Dietary Guidelines for Americans recommends the Mediterranean diet as an eating plan that can help **promote health and prevent disease**.

## Mediterranean Diet

- ▶ Scientists have intensely studied the eating patterns characteristic of the Mediterranean Diet for **more than half a century**.
- ▶ Shortly after World War II, researchers organized the remarkable **Seven Countries Study** to examine the hypothesis that Mediterranean-eating patterns contributed directly to improved health outcomes.
- ▶ This long-running study examined the health of almost 13,000 middle-aged people in the United States, Japan, Italy, Greece, the Netherlands, Finland, and then-Yugoslavia.

## Mediterranean Diet

- ▶ When the data were examined, it was clear that people who ate a diet where fruits and vegetables, grains, beans, and fish were the basis of daily meals were healthiest.
- ▶ Topping the chart were **residents of Crete**.
- ▶ Even after the deprivations of World War II - the cardiovascular health of Crete residents exceeded that of US residents.
- ▶ Researchers **attributed the differences to diet**.

## Island of Crete



## Mediterranean Diet

- ▶ In subsequent years the body of scientific evidence supporting the healthfulness of the traditional Mediterranean Diet has **continued to grow**.
- ▶ A Mediterranean diet - rich in vegetables, olive oil and fish - offers substantial protection against many conditions influenced by **inflammation**, including four major **chronic illnesses**: heart disease, Parkinson's disease, Alzheimer's disease and Cancer

## Mediterranean Diet has been shown to:

- ▶ *Lengthen your life*
- ▶ *Improve Brain Function*
- ▶ *Defend you from chronic diseases*
- ▶ *Fight certain cancers*
- ▶ *Lower your risk for heart disease, high blood pressure and elevated "bad" cholesterol levels*
- ▶ *Protect you from diabetes*
- ▶ *Aid your weight loss and management efforts*
- ▶ *Keep away depression*
- ▶ *Ward off Parkinson's & Alzheimer's disease*
- ▶ *Improve rheumatoid arthritis*
- ▶ *Improve eye health*
- ▶ *Reduce risk of dental disease*
- ▶ *Help you breathe better*
- ▶ *Lead to improved fertility healthier babies*

## Mediterranean Diet

- ▶ [www.oldways.org](http://www.oldways.org)
- ▶ Mediterranean Diet and Health Information
- ▶ Cited research on each category on previous slide



## Mediterranean Diet

- ▶ Throughout history, infections have posed the biggest challenge to human health.
- ▶ This challenge changed in the 19th and 20th centuries because of economic development and improvements initiated largely by the Industrial Revolution
- ▶ Public health and hygiene improved; the advent of antibiotics and vaccinations reduced diseases, and, driving these, the recognition that a predominant cause of infections was microbial pathogens
- ▶ It seemed that man's battle against disease had been all but won.

## Mediterranean Diet

- ▶ Mid-20th-century optimism, however, was dampened by the reality of a transition that occurs with economic development.
- ▶ In this transition, **chronic diseases and conditions** (eg, heart disease, cancer, diabetes, chronic respiratory problems) — often called the "diseases of civilization" — **replace infections as the major source of disease**.
- ▶ Approximately **70%** of diseases now result from chronic conditions

## Mediterranean Diet

- ▶ For more than 2,000 years, classical inflammation has been recognized by the symptoms identified by the Roman physician Aurelius Celsus as **pain, redness, heat, and swelling**
- ▶ This form of classical inflammation is typically a **short-term response to infection and injury**

## Mediterranean Diet

- ▶ However, in 1993, researchers discovered a different type of **prolonged, and maladaptive inflammatory response associated with obesity**, which they suggested may explain the disease-causing effects of excessive weight gain
- ▶ “Metaflammation,” as it was later called because of its link with the metabolic system, differs from classical inflammation in that it:
  - ▶ 1) is **low-grade**, causing only a small rise in immune system markers

## Mediterranean Diet

- ▶ 2) is persistent and results in chronic, rather than acute illness
- ▶ 3) has systemic rather than local effects
- ▶ 4) appears to perpetuate, rather than resolve disease
- ▶ 5) is associated with a reduced, rather than increased, metabolic rate.

