

# Healing from Chronic Inflammation

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What causes inflammation in the body; how can we find relief and stem the genesis of disease? After a short discussion on the causes of inflammation, we'll delve into the myriad ways to contend with it and lead a life that is healthier.

Chronic inflammation due to the body's inability to resolve the primary inflammatory origin can cause tissue damage that then creates continued inflammatory response. Like the ripples that arise from a pebble thrown in the water, the damage can broaden over time. This broadening can put a burden on the entire system, thus making it even harder for the body to change the condition. Chronic inflammation can lead to chronic diseases such as rheumatoid arthritis, Crohn's disease, ulcerative colitis, psoriasis, and more.

“Chronic inflammation is a risk factor for many different diseases. It is clear that inflammation is associated with degenerative brain diseases, obesity, metabolic syndrome, cardiovascular disease, diabetes, and cancer. Throughout the past 100 years, changes in the causes of death in the US have been dramatic. The most recent data indicate that cardiovascular disease and cancer are now responsible for 63% of mortality in the US population. Although progression of these diseases is related to diet, lifestyle, and genetic factors, a common but often unrecognized link is the presence of underlying chronic inflammation. As of 2014, 83.6 million people were living with some form of cardiovascular disease, 29.1 million people have been diagnosed with diabetes, 14 million people carried the diagnosis of cancer, and 5.2 million people were living with Alzheimer disease. These diseases are a huge burden on our health care system and all have been associated with chronic inflammation. Inflammation is our first defense against infection, but when it goes awry in specific organ sites, it can lead to progression of several diseases, including cancer, cardiovascular disease, metabolic syndrome, diabetes, and Alzheimer disease. When an individual undergoes acute tissue damage through blunt trauma or other means, the resulting swelling and inflammation is obvious, painful, and short-lived. The immune system reacts immediately by sending in lymphocytes and other inflammatory mediators to help remove the damaged tissue and start the healing process. Inflammation is a critical component of the immune system to help fight off viruses, bacteria, fungi, and other invaders. Inflammation can become chronic when there is a persistent stimulus without resolution (1).”

Directly after an injury happens, the immune system jumps into action. This is called acute inflammation and is part of the healing process. “Many different immune cells can take part in

an inflammation. They release different substances, the inflammatory mediators. These include the tissue hormones bradykinin and histamine. They cause the narrow blood vessels in the tissue to expand, allowing more blood to reach the injured tissue. For this reason, the inflamed area turns red and becomes hot.

More defense cells are also brought along with the blood to the injured tissue, to help with the healing process. Both hormones can also irritate nerves and cause pain signals to be sent to the brain. If the inflammation hurts, you usually favor the affected part of the body.

The inflammatory mediators have yet another function: they increase the permeability of the narrow vessels, so that more defense cells can enter the affected tissue. The defense cells also carry more fluid into the inflamed tissue, which is why it often swells up. After this fluid is transported out of the tissue once again a while later the swelling disappears again.

The mucous membranes also release more fluid during inflammation. This happens for example when you have a stuffy nose and the nasal mucous membranes are inflamed. Then the nasal secretions can help to quickly flush the viruses out of the body.

An inflammation is not always a helpful response of the body. In certain diseases the immune system fights against its own cells by mistake, causing harmful inflammatory responses. These include, for example:

- Rheumatoid arthritis, where many joints throughout the entire body are permanently inflamed
- Psoriasis, a chronic skin disease
- Inflammations of the bowel like Crohn's disease or ulcerative colitis

These diseases are called chronic inflammatory diseases and can last for years or even a lifetime in varying degrees of severity and activity" (2)(3).

### **Major causes of inflammation**

1. **Injury:** When the body is injured, inflammatory hormones are produced to help keep the injured part immobilized, take metabolites out and bring in nourishment to the cells. This is not chronic inflammation. As the injury heals, the inflammation will reverse naturally. Cold compresses can help mitigate the inflammation.
2. **Insect stings/bites:** When bugs attack, it can cause swelling at the site of entry, which can quickly spread and go from irritating to life threatening. Nettle tincture applied to the site plus taken internally can reverse the inflammatory process as can apple cider vinegar. Fresh plantain juice works as well. The key is to use the remedies directly after the attack to be best effective. With plantain, tincture is not as effective as nettle. Spit poultices

introduce bacteria from the mouth onto an open wound. Not a great idea. Plantain leaves may be rubbed between the fingers to extract the juice and applied. The juiced plantain can be preserved by freezing in ice cube trays or by making a succus. A succus is fresh juice with 20 – 25% added 151 proof alcohol. A succus will keep in the fridge for up to a year. With severe allergies, please be smart. The remedies can help lessen the reaction enough to get the person to a medical facility. The remedies may be repeated as necessary.

