

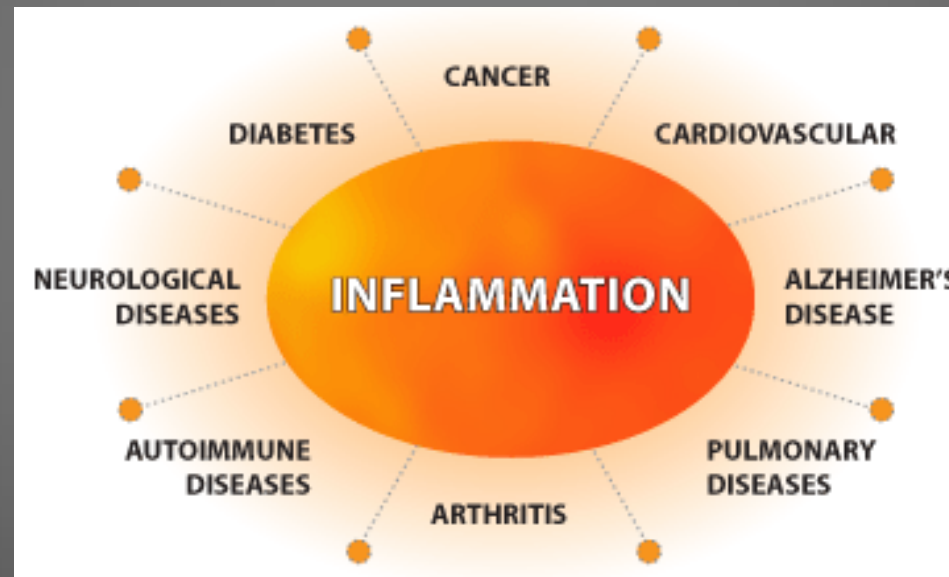


Inflammation: The Silent Perpetrator

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Why Discuss Inflammation?

Inflammation may cause or be involved in the development of various chronic diseases.



Chronic inflammation leads to poor overall health.

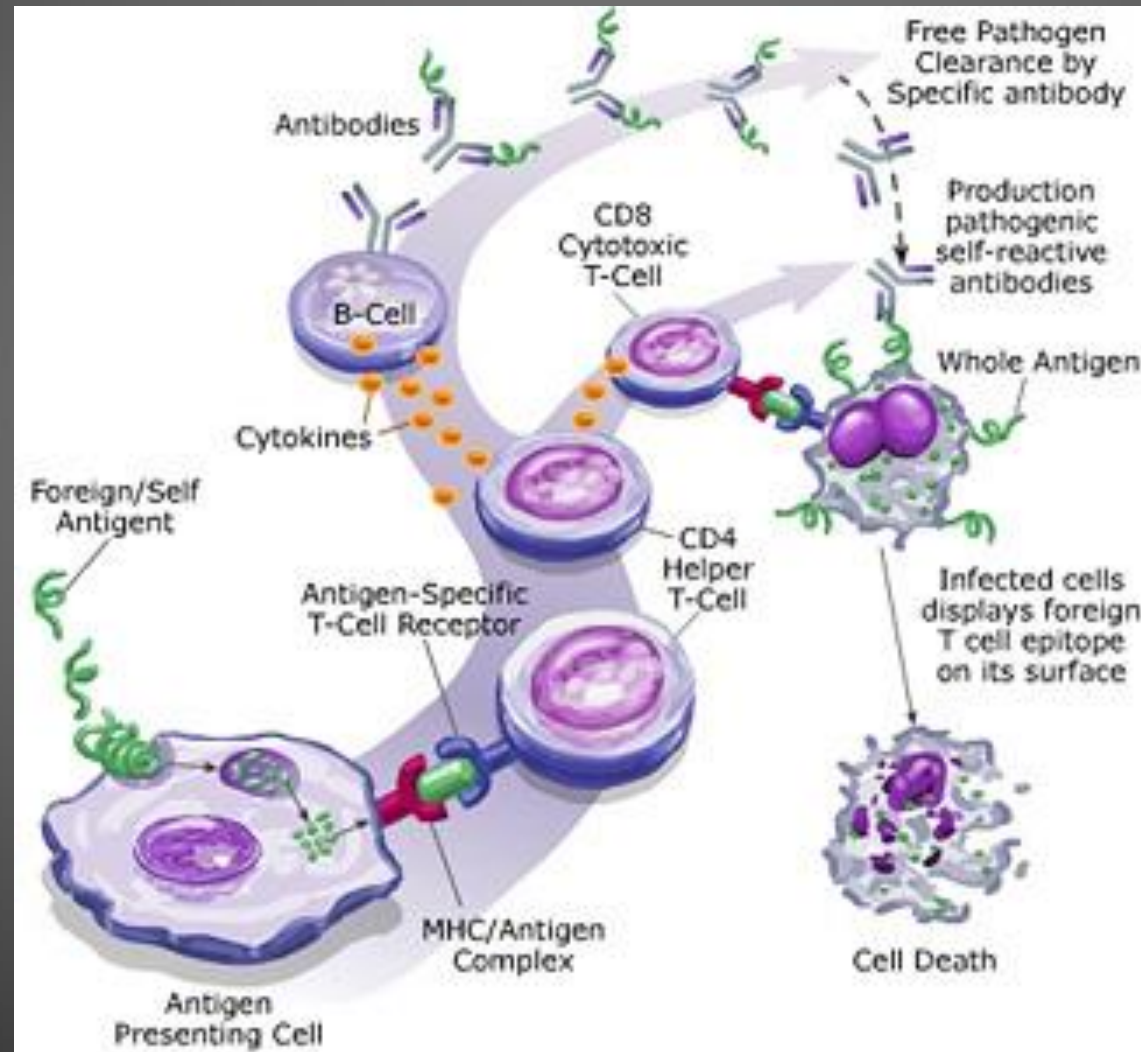
What is Inflammation?