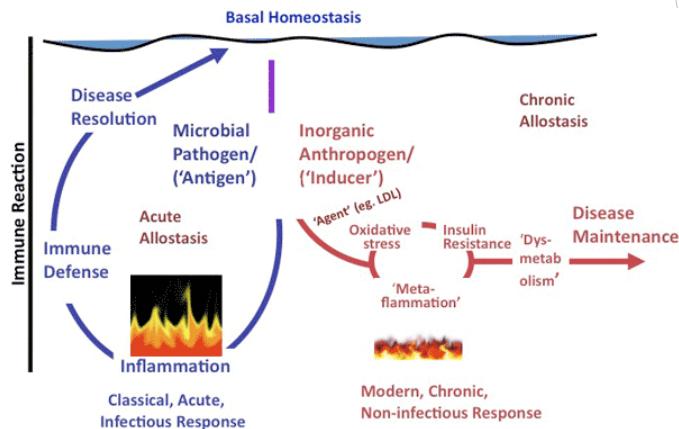


## Mediterranean Diet

- ▶ In essence, although classical inflammation has a healing role in acute disease, metaflammation, because of its persistence, has a different role, helping to aggravate and perpetuate chronic disease.



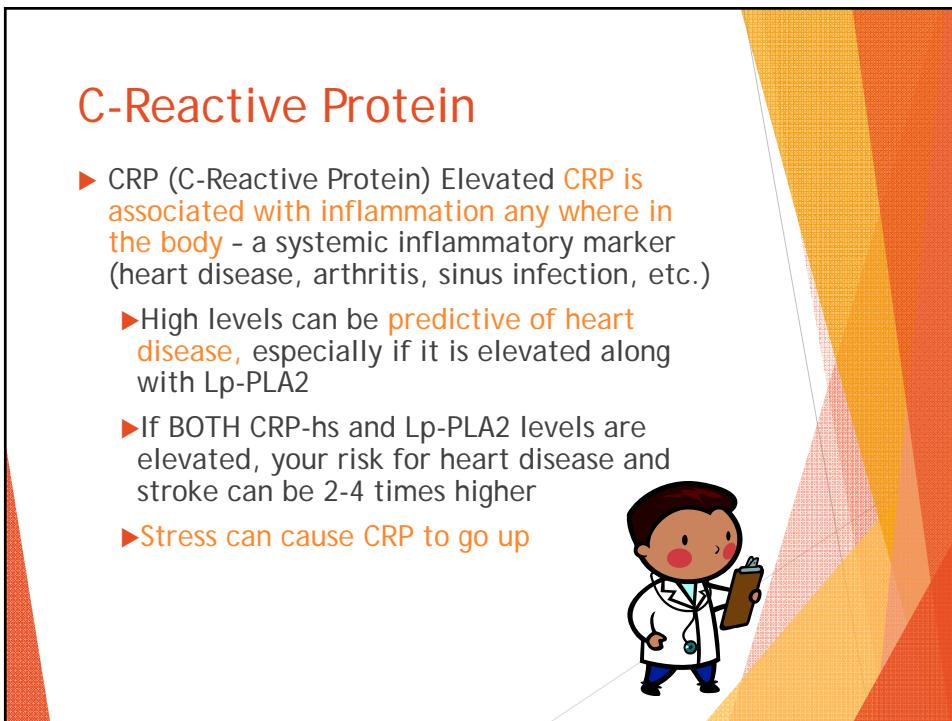
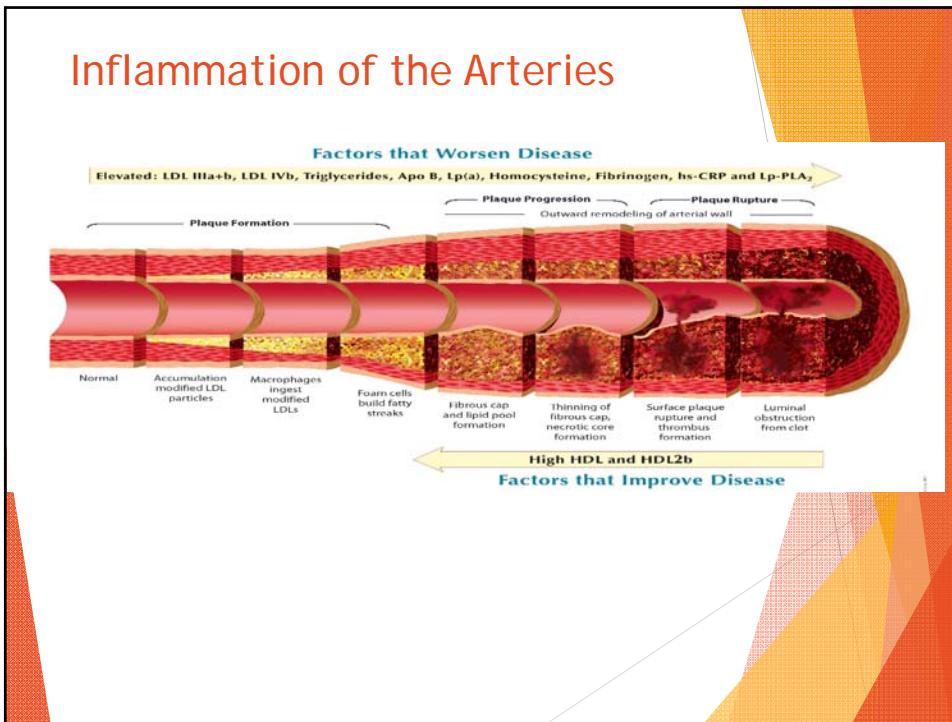
## Mediterranean Diet



