



INFLAMMATION: YOUR PANTRY TO THE RESCUE

This information was compiled by KIMA Center for Physiotherapy and Wellness as part of a holistic and collaborative approach to health and healing.

WHAT IS THE BIG DEAL ABOUT INFLAMMATION?

Researchers are finding more and more evidence linking chronic inflammation with chronic diseases like cardiovascular disease, cancer, Alzheimer's, Parkinson's, autoimmune disease, and even asthma.

We all know inflammation on the surface of the body as local redness, heat, swelling and pain. It is the cornerstone of the body's healing response bringing more nourishment and more immune activity to a site of injury or infection. But when inflammation persists or serves no purpose, it damages the body and causes illness. Stress, lack of exercise, genetic predisposition, and exposure to toxins can all contribute to such chronic inflammation, but dietary choices play a big role as well. Learning how specific foods influence the inflammatory process is the best strategy for containing it and reducing long-term disease risk.

WHAT IS INFLAMMATION?

There are 2 types of INFLAMMATION:

1. Acute (overt) The initial response of the body to harmful stimuli and is achieved by the increased movement of plasma and leukocytes (especially granulocytes) from the blood into the inflamed tissues. Symptoms such as redness, swelling, heat, immobility and pain will result.

2. Chronic (silent) Related to almost every chronic disease process. When the body has chronic inflammation, there is an increase in C Reactive protein and a constant release of chemicals (pro inflammatory cytokines). This can go on for a period of months and years. These chemicals floating around in the system are cause damage and create a perceived threat to the body. The body has to create an anti-inflammatory response. This cyclic situation causes damage to our tissues (auto-immune, cancer, arthritis).

CAUSES OF CHRONIC (SILENT) INFLAMMATION

- Diet
- Chronic Stress
- Lack of Exercise
- Allergens – Gluten, food allergies, mold, pollens
- Infections – Gum disease, virus, bacteria, parasite, yeast
- Toxins – Petrochemicals and heavy metals
- Physical Injuries
- Free Radicals – Free roaming atoms that can cause cell + DNA damage without presence of antioxidants
- Age-related wear and tear

INDICATORS OF SILENT INFLAMMATION

- Being overweight
- Elevated blood sugar
- Sleep deprivation
- PMS
- Constant fatigue
- Runny, stuffy nose and allergens
- Craving carbohydrates
- Groggy upon waking
- Brittle fingernails

COMMON INFLAMMATORY DISORDERS

- Arthritis (RA and OA)
- Allergens
- Asthma
- Bronchitis
- Eczema
- Psoriasis
- Periodontitis
- Gingivitis
- Inflammatory Bowel Disease
- Sinusitis
- Gastritis
- Multiple Sclerosis
- Diabetes
- Cancer
- Alzheimer's
- Cardiovascular Disease
- Obesity

TREATING CHRONIC INFLAMMATION

- Exercise is the most powerful anti-oxidant medicine
- Meditation and stress management
- Treat food allergies-gluten, dairy, yeast, corn, eggs and soy
- Probiotics

FOOD AND DIET AS A WAY TO REDUCE INFLAMMATION

An anti-inflammatory diet is not a diet in the popular sense- it is not intended as a weight-loss program, nor is it an eating plan to stay on for a limited period of time. Rather it is a way of selecting and preparing foods based on scientific knowledge of how they can help your body maintain optimum health.