2 Types of Inflammation:

Acute – bodily process involving chemical mediators that trigger a biological response to physical injury or infection.

Chronic – stimulus persists; chemical compounds produced that perpetuate inflammatory response resulting in tissue damage and repair with fibrous tissue

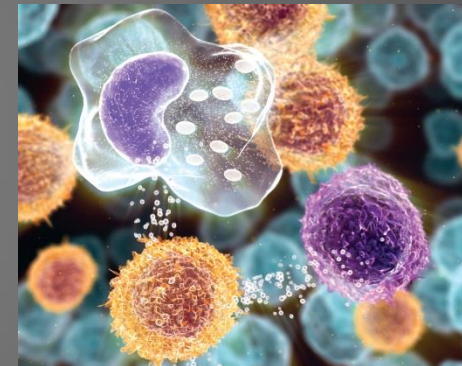
Inflammatory Process



How is Inflammation Detected in the Body?

There are several compounds that are bio-markers of systemic inflammation, including

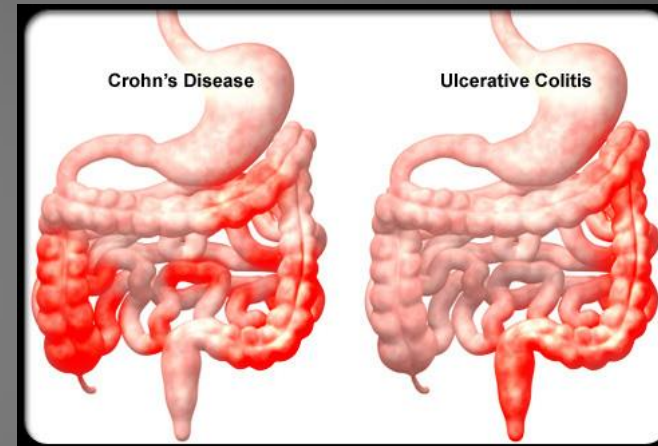
- white blood cells (WBC)
- C-reactive protein (CRP)
- interleukins (ILs)
- tumor necrosis factor (TNF- α)
- certain cytokines



