

INFLAMMATION

What it is and How to Fight It

The term “*inflammation*” is often thrown around in both the medical field and general public. But what is it exactly? In simple terms, inflammation is an immune reaction that occurs in response to acute tissue damage or infection, and is the body’s attempt to repair itself; it is often associated with redness, swelling, heat, and pain.

The body can also become overloaded with pro-inflammatory chemicals creating a state of chronic inflammation; rather than repairing the body, this chronic inflammation actually causes damage and is implicated in many disease processes including: chronic pain, arthritis, heart disease, and digestive disorders to name a few.

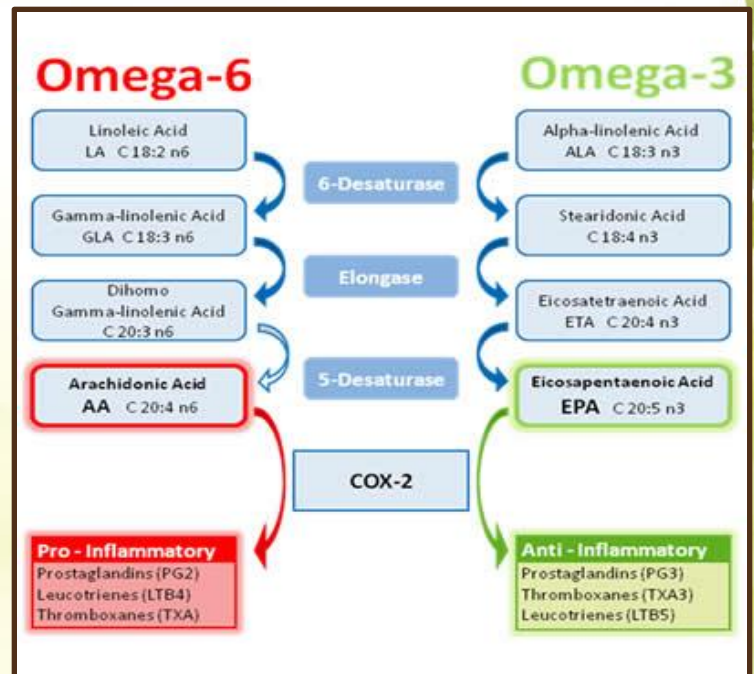
But why does this ‘chronic inflammation’ occur? A large part of the answer lies in our diet, and how the food we eat affects our body on a cellular level.

Fatty acids are a vital constituent of our cell membranes; some fatty acids are essential, meaning they must be consumed in the diet because our body cannot manufacture them. Two key essential fatty acids (EFA’s) are:

- 1.) Linoleic Acid (LA): omega-6 (n-6) fatty acid
- 2.) Alpha-Linolenic (ALA): omega-3 (n-3) fatty acid.

In the body, LA is enzymatically converted into arachidonic acid (AA), leading to the production of PRO-inflammatory chemicals; whereas ALA is converted to eicosapentaenoic acid (EPA) and docosahexanic acid (DHA), leading to the production of ANTI-inflammatory chemicals. Therefore, consuming foods that are high in omega-6 fatty acids, such as LA, will promote an inflammatory state in the body.

For more on diet and inflammation, see page 3.



SYMPTOMS OF CHRONIC INFLAMMATION

- Body aches and pains
- Congestion
- Frequent infections
- Diarrhea
- Dry eyes
- Indigestion
- Shortness of breath
- Skin outbreaks
- Swelling
- Stiffness
- Weight gain/obesity

FIGHTING INFLAMMATION

THE PILLS: DO WE NEED THEM?



Various types of NSAIDs.

When dealing with pain and inflammation, the all too common answer has become taking Ibuprofen or any variety of prescription or over the counter NSAID (non-steroidal anti-inflammatory). The problem herein lies with the fact that long-term NSAID use comes with side effects, and some potentially serious complications:

- 50% of NSAID users will experience NSAID associated dyspepsia (indigestion, upset stomach);
- Almost all long-term users demonstrate (minor) bleeding in the stomach;
- 8-20% of long-term users develop gut ulceration;
- 3% develop serious side effects leading to 100,000 hospitalizations and 16,500 deaths annually; and
- Over \$1.5 billion is spent annually in the US to treat NSAID complications.

With all these potential complications, should these medications really be our first choice to fight pain and inflammation?

How Do NSAIDs work? - The COX Factor

NSAIDs work by blocking specific enzymes called cyclooxygenase or COX. There are two distinct COX enzymes:

- 1.) COX-1: normally expressed and involved in normal homeostasis (gastric protection, hemostasis, renal function); and
- 2.) COX-2: not normally expressed; activity induced following tissue injury.