- Eat Whole Foods – mainly plant based diet with a low GL (glycemic load) + high PI (phytonutrient level)
- Choose anti-inflammatory foods such as curcumin, ginger and rosemary
- Stop inflammatory foods – processed, refined foods, sugar, HFCS, trans fats + many vegetable oils
- Change oils you use: increase anti inflammatory fats such as omega 3 fats from small fish like sardines, sable, herring, wild salmon, monounsaturated fats such as avocado + olive oil

AN ANTI-INFLAMMATORY LIFESTYLE DIET

- Bright colored fresh fruits and vegetables
- Legumes of all types
- Whole Grains (exclude gluten)
- Walnuts, flaxseeds, pumpkin seed and sunflowers
- Plenty of fish and seafood
- Extra virgin olive oil
- Lean grass fed meat or free range poultry
- Moderate amounts of red wine
- NO trans fats

AVOID ALL REFINED SUGARS

- White sugar
- White bread
- White rice
- Breakfast bars
- Sweetened Drinks
- Fruit juice like orange juice is very inflammatory

TEAS

EGCG (Epigallocatechin gallate) is the most abundant catechin in tea and is a potent antioxidant that may have therapeutic applications in the treatment of many disorders (e.g. cancer). It is found in green tea but not black tea. Can add cinnamon and cardamom.

GREEN TEA

2 cups a day decreases measures of oxidative stress and DNA damage in blood.

3 cups a day reduces the oxidation of LDL-cholesterol, a significant factor in the development of heart disease. This beneficial effect of green tea is accompanied by decrease in inflammation of the arteries, another important factor in preventing heart disease.

4 cups a day of decaffeinated green tea produces significant antioxidant effects for cigarette smokers, whose bodies are exposed to greater oxidative stress than are non-smokers'.

FATS

We need to pay attention to the fats we are eating because they are converted into prostaglandins. 30% of our diet should come from fats and of those fats we need $\frac{1}{3}$ Monounsaturated, $\frac{1}{3}$ Polyunsaturated, and $\frac{1}{3}$ Saturated Fats.

Our body forms three main types of prostaglandins:

1. Anti-inflammatory PG-E1
2. Anti-inflammatory PG-E3
3. Pro-inflammatory PG-E2

ESSENTIAL FATTY ACIDS

The body needs essential fatty acids like Omega 3 and Omega 6 because the body does not make them on its own. The key is that we need to make sure they are in balance. Americans currently consume Omega 6 and Omega 3 fatty acids at a ratio of 30:1. The ideal ratio is 4:1 (Omega 6: Omega 3). When we eat a fat the body converts it into fatty acids (Omega 3 or 6). When we eat too many Omega 6 then significant inflammation occurs. We should be consuming 1 gram of Omega 3 per day minimum and 3 grams is IDEAL (or 3,000 mg per day). The balance between these two determines the levels of inflammation in our body (pro- or anti-inflammatory).

WHAT ARE THE BEST SOURCES OF OMEGA 3S?

- Wild, fresh water fish
- Wild Salmon
- Krill oil
- Flax seed oil (*but the body doesn't convert it as easily*)
- Hemp Seeds and Chia Seed are the same as Flax seeds
- Walnuts fall into this category but not high levels
- Anchovies
- Herring
- Sardines
- Smelt
- Mackerel
- Sturgeon
- Tuna (careful of mercury)
- Halibut
- Cod
- Swordfish
- Sea vegetables
- DHA supplements

OMEGA 3 BENEFITS RESEARCH

- 1-2 servings daily reduced death by $\frac{1}{3}$
- Reduce triglycerides
- Blood thinning affect
- Lowers Blood pressure
- Reduces risk of dying from an arrhythmia
- OA halted joint cartilage (halt enzymes that break down the cartilage)
- 10 grams of cod liver oil per day
- 30% of cancers from inflammation; taking omega 3 helped breast/prostate
- Improved Mood (DHA)
- Reduced macular degeneration
- For woman, helps with menstrual cramps
- Increase fertility rate
- PSOS (polycystic ovarian syndrome) helped with Omega 3 ratios
- Premature birth rate reduces (EPA-DHA)
- Helps with menopause symptoms
- GLA (Gamma Linoleic Acid) primrose oil, black current seed oil helps OA

30% OF OUR DIET SHOULD COME FROM FATS AND OF THOSE FATS WE NEED $\frac{1}{3}$ MONO, $\frac{1}{3}$ POLY, AND $\frac{1}{3}$ SATURATED FATS:

Mono Unsaturated Oils/Fats (1 double bond in the carbon structure and are anti-inflammatory)
Best example is Olive Oil. It is Omega 9. Very good oil. Others are:

- Olive
- Canola
- Avocado
- Macadamia nut

Polyunsaturated Fats (Omega 6 Sources)

- Soybean oil
- Corn oil
- Cottonseed oil
- Safflower oil
- Sunflower oil

Saturated Fats (Get a good high quality)

- Coconut Butter/oil (Coconut Oil is good for Alzheimer's)
- Butter

WHAT ARE TRANS-FATS?

- Made by changing the chemical structure of fats; the body does not know how to process it
- Linked to cancer and diabetes
- 0.5 grams or more need to be labeled in NYC. Restaurants get around it by decreasing the serving size
- Interesterified fats (even worse than trans fats) and not regulated yet

WHAT TO CONSIDER WHEN EATING MEATS

What is the animal itself eating? *If it is fed corn, it will contain more Omega 6. If it is fed grass, it will have more Omega 3. Corn Fed Beef has a ratio of 20:1 (Omega 6:3) and grass fed beef has a 4:1 ratio.*

THE GLYCEMIC INDEX (GI)

GI is a ranking of carbohydrates on a scale from 0 to 100 according to the extent to which they raise blood sugar levels after eating. Foods with a high GI are those which are rapidly digested and absorbed and result in marked fluctuations in blood sugar levels. Low-GI foods, by virtue of their slow digestion and absorption, produce gradual rises in blood sugar and insulin levels, and have proven benefits for health. Low GI diets have been shown to improve both glucose and lipid levels in people with diabetes (type 1 and type 2). They have benefits for weight control because they help control appetite and delay hunger. Low GI diets also reduce insulin levels and insulin resistance.

Recent studies from Harvard School of Public Health indicate that the risks of diseases such as type 2 diabetes and coronary heart disease are strongly related to the GI of the overall diet. In 1999, the World Health Organization (WHO) and Food and Agriculture Organization (FAO) recommended that people in industrialized countries base their diets on low-GI foods in order to prevent the most common diseases of affluence, such as coronary heart disease, diabetes and obesity.

CARBOHYDRATE SOURCES

- Anything that grows out of the ground are carbohydrates – all vegetables
- When you eat carbs you need to eat organic (no pesticides, neurotoxins)
- Local is much better!
- In Greece everyone grows something in the back yard. If we could all have a little plot of land, we too could grow organic
- Eat foods that are in season
- Lots of greens
- Dirty Dozen avoid especially if out of season, and not local (ask your therapist for this list)
- Low Glycemic index foods are best
- Fiber is key to keeping balanced levels of blood sugar and carbohydrates

CHOOSING LOW GLYCEMIC INDEX CARBOHYDRATES

The carbohydrates that produce smaller fluctuations in your blood glucose and insulin levels are one of the secrets to long-term health, reducing your risk of diabetes and heart disease. It is also one of the keys to sustainable weight loss.

LOW GI FOODS

Traditional oats; legumes such as beans, chickpeas and lentils (dried or canned) and split peas, grain foods like barley (pearl), bulgur, pasta, noodles and low or lower GI rice; starchy veggies like carrots, potatoes (Charisma and other lower GI varieties), taro, yams, parsnips and sweet corn; fresh green and salad veggies and fruit in season; and dairy foods like milk and yogurt (or the calcium enriched soy alternatives). For frugal low GI food know how, check out websites like food cents and Money Saving Meals (which has recipes packed with low GI ingredients). <http://www.glycemicindex.com/>

FIBER

Most Americans don't eat enough fiber. The average adult only eats 15 grams of dietary fiber per day. How much fiber do you need? Women need 25 grams per day and men should get 38 grams per day, according to an Institute of Medicine formula based on getting 14 grams of fiber for every 1,000 calorie.