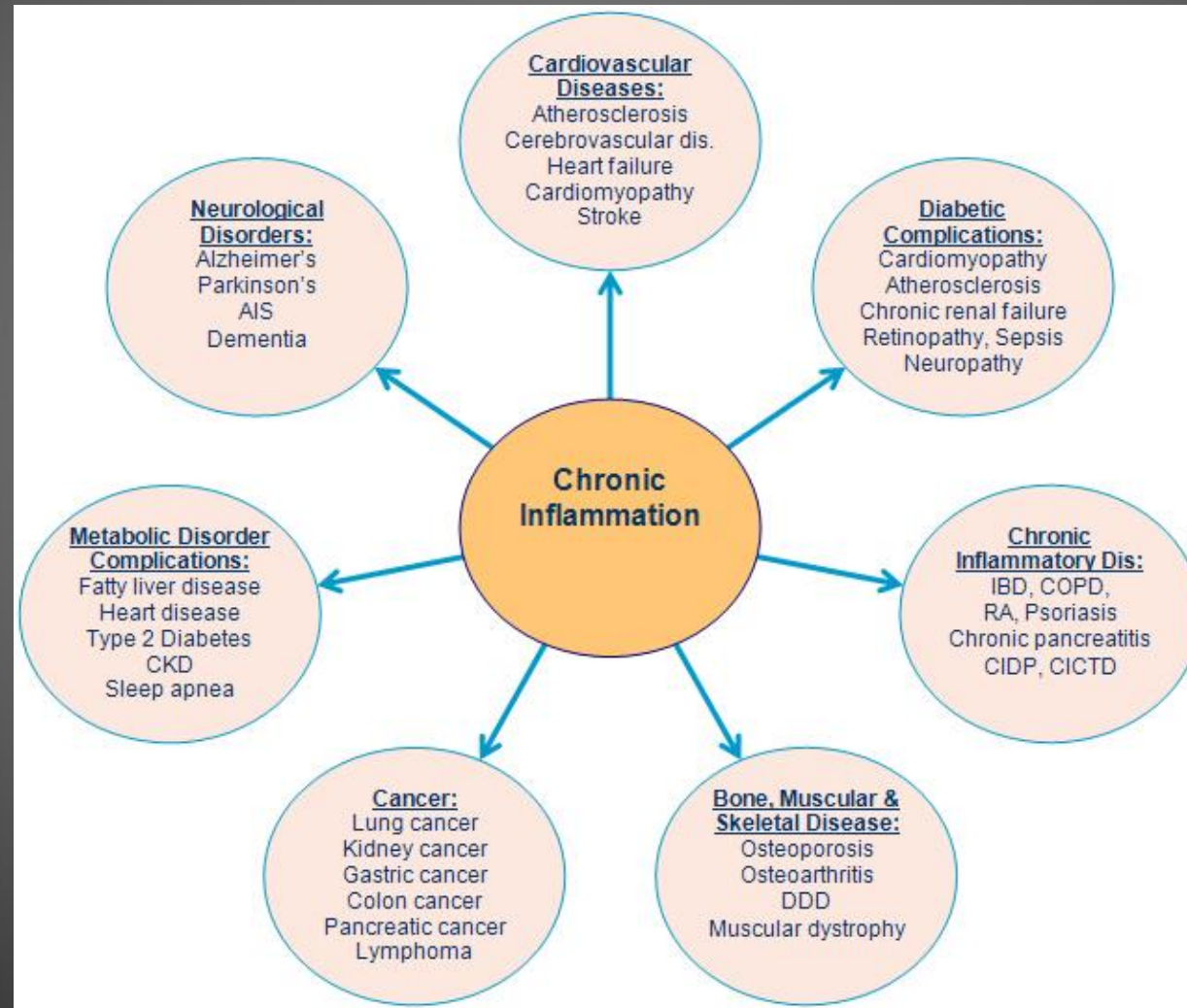
*These markers play a direct role in the development of atherosclerosis and insulin resistance.

Inflammatory Diseases

- Asthma
- Crohn's disease
- Rheumatoid arthritis
- Celiac disease
- Diverticulitis
- Inflammatory Bowel disease
- And more

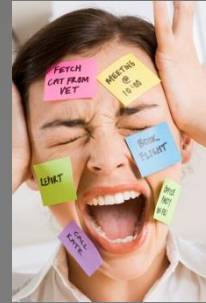


Inflammation and Chronic Disease



What causes chronic inflammation?

- Genetic predisposition
- Age
- Stress
- Lack of exercise
- Environmental toxins
- Excess body fat
- Dietary choices



Dietary & Lifestyle Contributors to Inflammation

Dietary and lifestyle factors associated with inflammation

Increase Inflammation

Trans fatty acids
Saturated fatty acids
High glycemic index foods
Excessive alcohol
Smoking
Excessive exercise

Reduce Inflammation

Omega-3 fatty acids
Low cholesterol diets
Low glycemic index foods
Dietary fiber
Arginine-rich foods (fish, nuts)
Moderate alcohol intake
Physical activity

Dietary Components that Contribute to Inflammation

Diets High in these items increase inflammation:



- Saturated fat – found in high fat meats, full-fat dairy products, butter



- Trans fat – found in processed and deep-fried foods, hydrogenated vegetable oils, margarine



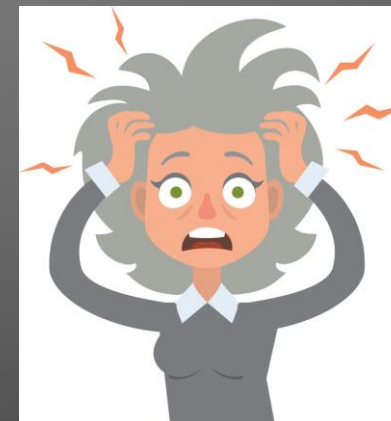
- Refined and Processed Foods – refined sugar and flour, packaged/processed foods

