

CONTROLLING THE CHAOS WITHIN

(This briefing is not medical advice and should not take the place of physician care. This is just a brief summary – the immune system is more complex than can be explained in 1 hour.)

The immune system (white blood cells) works tirelessly for us. It fights off germs that enter the body, removes toxins, heals the tissues that get damaged, then switches back to a quiet state.

Inflammation – when the problem is great enough that large numbers of various white cells get involved and our body tissues are affected.

Chronic inflammation – goes on for a long time, often resulting in serious damage to the body tissues. May cause chronic pain, swelling, difficulty breathing, a rash, GI problems, tiredness.

Some autoimmune diseases:

asthma	allergies	type I diabetes	rheumatoid arthritis
Crohn's disease	multiple sclerosis	lupus	Hashimoto's, Grave's disease
celiac disease	eczema, psoriasis	Sjogrens syndrome	

Chronic inflammation is often a major factor in:

Alzheimer's disease	migraines	gout	gum disease
heart attacks	many cancers	osteoarthritis	bronchitis, emphysema, COPD
atherosclerosis	type II diabetes	ulcers	hepatitis, pancreatitis, colitis

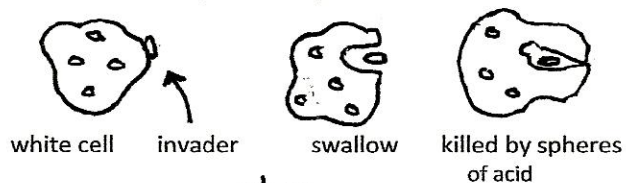
CRP (C-reactive protein) is a blood test that measures the level of inflammation in your body. The larger the number, the more inflammation. Less than 1 is ideal; over 3 is considered very high.

Basics of White Cells

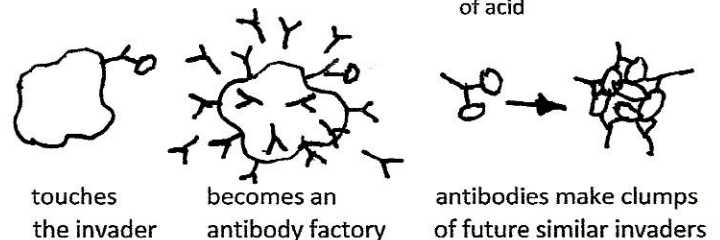
All the cells in our body have unique, ultra-small “antennae” on their surface, mainly single molecules of a protein. This allows white cells to know what is “self” and what is “not self” – what to leave alone and what to destroy.

There are a number of different types of white cells, each with their own job. They:

- Recognize an invader, swallow it, then kill it with acid inside the white cell.



- Recognize an invader and make antibodies which form clumps of the invader, so they can be killed off.



- Produce chemicals that stimulate the other white cells and make them live longer.

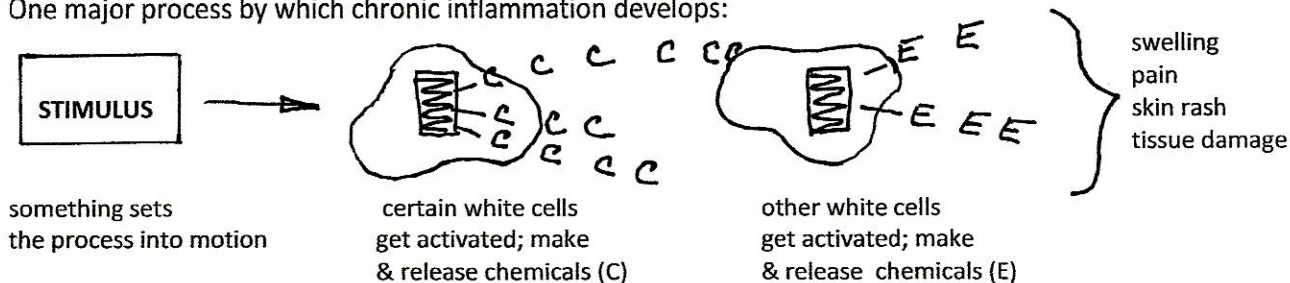


- Produce chemicals that stimulate cells in the tissue to respond (fever, runny nose, pain, repair wounds, etc).
- Produce chemicals that shut the system back down.

For each basic function, a number of different white cells are involved. Like a colony of ants, they have their own jobs, but when the need arises they work together in incredible ways to get the job done.

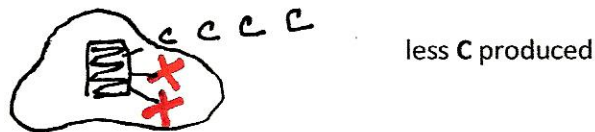
In chronic inflammation the system miscalculates. It may react to a harmless object such as an ordinary food. Or it may not shut down when it should – so the white cells continue fighting and don't let up. When this happens for a long time, the body can't keep up with the clean-up effort and the person is trapped in an endless cycle of damage and partial repair. Eventually, this over-reaction begins to destroy the tissue itself, causing internal scarring that makes the tissue unable to work the way it was designed to.