3. **Diet** – Some foods, such as those in the Solanaceae family, can cause inflammation. Minimizing the intake of these foods can help lessen to eliminate the issue. Fermented foods stimulate a histamine response in many people, which can lead to chronic inflammation. Take care to limit the volume of fermented foods eaten and consider taking a quality probiotic blend in capsule form instead. Probiotics taken in this form do not cause the histamine reaction that fermented foods can. Back in the early 1990's there was an elderly woman in Seattle who made kombucha. It was all very hush-hush and you had to know someone who knew her to be invited into her home to meet her and get a kombucha baby, as she called them. I was taken blindfolded (ha!) to her home, where she gave me instruction on how to care for my "baby" and make kombucha. One thing she told me that was so important and stuck with me to this day was to ingest only 1-2 ounces of kombucha a day or it would cause inflammation and other issues. How many folks drink several bottles of kombucha a day and wonder why they are not as healthy as the claims state? Slow down, my friends, slow down. It's not "if a little works, a lot will work better" in the case of kombucha and other fermented foods. Think of fermented foods being complimentary to a meal, not the main course.
  
4. **Emf and blue light exposure, Wi-Fi and electricity, and close proximity to power lines and cell towers.** Dr. Jack Kruse, neurosurgeon and optimal health educator, has done extensive research on this subject in conjunction with research on the extreme damage that EMFs, or electromagnetic fields, wreak on our bodies. EMFs bombard us from computers, smartphones, tablets, wiring, wireless routers, cell towers, etc. Not only do EMFs disrupt the circadian rhythm, but also cause damage to mitochondria, neurological and behavioral changes, chronic fatigue, and more. You can bio hack to protect yourself by unplugging your router at night and when you're not using it or putting it on a timer. Place your phone on airplane when not using it, utilize the speaker vs holding the phone up to your head when on a call. Put all technology on "night" to reduce blue light. Keep the smart phone off the bed and nightstand at night. Use blue blocking glasses after dark. Splash ice cold water on your face, particularly on your closed eyes each morning, and a few times a day when on the computer. For further information, go to [www.jackkruse.com](http://www.jackkruse.com).

5. **Poor sleep patterns:** While the causes can be numerous, stress and unprotected tech usage seem to be the major culprits. When the body does not get proper sleep, maintenance and repair cannot happen. Over time, this can cause mitochondrial and neurological damage and chronic inflammation. See above for ways to shield from tech dangers. See below for valuable information to achieve better sleep.
  
6. **Lack of exposure to sun and grounding:** The sun has the amazing power to heal damaged mitochondria in the cells. UVB rays from the sun reduces inflammation. Our skin is our biggest organ and along with the eyes, it governs the peripheral clock genes in the body. When we allow for the skin and eyes to be exposed to the full UV spectrum of sunlight at sunrise and sunset, we are helping to recalibrate our circadian rhythm. “Biological rhythms coordinate the timing of our internal bodily functions. Colonic motility follows a rhythm as well. Circadian clocks have been highly conserved throughout evolution and their main role may have been to present living beings with a survival advantage by allowing them to adapt to environmental changes and anticipate the physiological needs for the time of day” (3). The best time to utilize the healing powers of the sun are at sunrise and sunset. Consider getting outdoors barefoot at those times. Stand in the sun’s path as often as you can. Take 5-10 minute mini breaks throughout the day.
  
7. **Drugs:** There are times when drugs, whether pharmaceutical or herbal, are necessary. While I would never tell a person what drugs/herbs to take or not take, there are times when a person will take several medications to mitigate the side effects of each other, which wreak havoc on the body. An investigation of lifestyle, diet, and all the other factors mentioned in this article and more may be engaged to determine whether the person can wean off medications as they commit to continuing on a healing path.
  