## Inflammation: Underlying cause of chronic illness

- ▶ Cardiovascular disease
- ▶ Cancer
- ▶ Neurodegenerative disease
- ▶ Autoimmune disease
- ▶ Type 2 Diabetes
- ▶ Obesity
- ▶ Alzheimers
- ▶ Asthma





## 4 Stages of Disease

- ▶ Wellness
- ▶ Silent Chronic Inflammation (can go on for years)
- ▶ Disease
- ▶ Chronic Disease

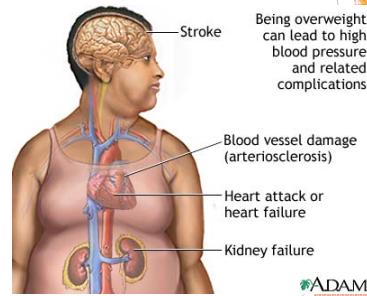


## Silent vs Classical Inflammation

- ▶ **Classical inflammation** hurts - red, irritated, inflamed
- ▶ **Silent inflammation** - chronic, low-level inflammation- no overt pain
- ▶ At cellular level
- ▶ Can linger for years, if not decades, until organ damage emerges

## Indicators of Silent Inflammation

- ▶ Being overweight, obese
- ▶ Sleep deprivation
- ▶ Constantly fatigued
- ▶ Gut issues
- ▶ Metabolic Syndrome
- ▶ Carbohydrate craving
- ▶ Chronic headaches



## What is Inflammation?

- ▶ Mediated by eicosanoids
  - ▶ Prostaglandins,
  - ▶ Leukotrienes,
  - ▶ Thromboxanes
- ▶ Eicosanoids are signaling molecules in the body that exert complex control over many bodily systems
- ▶ Inflammation is treated by drugs that alter eicosanoids: aspirin, NSAID's, COX-2 inhibitors, Steroids



# Eicosanoids

- ▶ The type of fat you eat has direct effect on what kind of inflammatory markers your body produces
- ▶ Fats are the building blocks of **eicosanoids**
- ▶ Eicosanoids mediate inflammation



## Good Eicosanoids

- ▶ Act as **vasodilator** (open up blood vessels)
- ▶ **Enhance** immune system
- ▶ **Decrease** inflammation
- ▶ **Decrease** pain
- ▶ **Increase** oxygen flow
- ▶ **Increase** endurance
- ▶ **Dilate** airways