One major process by which chronic inflammation develops:



One solution is to find ways of slowing down this production line – without turning it completely off.

A number of drugs ("biologics") work by interfering with the production of C chemicals, such as Enbrel and Humira. They are very expensive, don't work for everyone, and may cause serious side effects.



The white cells that make the E chemicals can be slowed down in several ways. This is the place where most anti-inflammatory drugs work.

Aspirin, Motrin, Aleve, and Celebrex interfere with one set of the E chemicals (prostaglandins). Singulair and Accolate interfere with the other set (leukotrienes).

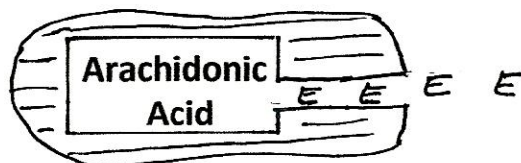


Omega-3 oils (such as fish oil or flaxseed oil) interfere with the production of the first set of E chemicals. (Note: fish oil also has a modest anti-clotting effect. If you are on a blood thinner, check with your doctor before taking fish oil.) Borage oil (or evening primrose oil) contains an ingredient (GLA) that interferes with the second set of E chemicals.

However, there is another way to reduce the output of this set of cells. Consider this example:

Think of the cells producing E chemicals as sausage factories making "E" sausages. In the factory you take pork meat, grind it up, add some spices, form it into shapes, and out comes sausage. You can slow down the output by interfering with the production lines, but another straightforward way is – just don't give the factory enough meat to work with!

In our white cells, the "meat" is a substance called Arachidonic Acid. The inflammatory E chemicals are made from Arachidonic Acid – a fatty acid which is found in abundance in certain foods we eat.



One easy way to reduce inflammation in the body is to reduce the intake of foods high in Arachidonic Acid, so the white cells will have less material available to make inflammatory chemicals. (Less meat = less sausage!)

Arachidonic Acid Content – for medium serving (numbers are approximate)

eggs, 2 whole	190	farm-raised salmon	1200
chicken livers	520	most wild salmon (av)	100
chicken white meat (no skin)	90	tuna fish, catfish (av)	80
chicken dark meat (no skin)	130	crab meat, snapper	70, 90
pork sausage, cooked	180	other fish & shellfish (av)	5-20
ham, lean or pork tenderloin	80	all vegetables, fruits, & grains**	0
beef, regular, cooked	60	milk and milk products	0
beef, lean, cooked	50		

(** Some AA can be produced in the body by conversion of fatty acids in the oils of vegetables & fruit.)

The Arachidonic Acid information is explained in detail in Win the War Within by D. Floyd Chilton.

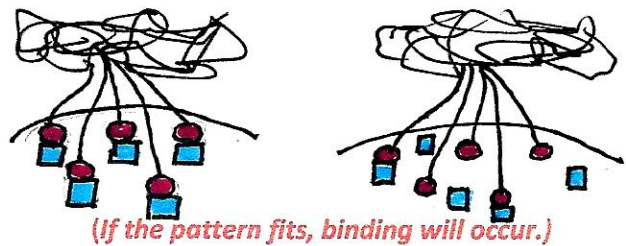
Discover the causes of inflammation For best results you have to find all of them - - - - if possible.

Certain Foods and Allergens

Allergies are caused by the immune system reacting to a harmless substance (e.g. peanuts, pollen) as if it were a toxic material. Proteins on the material fit onto the antibody of one type of the person's B-cells. That causes those B-cells to produce many similar antibodies, which spew out into the bloodstream and go all over the body. At the next exposure to this material the antibodies (often IgE or IgG) grab onto it, rapidly causing symptoms such as swelling of the tongue, rash, or difficulty breathing.

Food intolerances are a serious problem for many people, especially those with an inflammatory disorder. Unlike an allergy, the intensity of the response is determined by how much of the food is eaten, and it usually takes 2 or 3 days to develop – or the person may not notice a symptom. Intolerances can be a major source of inflammation, since 70% of the white cells in our body are in the gut!

The cells lining the gut have proteins on their surface, that vary from one person to the next. Sometimes a food will have a protein on *its* surface (called a *lectin*) that fits onto the cell wall protein. When this happens, binding occurs. This causes the white cells under the cells to get activated, starting up the inflammatory process and spreading into the body.



There are several consequences:

If a person eats foods that they are intolerant to day after day, their immune system will stay in a constant active state, gradually wearing down their body tissues.

Sometimes the white cells don't get turned off when they should. The active white cells get stuck in the "on" position, further wearing down the affected tissues.

If this inflammation continues for a long time, a person will likely develop small "cracks" in their gut wall – called a **leaky gut**. The cracks allow undigested protein molecules from the food to get **into** the body, causing more inflammation. *(Normally proteins are broken down into individual amino acids before they move into the body. A food protein that gets through the gut wall and into the bloodstream is considered an enemy and will activate the immune system.)* Even worse, lectin proteins will also get through. Once in the body, they may attach to cells in the tissue of the joints, or in the thyroid, pancreas, or skin, etc. Then white cells will start attacking the person's own tissue, and autoimmunity develops.