8. **Alcohol:** “Chronic inflammation is commonly associated with alcohol-related conditions. Accumulating evidence suggest that it acts as an etiological factor in the initiation and progression of many of these conditions” (4). Most of us have felt the morning after effects of a fun night out on the town. Fingers that feel like sausages, jeans that won’t button, puffy eyes and face. For many, this is an occasional occurrence and with a healthy liver, the body can break down the alcohol and reverse the inflammation. Chronic usage of alcohol causes a liver to become overworked and underpaid, with the accompanying chronic inflammation. The choices we make directly affect our health. For those who are looking for help with an alcohol addiction, AA meetings and sponsors can be lifesaving. It takes work to abstain from alcohol, but it can be done.

9. **Water quality and quantity plays** a big role in chronic inflammation. Water helps the body to eliminate toxins, waste, and cellular metabolites. It can be debated that plain tap water is not quality water, nor does it help to improve the redox potential. “Redox chemistry is fundamental to all life forms” (6). Chronically dehydrated cells cannot function properly. Every system in our body requires water to function optimally. There is a free to the public spring of incredibly high quality spring water in Lynnwood, WA. Take the 164<sup>th</sup> St. exit off I5, just down the hill west of the freeway on the right side of the road. It gets tested regularly. People are generally very nice and patient. I’ve had many a lively discussion waiting my turn to get water. I use it in my cooking and drinking and my animals and plants all get this water. For those who don’t live in the area, Mountain Valley Spring Water and Polish Spring Water are two sources for healthy water. Drink plenty of quality water. Add a bit of lemon or lime juice to it if you choose.
10. **Stress:** The nervous system is the control center of the body. It interprets what the body senses and directs responses via movement and glandular activity. It governs the running of our systems such as heart rate, immunity, digestion, and respiration without us having to think about it. The nervous system is responsible for our moods and thoughts. Emotional health, therefore, is a function of nerve health. Cortisol, a stress hormone that helps us to wake up in the morning, is produced slower than adrenaline, but lingers longer in the bloodstream. Cortisol and adrenaline are synthesized in the adrenal glands, which sit on top of the kidneys. When continually hit with any stress stimulant, the adrenals can over produce these hormones, putting the body in a constant fight or flight mode. Prolonged stress alters the effectiveness of cortisol to regulate the inflammatory response, because it decreases tissue sensitivity to the hormone. Specifically, immune cells become insensitive to cortisol’s regulatory response, and do not react as needed. When stress happens, our mind and body have several mechanisms for handling the mental and physical manifestations. Chronic stress contributes to chronic inflammation as the body responds to any stress with histamine reaction. Chronic inflammation can lead to diseases such as fibromyalgia, SEID (chronic fatigue), and even cancer. The mind can shut down. The term “can’t think straight” becomes a real thing. In fact, there are those who say that all disease starts with inflammation” (7). There are many ways to reduce and eliminate stress. Where to target is the source of the stress, not the symptoms. While alleviating the symptoms of stress give welcome relief, the effects are temporary and will come back. When we eliminate the source of the stressor, the symptoms will naturally resolve. This may entail lifestyle and diet changes, exercise, herbs, meditation, and healthy self-soothing practices to name just a few resources available. For a plethora of useful information, read my Nervous System, Anxiety and Stress Relief article and use what works for you.

## Herbal Support

### **Willow, *Salix spp.***

There are 90+ species of willow in the Pacific Northwest and Inland West and all are medicinal. Willow contains a number of polyphenols. Polyphenols are a class of flavonoids. In plants, polyphenols' roles are to give fruits and veggies their color, contribute to bitter taste, astringency, aroma, and the stability of the plant. In us, polyphenols help to slow down or prevent the progression of diseases such as diabetes and Alzheimer's. Additionally, they fight free radicals, reduce the appearance of aging, reduce inflammation, protect the cardiovascular system, support normal blood sugar levels and blood pressure, promote brain health, protect the skin against UV rays.

Guess what? Studies show that organically grown food contain more polyphenols than non-organic food. Boom! Polyphenols help to positively influence the health of the gut ecology. Beneficial bacteria thrive in the gut with the addition of polyphenols, while bad bacteria are negatively impacted. What we eat directly influences the health of the structure of our gut and the demographics (the population and particular bacterial groups within it) of the bacteria in our intestines. Polyphenols are micronutrients aka antioxidants that must be hydrolyzed (broken down with water) by intestinal enzymes or microflora. The intestinal microflora is a complex ecosystem containing over 400 bacterial species!