- Omega-6 fatty acids versus Omega-3 fatty acids – safflower, sunflower, corn, cottonseed and mixed vegetable oils

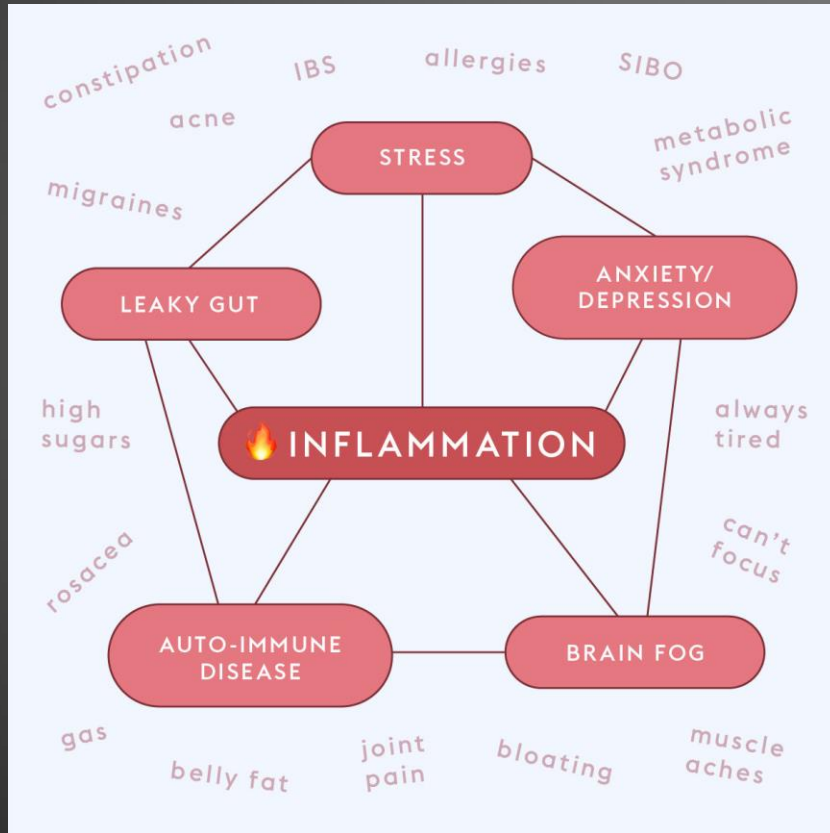


Lifestyle Factors that Contribute to Inflammation

- Smoking
- Excess alcohol intake
- Lack of exercise
- Being overweight
- Stress



Symptoms of Chronic Inflammation



6 signs you have inflammation ✓

chronic inflammation is linked to a slew of health conditions —and it's more common than ever



persistent pain

lasting joint, neck, or back pain + chronic headaches

can lead to rheumatoid arthritis



fatigue

all-around exhaustion (in and out of the gym)

💡 inflammation affects our mitochondria (cellular powerhouses)



frequent illness

more time spent sick + worse symptoms



digestive issues

acid reflux, diarrhea, constipation, and more

can lead to irritable bowel diseases, like Crohn's



moodiness

feelings of low mood or anxiety

💡 science now suggests mood disorders are tied to inflammation



weight gain

stubborn belly fat + excess water weight



fight inflammation every day by eating a clean diet, exercising regularly, managing stress, and cooking with herbs like turmeric and ginger



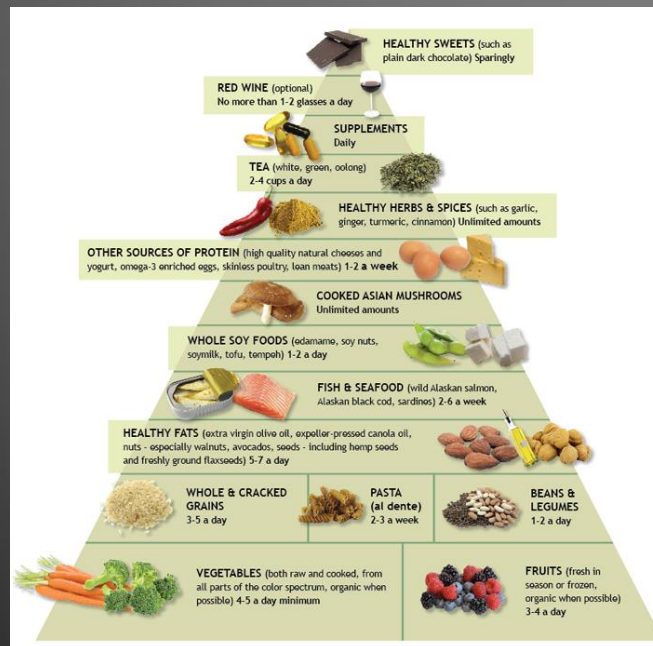
Questions?