BEST SOURCES OF FIBER

All beans, peas, lima beans, soybeans, chickpeas, black-eyed peas, artichokes, whole-wheat flour, barley, bulgur, cornmeal, bran, raspberries, blackberries, and prunes. Other good sources of fiber include lettuce, dark leafy greens, broccoli, okra, cauliflower, sweet potatoes, carrots, pumpkin, potatoes, corn, snap beans, asparagus, cabbage, whole-wheat pasta, popcorn, nuts, raisins, pears, strawberries, oranges, bananas, blueberries, mangoes, and apples.

NIGHT SHADES

Not a lot of solid research, but there are lots of testimonials that they can cause inflammation in some people

- Eggplant
- Potatoes (white)
- Tomatoes
- Peppers
- Tobacco
- Nightshade elimination works for some people and not for others

ANTI-INFLAMMATORY NUTRIENTS AND VITAMINS

- B6—A new study shows that individuals with the highest vitamin B6 intake had the lowest levels of inflammation. Furthermore, if you are already inflamed then you have a higher need for vitamin B6 to protect yourself.
- Magnesium— nuts, seeds, and whole grains, vegetables 300 different functions in the body and need 300 to 400 mg a day. Stress also depletes your magnesium. Coconut Water really good source of magnesium
- Vitamin C—a carefully conducted randomized, controlled trial for people with moderately elevated levels of inflammation, vitamin C may be able to reduce CRP as much as statins have done in other studies.
- Multivitamin is ok but need to take a very high quality one: Willner Chemists are good. Metagenics, Thorne Research, Standard Process are good quality. Stress depletes our bodies of vitamins and minerals.
- Selenium—adequate levels of Selenium are important for initiating immunity, but they are also involved in regulating excessive immune responses and chronic inflammation. Binds to mercury and can pull it out of the body!

HOW CAN YOU GET SELENIUM IN THE DIET?

- Brazil Nuts (2 or 3 nuts a day=200 mg)
- Whole Grains
- Vegetables

ALLERGENS AS A CAUSE OF INFLAMMATION

To treat inflammation, these allergens need to be identified and reduced in the diet:

- Common Food Allergens
- Dairy
- Wheat, Rye, Barley, Oats, Gluten
- Corn
- Soy
- Eggs

To identify food allergens, it is often helpful to keep a food diary. Eliminate the above foods for a few months and then add them back in one at a time.

- When we eat the same foods all the time and we become sensitive to them
- Rag weed
- Pollen
- Sinus issues and need to take antibiotics which destroy your gut
- Infections in the gums can cause inflammation in the body
- Chlamydia
- Epstein Barr virus (mono)
- Herpes virus
- If you have these viruses they don't go away, just need to make sure you are keeping the inflammation in your body in check

FIRST CHOICE IS FOOD, THEN THINK ABOUT:

SPICES

- Garlic good and also helps to lower cholesterol, drops your blood pressure
- Onion
- Chives
- Ginger
- Oregano
- Turmeric
- Rosemary is great for asthma peptic ulcers, liver toxicity
- Mint
- Cinnamon

ANTI-INFLAMMATORY BOTANICALS

- **Turmeric** (curcumin)– Natural Cox 2 inhibitor; great for decreasing inflammation and for aches and pain. Try a recipe with lemon and ginger and maple syrup. Show to decrease inflammation in the heart, kidney, skin, liver, lungs, tendons, and ligaments.
 - **Vonacor** (www.vonacor.com) – A natural product that uses patented microtechnology to maximize purity, potency and absorption of curcumin.
 - **Meriva-SR** (www.meriva-sr.com) – A supplement with “sustained release” curcumin phytosome to overcome the problem of curcumin's rapid utilization in the body. Metagenics and Thorn have Meriva supplements.
 - **Adding Black Pepper with Turmeric** – Will help it to absorb more readily and be bioavailable
- **Boswellia** – A genus of trees known for their fragrant resin and anti-inflammatory properties. The Biblical incense frankincense was probably an extract from the resin of the tree, *Boswellia sacra*. 5-LOXIN is a new, patented and standardized extract of *Boswellia serrata* providing 30% acetyl-11-keto-beta boswellic acid (AKBA), one of the most powerful boswellic acids for joint health and inflammatory problems.
- **Ginger**