If lectins attach to the wall of the stomach, they cause a decrease in secretion of the protective mucus the stomach wall depends on. The stomach lining reacts by secreting more acid. Next thing you know - chronic heartburn.

Symptoms of a food intolerance include: painful joints or stiffness; fatigue; skin rash; itchy eyes; headaches; heartburn; abdominal pain; diarrhea or constipation.

There is no simple test to find out what foods you are intolerant to. You have to cut out a large number of foods from your diet for 7 - 10 days and see if you get better – not easy, but well worth the effort. (Cutting out 95% of each food will usually do.) Then you add back one food every 2 or 3 days, and see if you get worse again.

The foods that most commonly cause intolerance (and usually the most severe) are:

whole wheat	starchy beans (including soy and peanuts)
any food with gluten (white flour, rye, barley)	

Other common candidates for intolerance:

tomatoes, potatoes, peppers, eggplant	milk and dairy products	corn
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There are capsules for sale that contain ingredients which bind to some of the offending proteins and tie them up before they can lock onto the cells of your gut wall: "Lectin Lock" (vrp.com) and "Deflect" (4yourtype.com) are two. Some people get relief from taking a digestive enzyme supplement.

2. Not enough good bacteria in your gut

A big player in keeping the gut healthy is “good” bacteria. There are billions of bacteria in the gut. Good ones:

- help digest our food and break down toxins.
- help form a protective lining on intestine walls and produce helpful fatty acids for the lining.
- help the body process vitamin B₁₂ and vitamin K so they can be used in the body.
- help turn off inflammation in the gut wall by aiding the white cells whose job is to “put on the brake.”

“Bad” bacteria do not help in these ways; in fact, they excrete toxic wastes as they eat your dinner!

- Taking probiotics increases the number of good bacteria in your gut so bad bacteria and yeasts get crowded out.
- Coconut oil, oregano oil, thyme oil, and grapefruit extract help kill off “bad” bacteria and yeasts.
- High fiber foods, onions, blueberries, and bananas help feed good bacteria.
- L-glutamine and zinc supplements can also help heal a leaky gut by strengthening the gut wall.

3. Exposure to toxins that overwork your liver.

We live in a world full of pesticides and don’t know the cumulative effect of being exposed for many years to a small amount of any toxin. Mercury promotes the development of several autoimmune diseases. Estrogen-like compounds given to cattle and chickens are thought to promote inflammation in some people. Traces of a wide range of drugs can be found in most water supplies.

Exposure to a high level of toxins may increase the work load on your liver to more than it can handle.

Detoxifying your body is something that should be done under the care of a physician. However, there are some healthy ways to help your liver:

- a. Our bodies make glutathione, the main antioxidant for detoxifying heavy metals. Alpha lipoic acid, another antioxidant (can be taken as a supplement), helps to “recharge” glutathione.
Broccoli, Brussels sprouts, collard greens, and onions also help to recharge glutathione.
- b. Soluble fiber (such as Metamucil or Benefiber) and high fiber foods help to pull toxins and estrogen compounds out of the body, making the liver’s work a little easier.
- c. B vitamins and the minerals zinc, selenium, magnesium, copper, and manganese can also help the liver.

4. Chronic Stress.

Stress causes inflammation in the body. Nerve impulses from your brain stimulate the production and release of killer-T cells, which are inflammatory. They also stimulate your adrenal glands to produce cortisol, a hormone that reduces the activity of killer-T cells. Cortisol is the main anti-inflammatory hormone in the body. To be healthy, we need to have a balance between these activities.

Today many people live with unrelenting stress. Continued stimulation of the adrenal glands will at some point cause *adrenal fatigue*. Then the glands cannot produce enough cortisol and the result is chronic inflammation. Chronic stress keeps a person from making compounds (like IgA) that are needed to support the good bacteria in the gut. The intestine wall gets gradually damaged, making it easier to develop a *leaky gut*. Chronic loss of sleep causes white cells that make “C” chemicals to overproduce, causing more inflammation. High stress for a long time gradually wears down our immune system. It grows old before its time.

Ideally, get relief through gentle exercise and stress reduction techniques (tai chi, meditation, deep breathing, etc). Vitamins B₅ and B₆ (which support the adrenal glands) can help some people with chronic stress.

5. Other Sources of Inflammation

- not enough antioxidants in the body (Free radicals cause damage to body tissues and they have to be cleaned out.)
- respiratory infections, such as colds, flu, bronchitis, pneumonia
- other infections, such as bladder infection, cold sores, boils, cellulitis, etc.
- being overweight. Fat (adipose) tissue contains excessive white cells that produce inflammatory chemicals.
Losing even 15 pounds can cause a measurable reduction in inflammation.
- elevated blood sugar. A high blood glucose level stimulates your pancreas to secrete more insulin.
Unfortunately, insulin has a side effect of promoting the production of inflammatory chemicals.

Recommended reading: The Immune System Recovery Plan by Susan Blum, M.D.