What Can We Do?



Anti-Inflammatory Diet

- Similar to **Mediterranean diet**
- May decrease risk for heart disease, improve blood triglycerides, lower blood pressure, decrease joint pain & stiffness
- May decrease risk of chronic disease – cancer, diabetes, Alzheimer’s, arthritis



What Does this Look Like?

Include a variety of **colorful** fruits and vegetables, which contain **phytonutrients**, such as quercetin, found in **red apples** and **red onions**, β -carotene, found in **sweet potatoes**, **carrots**, **winter squash**, **cantaloupe**, **spinach and broccoli**, and anthocyanins found in **tart cherries** and **blueberries**



What Does this Look Like?

Include **lean protein** from fish, especially salmon, sardines or herring, skinless chicken, beans, soy products, nuts and nut butters



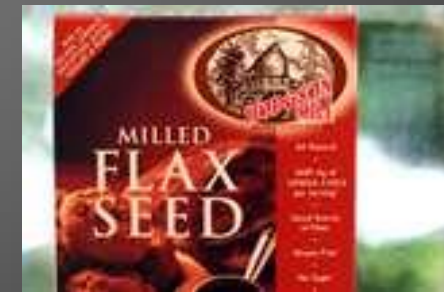
What Does this Look Like?

- Include mostly **whole grain, fiber-filled carbohydrates**, which have a lower glycemic index, such as whole grain breads, cereals, pasta, brown and wild rice, barley, buckwheat, oats, bulgur, farro, millet, quinoa and popcorn
- Gradually increase fiber intake to **40g/day**



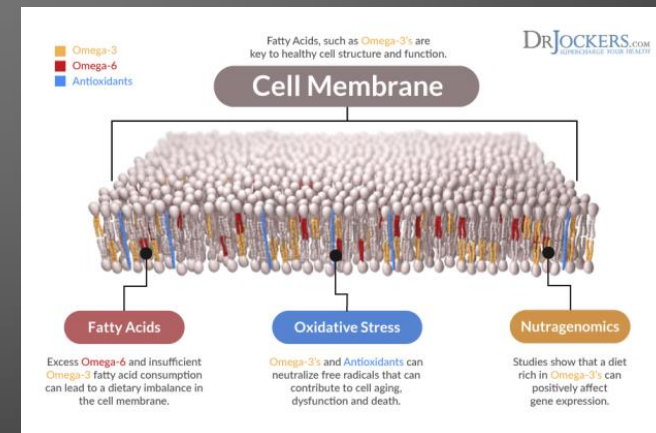
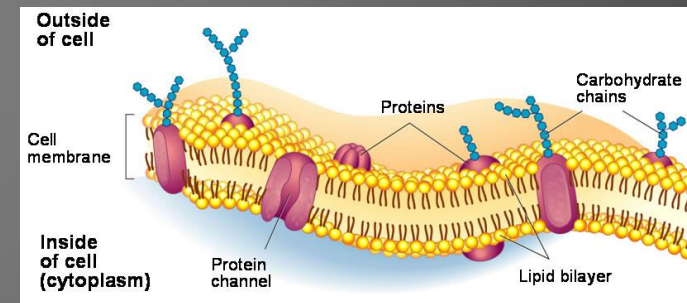
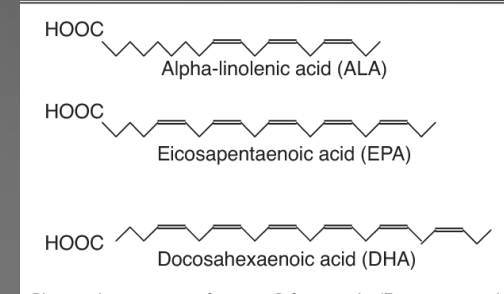
What Does this Look Like?

- **Decrease** saturated and trans fat intake
- **Increase** intake of monounsaturated fats, such as **olive oil**, **avocado**, and **nuts**
- Include sources of **omega-3** fatty acids in your diet from fish, such as fresh or frozen wild salmon, canned sockeye salmon, halibut, herring, sardines, black cod or from plant sources such as flaxseeds or walnuts



What are Omega-3 Fatty Acids?