- **Black Seed (nigella sativa)** – Used in bread and great for lung conditions.
- **Bromelain** – An extract derived from the stems of pineapples. As a supplement it is thought to have anti-inflammatory effects. The Natural Medicines Comprehensive Database suggests that bromelain, when used in conjunction with trypsin and rutin is as effective as some prescription analgesics in the management of osteoarthritis.

ANTI-INFLAMMATORY FOODS

Vegetables:

- Bok Choy
- Broccoli
- Brussel Sprouts
- Cabbage
- Cauliflower
- Collard Greens
- Fennel
- Garlic
- Kale
- Onions
- Spinach
- Sweet Potatoes
- Turnip Greens

Fruits:

- Acerola cherries
- Apples
- Avocados
- Blackcurrants
- Blueberries
- Cranberries
- Kiwi
- Grapefruit
- Lemon
- Lime
- Papaya
- Pineapple
- Pomegranate
- Strawberries

Grains:

- Buckwheat (sprouted buckwheat groats)
- Rice

Fish:

- Wild Alaska Salmon
- North Atlantic Mackerel
- Anchovies
- Sardines
- Herring
- Halibut

Nuts and Oil:

- Almonds
- Flaxseed
- Sunflower Seeds
- Hazelnuts
- Walnuts
- Extra virgin Olive Oil
- Sesame Oil

Herbs:

- Basil
- Cayenne/Chili Peppers
- Cinnamon
- Cocoa (at least 70%)
- Mint
- Oregano
- Parsley
- Rosemary
- Thyme
- Turmeric/curcumin

REFINED PROCESSED FOODS

The more you eat the more you are pro-inflammatory.

Why do we eat them?

- Addictive
- Fast
- Cheap

MEDICATION ASSOCIATED WITH REDUCING INFLAMMATION

- Aspirin
- Ibuprofen (Advil)
- Naproxin (Alieve)
- Cox 2 inhibitors (Celebrex and Vioxx)
- Steroids

ANTI-INFLAMMATORY DRUGS AND LONG-TERM SIDE EFFECTS

- Severe damage and bleeding in the stomach and GI
- Cataracts
- Asthma
- HBP
- Kidney Damage
- Prevent Healing (break down the cartilage)
- Heart Failure
- Immune suppression
- Death
- Injury to the body that doesn't heal properly, you set yourself up for increased inflammation in the body. Make sure you are carefully balancing what you put in your body.

STRESS AND INFLAMMATION

- Increases Cortisol levels and promotes inflammation
- Cortisol levels affect sleep
- Cortisol causes us to hold on to fat (especially in the belly). The more belly fat you have the more inflammation you have. The more belly fat you have the more leptin resistance you have (don't feel full if you have high levels of leptin)
- Reduce Stress through meditation, yoga, or aromatherapy with essential oils.

EXERCISE

Regular exercise protects against diseases associated with chronic low-grade systemic inflammation. This long-term effect of exercise may be ascribed to the anti-inflammatory response elicited by an acute bout of exercise, which is partly mediated by muscle-derived IL-6. Physiological concentrations of IL-6 stimulate the appearance in the circulation of the anti-inflammatory cytokines IL-1ra and IL-10 and inhibit the production of the pro-inflammatory cytokine TNF- α .

- Need to exercise at least 30 min 4 to 5 days a week.
- Weight training and core work in addition to aerobic is ideal
- Movement is key to keeping inflammation down



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