## Bad Eicosanoids

- ▶ Act as **vasoconstrictors** (constrict blood vessels)
- ▶ Suppress immune system
- ▶ Increase inflammation
- ▶ Increase pain
- ▶ Decrease oxygen flow
- ▶ Decrease endurance
- ▶ Constrict airways (asthma)
- ▶ Increase cellular proliferation (cancer)



## Eicosanoids

- ▶ In order to make more good eicosanoids and less bad eicosanoids to avoid disease, we need to **eat the correct fats**
- ▶ **Good fats:** Omega 3 fats, Monounsaturated fats
- ▶ **Bad fats:** Too much Omega 6 fats, Saturated fats, Trans fats

## FAT IS GOOD!!

- ▶ Depending on what kind....
  - ▶ **Omega 3 fatty acids** (salmon, sardines, herring, fish oils)
  - ▶ Monounsaturated fats (EVOO, nuts and nut oils, avocado)



## FAT IS BAD!

- ▶ Saturated/Trans:
  - Too much beef and other animal fats*
  - ▶ *Hydrogenated fats and oils*
  - ▶ *Too much omega 6 fats*



## Omega 6 and Omega 3

- ▶ Omega 6 and Omega 3 fatty acids should be consumed in a ratio of 2:1
  - ▶ Typical American diet is more like 20:1
- ▶ For every 2 grams of Omega 6 fats consumed, 1 gram of Omega 3 should be consumed

## Sources of Omega 6

- ▶ Widespread in foods (processed)
  - ▶ Cheaper
  - ▶ Shelf stable
- ▶ Found mostly in:
  - ▶ Vegetable oils (Safflower, sesame, soy, corn and sunflower seed oils)
  - ▶ Salad dressings made with above oils
  - ▶ Margarines made with above oils
  - ▶ Any product with long shelf life (crackers, pastries, chips)



## Reduce Omega 6

- ▶ Make your own salad dressing using EVOO (monounsaturated) or walnut oil (Omega 3)
- ▶ Use EVOO or nut oil with herbs on vegetables instead of margarine
- ▶ Use peanut or almond butter on toast instead of margarine



## Increase Omega 3

- ▶ Eat **more oily fish**: salmon, trout, herring, sardines, tuna (no more than 2x/week)
- ▶ Eat **1-2 Tbsp ground flaxseed** daily
- ▶ Eat small servings **walnuts/pumpkin seeds**



## Studies on Fish Oil

- ▶ Eating fish as little as once a week reduces the risk of sudden death in men
- ▶ Eating fish twice a week reduces CHD risk in women
- ▶ Fish intake reduces Alzheimer's risk



## Fish Oil Supplement

- ▶ Fish
  - ▶ Contamination with PCB, dioxin, and Hg
- ▶ Omega-3 EPA/DHA Supplements
  - ▶ Removal of PCB's and other toxins
  - ▶ Can be used in high doses
  - ▶ EPA + DHA = 1,000 mg - 4,000 mg per day
  - ▶ Healthy: 1,000 mg day
  - ▶ High Triglycerides: 2,000 - 4,000 mg day
  - ▶ High Blood Pressure: 2,000 mg day
  - ▶ High Cholesterol: 2,000 mg day
  - ▶ BiPolar disorder: > 10 g day in studies