- A polyunsaturated fatty acid
- Essential nutrient because our bodies cannot manufacture them
- Part of every cell membrane – helps maintain health and fluidity of cells
- Play a direct role in anti-inflammatory, anti-cancer, and improved cardiovascular functions



Types of Omega-3 Fatty Acids

- Alpha-Linolenic Acid (ALA) - from plant sources such as flaxseeds, flaxseed oil, walnuts, canola oil, pumpkin seeds, soybeans, some dark leafy greens, chia seeds, hemp seeds, quinoa, and wheat germ

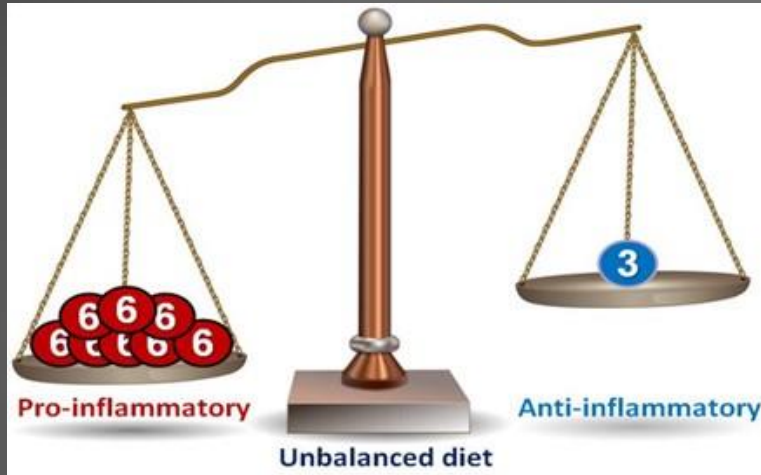


- Eicosapentaenoic Acid (EPA)
- Docosahexaenoic Acid (DHA)
 - Both from cold water fish such as salmon



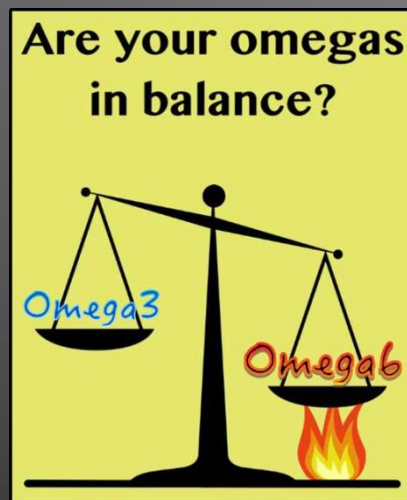
- ALA needs to be converted to EPA → DHA in the body; has only between a 4 - 10% conversion rate

Out of Proportion Omegas



Average American diet contains large amounts of omega-6 fatty acids, found in processed and fast foods, and very little amounts of omega-3 fatty acids

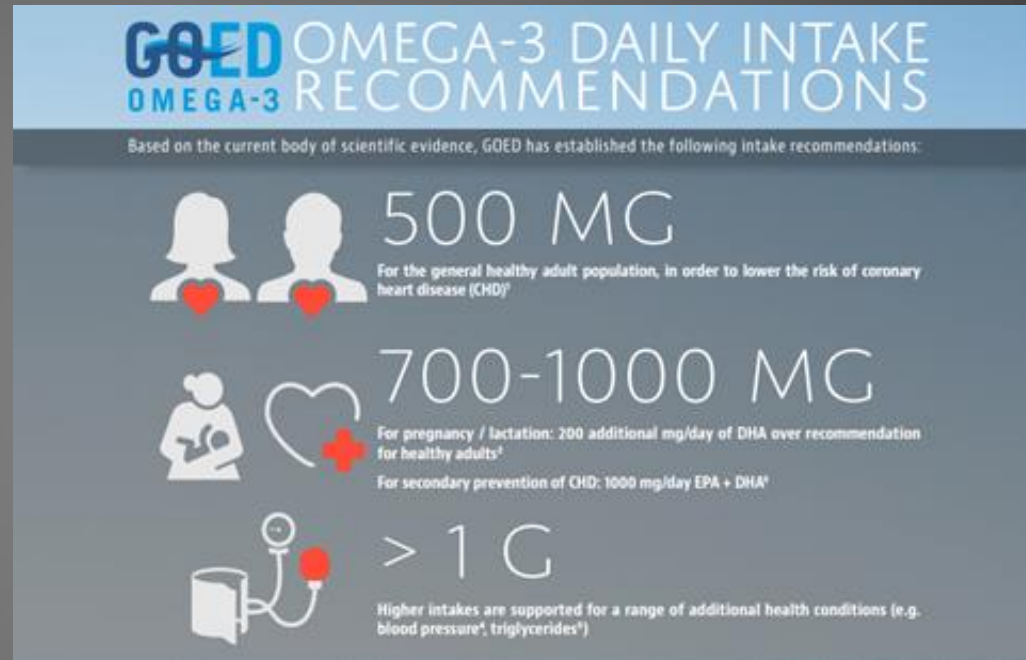
- Diet usually contains at least 10 times more omega-6 than omega-3 fatty acids
- May be as high as 16:1
- Should be 4:1 or less