“Heating and exposure to light and oxygen may affect the polyphenolic composition in many cases; therefore high-temperature drying should be avoided as much as possible” (8).

Willow contains a number of polyphenols and other antioxidants such as:

**Apigenin** - a naturally occurring plant flavonoid /polyphenol shown to possess anti-inflammatory, antioxidant and anticancer properties. It can contribute to causing apoptosis in certain cancer cells.

**Isoquercitrin** - a scavenger. Isoquercitrin has antiproliferative effects on cancer cells such as in the liver. It is anti-inflammatory and may reduce blood pressure. Isoquercitrin in plants is more easily bioavailable than a capsule that you'll get in the store.

### **Salicylates:**

**Salicoside** (aka salicin) sometimes referred to as an alcohol glycoside. Water soluble. Salicoside is an anti-inflammatory and fever reducing compound. This compound is the basis for acetylsalicylic acid (aspirin).

### **Salicylic acid**

Aspirin is acetylsalicylic acid and begins its metabolization in stomach, which can be irritating. Acetylsalicylic acid isolated can cause significant gastrointestinal irritation. Salicylic acid is metabolized in liver, not the stomach. It takes longer to metabolize, which means it's anti-

inflammatory effects are longer lasting. Acetylsalicylic acid inhibits platelet aggregation. Salicylic acid does not.

On my mother's side of the family, a number of my relatives developed cancers such as stomach, colon, prostate, lung, and liver. The cancers my family developed were environmentally derived vs genetic. My great grandparents emigrated from Slovakia to the coal mining town of Trail Run, Ohio. My great grandfather worked in the coal mines, then moved to Pittsburgh, PA, land of steel mills. He worked in the mills. My grandfather worked in the mills. My grandparents' home, where my uncle and mother grew up, was up the hill from the mills. My great aunt's house was down the street from my grandparents and was the place where my mother's first cousin grew up. I remember as a kid looking out of the attic windows at night, watching the lights of the mills and listening to the drumming that said the workers were making steel. When I'd lift my arms from the window sill, they would be covered in orange dust. This came from the mills. My grandfather and uncle developed prostate cancer. My grandmother developed colon cancer. My mother died from stomach and esophageal cancer. Her first cousin died from cancer. This is not the legacy that I want to inherit. I utilize willow several times a week year round as a fresh plant elixir and honey to enjoy its anti-inflammatory, cellular protective and cancer eliminating benefits.

### **Dandelion, *Taraxacum officinale*.**

Dandelion is in my top 5 often used plants. It serves to support and heal the digestive system. The digestive system is one of the body's excretory systems – eliminating waste and cellular metabolites. Go team dandelion! Use with ginger to aid in reducing intestinal inflammation and increase intestinal motility.

Dandelion contains several constituents that aid in mitigating inflammation including:

**Ascorbic acid** – in the root, ascorbic acid is anti-inflammatory, immuno-modulating, cardio protective and is a vasodilator.

**Caffeic acid** – whole plant. Caffeic acid is anti-inflammatory, DNA protective, and analgesic.

**Magnesium** – an electrolyte/macro nutrient, magnesium is anti-inflammatory and helps to alleviate stress.

**Taraxerol** - anti-inflammatory triterpenoid. Triterpenes have strong antioxidant properties, prevent insulin resistance and normalize glucose and insulin levels. They also help with wound healing. Anticancer activity.

### **Nettles, *Urtica dioica*.**

Nettle's anti-inflammatory action is beneficial for reducing stress related inflammation. It is a micro-nutrient rich green food that helps build blood and tissues, gives our mitochondria what it needs to make fuel to keep our bodies working properly, and contains acetylcholine and serotonin. While nettles are popular for treating adrenal fatigue, I do not recommend them for this purpose. Nettles are powerfully stimulating to the adrenals. Anything that is stimulating to an organ or system and used for long periods of time can create a negative health effect. Use nettles sparingly in this case and short term only. Many people subscribe to the "more is better" regimen when utilizing nettles, which is a detriment in the long run. Think of it this way: Cortisol and adrenaline are synthesized in the adrenals. When continually hit with a stimulant, the adrenals can over produce these hormones, putting the body in a constant fight or flight mode. Overuse of nettles can lead to greater adrenal fatigue. In the short term, an upswing of energy is felt; however, eventually all things need to rest. Herbs such as devil's club, dandelion, and ashwaganda strengthen the adrenals, help deal with adrenal fatigue, and support the adrenals to do the job they are meant to do each day.