## Mediterranean Dietary Pattern

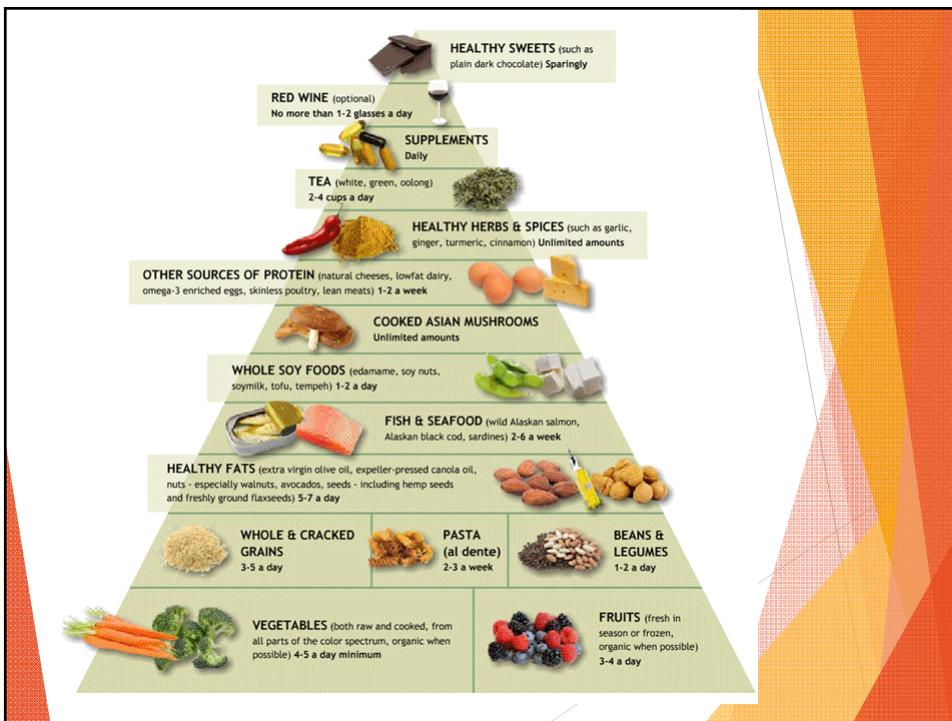
- ▶ An abundance of **foods from plant sources** - fruits, vegetables, potatoes, breads and whole grains, beans, nuts and seeds
- ▶ Emphasis on a variety of **minimally processed, seasonally fresh and locally grown foods**
- ▶ **Olive oil as the principal fat**, replacing other fats and oils
- ▶ Total fat ranging from less than 25% to more than 35% of total calories with saturated fat no more than 7%

## Mediterranean Dietary Pattern

- ▶ Daily consumption of **low to moderate amounts of cheese and yogurt**
- ▶ Twice-weekly consumption of low to moderate amounts of **fish and poultry**
- ▶ Zero to 4 **eggs** per week
- ▶ **Fresh fruit as typical daily dessert**; sweets (usually made with honey) and saturated fat consumed no more than a few times per week
- ▶ Red meat consumed a few times **per MONTH**

## Mediterranean Dietary Pattern

- Moderate consumption of wine, normally with meals, about 1-2 glasses per day for men and 1 glass per day for women



## Anti-inflammatory food guide pyramid

- ▶ [www.drweil.com](http://www.drweil.com)
- ▶ Healthy sweets - sparingly: dried fruit, dark chocolate, fruit sorbet
- ▶ Red wine: optional no more than 1-2 glasses per day (1 for women, 2 for men)
- ▶ Tea: 2-4 glasses/day
- ▶ Healthy herbs and spices: unlimited

## Anti-inflammatory food guide pyramid

- ▶ Other Protein: 1-2 servings/week animal protein
- ▶ Cooked Asian Mushrooms: Unlimited
- ▶ Whole soy foods: 1-2 servings per day
- ▶ Fish and Seafood: 2-6 servings per week
- ▶ Healthy Fats: 3-5 servings per day
- ▶ Whole grains: 3-5 servings per day
- ▶ Pasta: 2-3 servings per week

## Anti-inflammatory food guide pyramid

- ▶ Beans and legumes: ½ - 2/3 cup cooked at least 3 times a week
- ▶ Vegetables: 4-6 servings per day (3 cups)
- ▶ Fruits: 3-4 servings per day (2 cups)
- ▶ Nuts: 1 oz at least 5 times a week
- ▶ Water: throughout day



## Research

- ▶ Greater adherence to the Mediterranean diet was significantly associated with a 25% reduction in total mortality and a 33% lower mortality from coronary heart disease (CHD) after 3.7 years of follow up.
- ▶ 1,302 people diagnosed with CHD - adherence to the Mediterranean diet was associated with a 27% lower mortality rate and 31% fewer deaths from CHD among people with preexisting heart disease after 3.7 years of follow up