Omega-3 Recommended Intake

Institute of Medicine and National Academies recommend 2 fish servings per week for approximately 500 mg/day of EPA & DHA; they recommend between 1.1 – 1.6 g/day of ALA with up to 10% of this coming from EPA & DHA

National Institute of Health recommends that at least 2% of total daily calories come from omega-3 fatty acids, which is about 2 g/day



Certain experts recommend a therapeutic dose of 2 – 3 g/day to improve cardiac outcomes and improve rheumatoid arthritis symptoms

Omega-3 Content of Various Foods

		Omega-3 content
Salmon, cold water, fresh and frozen, cooked	4 oz.	1.7 g
Sardines, canned in oil, drained	4 oz.	1.8 g
Tuna, canned in water, drained	4 oz.	0.3 g
Tuna, canned in oil drained	4 oz.	0.2 g
Cod, fresh and frozen, cooked	4 oz.	0.6 g
Mackerel, canned, drained	4 oz.	2.2 g
Swordfish, fresh and frozen, cooked	4 oz.	1.7 g
Crab, softshell, cooked	4 oz.	0.6 g
Bluefish, fresh and frozen, cooked	4 oz.	1.7 g
Salmon, canned, drained	4 oz.	2.2 g
Scallops, Maine, fresh and frozen, cooked	4 oz.	0.5 g

Omega-3 Content of Various Foods

Omega-3 Sources



FATTY FISH
Anchovies, Sardines, Herrings, Trout, Salmon, and Mackerel

PLANTS RICH IN OMEGA-3 FATTY ACIDS





BASIL CHIA SEEDS FLAX SEEDS





PERILLA SEEDS HEMP SEEDS SPIRULINA





SPINACH WALNUTS DRIED TARRAGON

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Eat Healthy, Live Longer, Enjoy Life!

We are committed to bringing you great recipes, dietary tips and nutritional information to help make healthy living and eating an easy, fun and yummy part of your daily life.

		Omega-3 content
Walnuts	1 oz.	2.6 g
Flaxseeds	1 oz.	1.8 g
Pecans, dry roasted	1 oz.	0.3 g
Walnut oil	1 Tbsp.	1.4 g
Flaxseed oil	1 Tbsp.	6.9 g
Canola oil	1 Tbsp.	1.3 g
Olive oil	1 Tbsp.	0.1 g
Soybeans, dried, cooked	½ cup	0.5 g
Tofu, regular	4 oz.	0.3 g
Spinach, fresh, cooked	½ cup	0.1 g



Questions?

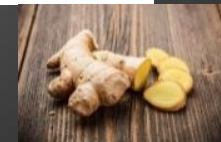
Controversial foods

- Gluten
- Sugar
- MSG
- Dairy
- Alcohol
- Nightshade vegetables
- Acid-producing foods
- Acidic foods
- Uric acid-producing foods



Other foods to Include

- Green and black tea
- Tart cherry juice
- Fermented foods
- Red wine
- Dark chocolate – should be 70% cocoa or higher
- Unrefined coconut oil
- Spices – turmeric (in curry), ginger, basil, cinnamon, chili peppers
 - These contain phytochemicals such as catechins and resveratrol, which decrease inflammation



Should I Use Supplements?

- Do you eat cold water fish on a regular basis?



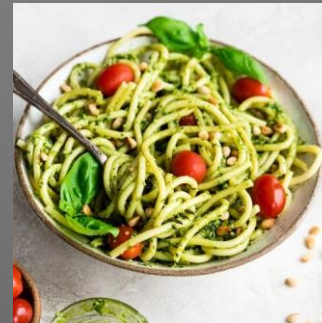
If not, then try a fish oil supplement that contains EPA & DHA, 1-3 g/day, mercury-free



- Try a multivitamin that contains vitamins C, E, & D, carotenoids, folic acid and selenium; should not contain iron

Practical Application

- Sprinkle into your yogurt or oatmeal:
 - Ground flaxseeds
 - Walnuts
 - Dried tart cherries
 - Cinnamon
- Use on mixed dishes:
 - Ginger
 - Cayenne pepper
 - Garlic
 - Curry powder (turmeric)
 - Basil



Inflammation-Friendly Menu

Breakfast:

- $\frac{3}{4}$ cup oatmeal or 1 slice Ezekiel bread with cinnamon
- 1 Tbsp. natural nut butter – eg. almond butter
- $\frac{1}{2}$ cup soymilk
- $\frac{3}{4}$ cup fresh berries or 1 small banana