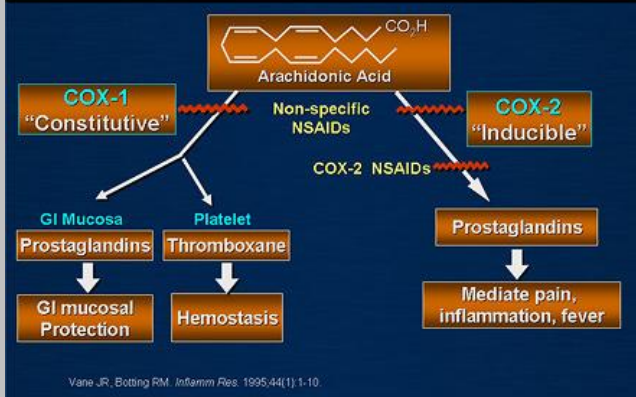
The problem is that non-specific NSAIDs block BOTH of these enzymes, therefore we lose the protective effects of the COX-1, leading to side effects such as gastric (stomach) irritation. For this reason, selective COX-2 inhibitors were created (Celebrex, Vioxx, Bextra); however, these drugs came with their own risks. Vioxx was taken off the market because it was found to increase the risk of heart attacks and strokes.

But is COX-2 really the problem? COX-2 is not an inherently pro-inflammatory enzyme. It actually acts on different cell membrane fatty acids:

- 1.) AA (arachidonic acid): produces pro-inflammatory chemicals leading to pain and inflammation; and
- 2.) EPA (eicosapentaenoic acid): produces anti-inflammatory chemicals reducing pain and inflammation.

Once again our discussion returns to our consumption of omega-6 and omega-3 fatty acids. An over-abundance of omega-6 FA's will increase AA and therefore COX-2 will contribute to more pro-inflammatory mediators. So to answer the question posed above, COX-2 is really NOT the problem! Our excessive consumption of omega-6 FA's is!

Mechanism of Action of NSAIDs



Vane JR, Botting RM. *Inflamm Res*. 1995;44(1):1-10.

Mechanism of action of NSAIDs and COX-2 Inhibitors



Don't let this be you!

FIGHTING INFLAMMATION

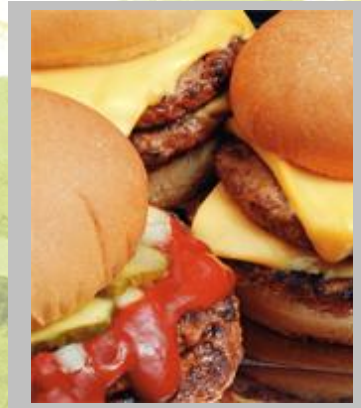
THE NATURAL WAY

On page one we started to discuss how diet can influence the inflammatory state of the body based on consumption of omega-6 and omega-3 fatty acids. Simply because omega-6 FA's create pro-inflammatory chemicals does not mean they are 'bad'; we still need to consume them in the diet because remember, sometimes inflammation is 'good' and helps us to heal. The key is a healthy balance of these fatty acids. Ideally the ratio of omega-6 to omega-3 fatty acids in our diet should be 1:1 or at worst 4:1; this ratio promotes a modulation of excessive immune and inflammatory responses, while still providing our body with its essential nutrients. The problem is that most North Americans have a ratio that is closer to 20:1 or higher. Why? On average, North Americans consume far too many grains (20:1), grain-fed animals (>4:1), and corn oils (>4:1) in our diets; such high amounts of omega-6 fatty acids contributes to a pro-inflammatory state, thus increasing consumption of Ibuprofen or other NSAIDS and COX-2 inhibitors.

What should we do? The simple answer is to increase our consumption of foods that are high in omega-3 FA's (such as fruits and vegetables, fish, flax seed, and walnuts), while decreasing those foods that are high in omega-6 FA's. We can also add certain spices to our food that have been shown to have anti-inflammatory effects. Turmeric/curcumin, a spice found in many Indian dishes, has long been shown to have anti-inflammatory as well as anti-oxidant effects with little or no side-effects; many inflammatory diseases can also be helped by consuming or supplementing with ginger, boswellia, bromelain, white willow bark, and green tea.

You can also supplement directly with EPA and DHA ("fish oils"); EPA and DHA can be taken daily to prevent/fight chronic inflammation, or even to combat acute inflammation from injury or infection.

With any type of supplementation, it is important to choose high quality products to ensure it is being absorbed and you are receiving the benefits.



Foods high in omega-6 FA's are PRO-inflammatory.



Foods high in omega-3 FA's are ANTI-inflammatory.



Supplement with EPA/DHA.

PRODUCT SPOTLIGHT:

What about acute inflammation resulting from tissue injury? What about those muscle aches and pains? There is a natural solution to NSAIDs for these problems as well: TRAUMEEL. Traumeel contains a variety of natural ingredients that help to:

- Reduce pain after injury;
- Reduce swelling;
- Stimulate healing;
- Treat bruising and associated soreness;
- Treat minor bleeding; and

Traumeel acts on the first stages of the inflammatory cascade to optimize the whole healing and recovery process; in contrast, NSAIDs act at the end of the cascade, with the result of simply masking the injury and pain.

Traumeel is available in a variety of forms including: ointment, gel, tablets, and drops.

For more information, visit www.traumeel.com



Seaman, David. *Alternatives to NSAID's in the Treatment of Spinal Pain.* *The American Chiropractor*, June 2006.
Seaman, David. *The Truth About the Dangers of COX-2 Inhibitors.* *The American Chiropractor*, March 2005.
Seaman, David. *Garlic, Ginger, and Turmeric for Your Health.* *The American Chiropractor*, January 2005.



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