## Metabolic Syndrome/Diabetes

- ▶ Research found Mediterranean diet significantly reduced C-reactive protein (inflammatory marker) and insulin resistance in people with metabolic syndrome compared with a low-fat diet
- ▶ Greater adherence to the Mediterranean diet was associated with a 35% reduction in the risk of type 2 diabetes after 4.4 years of follow up
- ▶ 25% lower risk of being hypertensive and a 36% greater probability of having blood pressure controlled

## Metabolic Syndrome/Diabetes

- ▶ Mediterranean dietary pattern may be more appropriate than a low-fat diet for people with metabolic syndrome, type 2 diabetes and insulin resistance
- ▶ Mediterranean diet has a positive effect on serum insulin, glucose, lipid levels as well as other metabolic factors that increase risk of CVD

## Mediterranean Diet

- ▶ Diabetes prevention - research study: 215 type 2 diabetics followed either low-fat or Mediterranean diet
- ▶ After 4 years only 44% of Mediterranean group needed diabetes medication - 70% of low-fat eaters did
- ▶ Mediterranean dieters also lost more weight

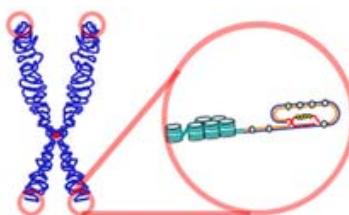
## What about weight gain?

- ▶ Mediterranean diet was NOT associated with greater weight gain or greater risk of developing obesity in 7,368 male and female subjects in research studies during a 2.3 year follow up
- ▶ Greater high adherence to the Mediterranean diet was associated with a lower likelihood of becoming obese among overweight subjects in the study

## Longer Telomeres

- ▶ 4,700 women in a study cited in the British Journal of Medicine who ate more Mediterranean foods — such as vegetables, fruit, nuts, legumes, unrefined grains, fish and olive oil — and drank moderate amounts of wine with their meals had **longer telomeres** in their blood cells.
- ▶ Telomeres are sequences of DNA that form protective caps at the ends of chromosomes.

## Telomeres



## Telomeres

- ▶ DNA segments at the ends of our chromosomes that get shorter with each replication.
- ▶ When a cell's telomeres get too short, it can no longer replicate and eventually dies.
- ▶ A few cells – namely adult stem cells as well as sperm and egg cells – are not limited by this process, though.

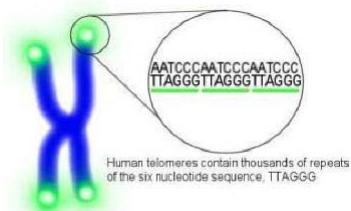
## Telomeres

- ▶ There are several indications that **telomere length is a good predictor of longevity**.
- ▶ In newborns, telomere length varies from about 8,000-13,000 "base pairs" (DNA letters) in length, and declines by about 20-40 base pairs each year.
- ▶ Telomeres are **also longer in women than men**, mirroring the difference in lifespan between the sexes.
- ▶ In elderly twins, the twin with shorter telomeres is roughly three times more likely to die first.

- ▶ In the study, for every point higher that a woman's diet scored, her telomere length corresponded with about 1.5 years less of aging, the researchers found.
- ▶ For example, two women with a three-point difference in their diet scores would show, on average, a 4.5-year difference in aging in their telomeres.
- ▶ This is comparable to the difference between smokers and nonsmokers (4.6 years), active and less-active women (4.4 years) and women with high phobic-anxiety scores and low phobic-anxiety scores (6 years), the researchers said.