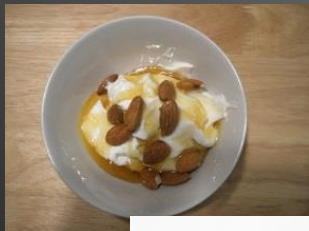
Lunch:



- Curried carrot, sweet potato, and ginger soup
- Chickpea salad with lemon, parmesan, and fresh herbs
- Whole grain crackers

Dinner:

- Grilled pineapple tofu skewers with spicy mango bbq sauce
- Quinoa with dried cherries and pistachios
- Simple spinach salad



Snack:

- Plain Greek yogurt with 1 tsp. honey, $\frac{1}{8}$ cup almonds ($\frac{1}{2}$ oz.), $\frac{1}{2}$ cup strawberries



Inflammation-Friendly Menus

Breakfast:

- Wild blueberry banana smoothie with chia seeds



Lunch:

- Mediterranean tuna wrap
- Lentil avocado salad



Dinner:

- Turmeric chicken with sumac and lime
- Roasted sweet potatoes with honey & cinnamon
- Garlicky green beans with pine nuts



Snack:

- Apple slices with 2 Tbsp. hazelnut butter or Veggie sticks with hummus



Inflammation-Friendly Menus

Breakfast:

- Breakfast quesadilla with scrambled eggs, spinach, red pepper, onion and mushrooms on whole grain tortilla (or substitute whole grain/Ezekiel toast)
- $\frac{3}{4}$ cup orange juice



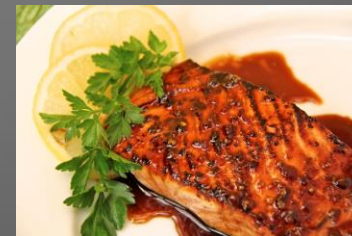
Lunch:

- Strawberry and spinach salad with honey balsamic vinaigrette
- Polenta with black beans and mango salsa



Dinner:

- Roasted salmon with orange-ginger glaze
- Herbed wild rice and butternut squash
- Kale sautéed with garlic and olive oil



Snack:

- Fruit sorbet or frozen yogurt with fresh berries; add whole grain cereal for crunch



What else can I do?

- Exercise
 - Studies have shown that individuals with better fitness had lower levels of inflammatory markers



- Lose weight
 - Studies have shown that weight loss produces a decrease in inflammatory markers



The Bottom Line

Choosing a whole-food, plant-based eating pattern minimizes inflammation in the body and can reduce the risk for and symptoms of multiple chronic conditions.



Maintaining a healthy body weight is one of the best things you can do to reduce inflammation.

Recipe links

<https://www.health.com/recipes/curried-carrot-sweet-potato-and-ginger-soup>

<https://www.epicurious.com/recipes/food/views/chickpea-salad-with-lemon-parmesan-and-fresh-herbs-364611>

<https://www.snixykitchen.com/grilled-pineapple-tofu-skewers-with-spicy-mango-bbq-sauce-a-tofu-giveaway/>

<https://www.myrecipes.com/recipe/quinoa-with-dried-cherries>

[..\Users\nowakj\Documents\Wild Blueberry Banana Smoothie with Chia Seeds \(1\).docx](..\Users\nowakj\Documents\Wild Blueberry Banana Smoothie with Chia Seeds (1).docx)

<https://www.foodnetwork.com/recipes/ellie-krieger/mediterranean-tuna-wrap-recipe-1947830>

<https://www.foodnetwork.com/recipes/guy-fieri/lentil-avocado-salad-2310236>

<https://www.serious-eats.com/recipes/2013/04/turmeric-chicken-with-sumac-and-lime-from-the-new-persian-kitchen-recipe.html>

<https://www.foodnetwork.com/recipes/tyler-florence/roasted-sweet-potatoes-with-honey-butter-recipe-1946538>

<https://www.realsimple.com/food-recipes/browse-all-recipes/garlicky-green-beans-pine-nuts>

<https://cookieandkate.com/breakfast-quesadillas-with-scrambled-eggs-spinach-and-black-beans/>

<https://www.allrecipes.com/recipe/214901/strawberry-and-spinach-salad-with-honey-balsamic-vinaigrette/>

<https://www.forksoverknives.com/recipes/amazing-grains/polenta-with-black-beans-and-mango-salsa-from-the-starch-solution/>

<https://www.forksoverknives.com/recipes/vegan-sauces-condiments/mango-salsa/>

<https://www.allrecipes.com/recipe/39456/roasted-salmon-with-orange-ginger-glaze/>

<https://www.mccormick.com/gourmet/recipes/salads-sides/herbed-wild-rice-and-butternut-squash-stuffing>



Questions?



Thank You!