Rockstar constituents in nettles:

**Chlorogenic acid** - antihistamine and cancer prevention.

**Adenosine** - vasodilator, respiratory stimulant.

**Ascorbic acid** – anti-asthmatic, antihistaminic.

**Cinnamic acid** – anti-inflammatory.

**Scopoletin** - anti-inflammatory, anti-mutagenic.

**Aesculetin** - anti-inflammatory, antibacterial, fungicide, anti-asthmatic.

**Hawthorn, *Crateagus spp.***

There are 73 active constituents in *Crateagus monogyna*. That's a lot of action for one plant! I've included this plant as part of the anti-inflammatory herb list because of its many secondary ways that it helps to alleviate inflammation in the body.

**Acetylcholine** in the plant - neurotransmitter/messenger of the brain. Assists in delivering messages from one neuron to another. Acetylcholine stimulates muscle contractions – every movement in the body. It's a transmitter in various parts of the brain, required for motor control, and memory. In the brain, cells geared to react only to acetylcholine spread through the dissimilar parts of the brain. The activated receptors enable the communication from basal forebrain to the hippocampus, two regions controlling memory and learning. ACh's role in the brain enhances the intensity and quality of neuron signaling.



**Adenine** in the plant - important building block for life. Without it, we wouldn't have DNA, RNA, or ATP.

**Adenosine** in the plant - antihypertensive, antiarrhythmic, arteriodilator, and antispasmodic.

**Aesculin** in the inflorescence - analgesic, anti-mutagenic, fungicide, antipyretic, and myorelaxant.

**Choline** in the plant – antimanic and antidementia.

**Apigenin** in the leaf, flower, and fruit is anti-inflammatory, antioxidant, and anticancer. Apigenin may be protective in diseases that are affected by oxidative process such as cardiovascular and neurological disorders.

**Quercitrin** in the leaf is a scavenger. Antioxidant, antiproliferative against cancer cells, anti-inflammatory, antiallergic, and may reduce blood pressure.

**Vitexin** in the plant. Vitexin is a flavonoid glycoside. Many drugs and poisons derived from plants are glycosides. The antioxidant effect of flavonoid glycosides is said to lessen capillary weakness. Vitexin is antihistaminic, anti-inflammatory, and hypotensive.

### **Turmeric, *Curcuma longa*.**

There are 170 active constituents in turmeric. What a plant! We'll look at just a spare few of the constituents and actions that it has in the body.

It's interesting to me that it contains **Alpha-Pinene** in the rhizome, leave, tuber, and essential oil.

**Alpha-Pinene** is not only anti-inflammatory, but also a sedative, tranquilizer, pesticide, anti-flu, antibacterial, and antiviral to name only a few of its actions.

Turmeric also contains:

**Alpha-Terpinene**, which is an ACh inhibitor. ACh is acetylcholine, a neurotransmitter that assists in delivering messages from one neuron to another. ACh is responsible for motor control, including the muscles in the GI tract and is found in sensory neurons and in the autonomic nervous system. It also has a role in scheduling REM sleep. ACh's part in the brain is to enhance the intensity and quality of neuron signaling. An ACh inhibitor impedes the breakdown of acetylcholine, so increasing the level and duration of acetylcholine's actions.

**1,8 Cineole** is anti-inflammatory, antiulcer, decongestant, and expectorant.

**AR-Turmerone** is anti-inflammatory, anticancer, anti-alzheimeran, and antiproliferant.

**Beta-Pinene** is also anti-inflammatory.

While I could go on with the constituents of turmeric and what they do, time and volume prevent me from continuing. Suffice it to say that there are many, many anti-inflammatory chemicals in turmeric.

Most people know to pair turmeric up with black pepper to enhance its actions. What many people do not know is that turmeric can be heating. For those who have bouts of vertigo, long term usage of turmeric can bring on vertigo and worsen the strength and duration of the dizziness and nausea. Therefore, taking breaks now and again would be a smart thing to do.

My friends, I do hope this information will be of value to you and your loved ones. Please note that an hour and a half lecture and this one short article will never do justice to all the excellent information that can help a person achieve optimal health. Please take what you like and leave the rest. Do your research, try some of the techniques, and take it further in your journey to optimal health! Until next time, I leave you Wild About Plants!

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