## Telomeres

- ▶ Telomeres get shorter every time a cell divides, so their length is thought to be a measure of a cell's aging.
- ▶ **Stress and inflammation** may also shorten people's telomeres



## Telomeres

- ▶ This is the largest population-based study specifically addressing the association between Mediterranean diet adherence and telomere length in healthy, middle-aged women said the researchers
- ▶ The results further support the benefits of adherence to this diet to promote health and longevity

## Mediterranean Diet

- ▶ Decreases practically every heart-disease risk factor:
- ▶ High blood pressure
- ▶ Cholesterol
- ▶ Triglyceride levels
- ▶ C reactive protein
- ▶ Research: 605 patients with first heart attack followed diet for 4 years - 50-70% lower risk of having second heart attack, angina or stroke

## Mediterranean Diet

- ▶ Reduced Alzheimer's risk
- ▶ JAMA - eating Mediterranean diet cut risk of developing Alzheimer's disease by **40%**
- ▶ People who added exercise to diet - **60% less likely** to get Alzheimer's

## Mediterranean Diet

- ▶ Meta-analysis in British Medical Journal
- ▶ 9% reduction in death from heart disease, cancer, Parkinson's and Alzheimer's
- ▶ Other studies - Mediterranean diet lessens the inflammation and pain of rheumatoid arthritis and cuts risk of getting Lou Gehrig's disease

## Mediterranean Diet

- ▶ Research published in *Blood*, the Journal of the American Society of Hematology
- ▶ Consumption of the Mediterranean diet was **directly related to lower levels of platelets and white blood cells**, which in turn correlated to lower levels of **inflammation**

## Slow Carbs

- ▶ Carbohydrates that digest **more slowly**
- ▶ Whole grains
- ▶ Fruits/vegetables
- ▶ Beans/legumes
- ▶ Yogurt (Greek)
- ▶ Approximately 40 % of calories
- ▶ 1200 calories day: 120 grams per day
- ▶ 1500 calories day: 150 grams per day



## High Glycemic Load Foods

### Increase:

- ▶ Inflammation
- ▶ Risk of heart disease, diabetes
- ▶ Examples include:
  - ▶ White bread, glucose (GI= 100)
  - ▶ Potatoes, white rice
  - ▶ Pastries, white flour
  - ▶ Sweets, carbonated soft drinks

## Lower GI/GL reduces risk

- ▶ Examples:
- ▶ Whole grains
- ▶ Fruits
- ▶ Vegetables
- ▶ Legumes
- ▶ Or...mixing high GI/GL foods with those with lower GI/GL





## What to Eat More of:

- ▶ Though there is no single definition of a Mediterranean diet, these are the foods to emphasize:
- ▶ Raw and cooked vegetables
- ▶ Legumes (peas and beans)
- ▶ Fruit - make it your dessert
- ▶ Nuts -  $\frac{1}{4}$  cup per day
- ▶ Seeds such as chia and flaxseeds
- ▶ Unrefined, whole grains: oats, barley, brown rice, whole wheat, quinoa
- ▶ Olive oil
- ▶ Alcohol: up to 1 drink per day for women, 2 for men

## What to Eat Less of:

- ▶ Poultry
- ▶ Eggs - limit to 4 per week
- ▶ Dairy foods
  
- ▶ Eat and Drink these rarely:
  - ▶ Red meat (beef, lamb, pork)
  - ▶ Especially limit processed meats (sausage, pepperoni)
  - ▶ Sweets and sugary foods and drinks

## 10 Foods to Avoid -

- ▶ Donuts
- ▶ White Bread
- ▶ Bread with < 3 grams fiber/ slice
- ▶ Soda
- ▶ Stick Margarines
- ▶ White Pasta
- ▶ Full Fat Dairy
- ▶ Movie Theatre Popcorn
- ▶ Luncheon Meats
- ▶ Sugar Coated Cereal





## WILD SALMON

- ▶ Lowers the risk of heart disease and cancer.
- ▶ The more omega-3 fish oils you eat; the lower your blood pressure
- ▶ In one study eating the oil in fish cut cancer incidence by over 60%
- ▶ Studies suggest that fish consumption is associated with a lower risk for depression, violent behavior, Alzheimer's disease, Attention Deficit Disorder, Atrial fibrillation.
- ▶ TRY TO EAT Wild salmon, halibut, sardines, etc. 2 to 4 times per week



## WALNUTS

- ▶ A handful a day can cut your risk of cardiovascular event by as much as 51%
- ▶ Two tablespoons of peanut butter 5 times/week cuts risk of type II diabetes by 20%
- ▶ Along with tea, the easiest way to improve your heart
- ▶ TRY TO EAT a handful of nuts, five times a week
- \* Skip the salt and added oils

## WALNUT SIDEKICKS

- ▶ Almonds
- ▶ Pistachios
- ▶ Sesame Seeds
- ▶ Peanuts
- ▶ Pumpkin and Sunflower Seeds
- ▶ Macadamia Nuts
- ▶ Pecans
- ▶ Hazelnuts
- ▶ Cashews



## Anti-inflammatory Antioxidants

- ▶ Antioxidants: fresh fruit, vegetables, herbs and spices
- ▶ Antioxidants help **neutralize free radicals**
  - cell damaging molecules
- ▶ We create free radicals all day long

## Salicylic Acid

- ▶ Aspirin is a synthetic derivative of willow bark and salicylic acid is the active component of willow bark
- ▶ Aspirin **reduces risk of heart attacks and strokes** by preventing platelets from clumping, reducing blood clots
- ▶ **Foods high in salicylic acid:** berries, prunes, broccoli, spinach, chili peppers, cinnamon, ginger, nutmeg basil, raisins, grapes whole grains, sage
- ▶ Strawberries have ability to inhibit cyclooxygenase or COX much like aspirin and ibuprofen

## Ginger

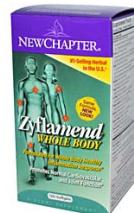


- ▶ Has been shown to lessen pain of knee osteoarthritis when taken in purified, standardized supplement form
- ▶ Can act as a blood thinner
- ▶ Powdered dry ginger - one to two capsules (500-1000 mg) twice a day

## Turmeric

- ▶ Sometimes called curcumin, turmeric is a mustard-yellow spice from Asia
- ▶ Main ingredient in curry
- ▶ Scientific studies show turmeric may help suppress inflammatory body chemicals
- ▶ 400-600 mg of turmeric extracts 3 times per day
- ▶ Look for standardized for 95% curcuminoids

## Zyflamend



- ▶ Herbal remedy by New Chapter
- ▶ Combination of herbs such as holy basil, turmeric, rosemary, green tea, oregano, ginger, etc.
- ▶ Used in research studies at Columbia University
- ▶ One tablet twice a day

## Red Wine



- ▶ Lowers inflammatory substances
- ▶ Long associated with lowered risk of heart attack and stroke - so called "French Paradox"
- ▶ Also contains polyphenols and flavonoids with antioxidant properties
- ▶ No more than 1 drink per day for women, two per day for men

## Isoflavones



- ▶ Soy beans, tofu and soy products - powerful inflammation fighters
- ▶ Great source of protein without pro-inflammatory components of red meat
- ▶ Red meat high in arachidonic acid, a type of fatty acid that increases inflammation

## Herbs and Spices



- ▶ Herbs and spices add flavors and aromas to foods, reducing the need to add salt or fat when cooking.
- ▶ They are also rich in a broad range of health-promoting antioxidants, and are used liberally in Mediterranean cuisines.
- ▶ Herbs and spices also contribute to the national identities of the various Mediterranean cuisines.
- ▶ Herbs and spices common to the traditional Mediterranean Diet include: anise, basil, bay leaf, chiles, cloves, cumin, fennel, garlic, lavender, marjoram, mint, oregano, parsley, pepper, rosemary, sage, savory, sumac, tarragon, thyme.

## A Day in The Life



- ▶ Breakfast: Greek yogurt with strawberries and oats with a sprinkling of walnuts on top.
- ▶ Lunch: Whole grain sandwich with turkey and hummus with vegetables.
- ▶ Dinner: Broiled salmon, served with brown rice and vegetables.
- ▶ Fruit for dessert
- ▶ Handful of nuts and an apple for snack



## Mediterranean Diet

- ▶ Newsletter - Fresh Fridays - Free
- ▶ Mediterraneanmark.org
- ▶ Oldways.org
- ▶ Recipes & research on the diet

