

# **Pain & Inflammation**

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Nobody gets through life unscathed and unhurt. From the time we are little children we come to understand the meaning of bruises, scratches, sores, infections and inflammation. But what is not well known is that inflammation is a key part of the healing process and not something to regard as a disease to be cured of.

In fact, inflammation is a process that the body needs and encourages, but the medical community sees it as something to be avoided and eliminated. The goal of many natural health care practitioners is to support the inflammation process so the body can move rapidly and successfully through this vital healing process to return to a state of wellness and strength.

## **More on Inflammation**

Modern science treats inflammation as a disease or symptom. To compound this problem, the word "infection" is used very often to describe inflammation and is applied to ear aches, arthritic swelling, head colds, flu, congestion, sore throat, sinus problems, fever, cuts, sprains and scrapes, urinary tract problems and even the body's reaction to toxic exposure. The word "infection" is not really accurate.

An infection is defined as: "Invasion by and multiplication of pathogenic microorganisms in a bodily part or tissue, which may produce subsequent tissue injury and progress to overt disease through a variety of cellular or toxic mechanisms; An instance of being infected; An agent or a contaminated substance responsible for one's becoming infected; The pathological state resulting from having been infected. " ([dictionary.com](http://dictionary.com))

## **Inflammation is not infection**

When body tissues are insulted or injured, as with trauma, excess stress, fatigue, drastic temperature changes, exposure to toxins and poisons, or nutritional deficiencies, there is some damage or breakdown of the cells. The body's reaction to this is a process called the biochemistry of inflammation and repair, which is a natural part of the healing process.

Symptoms are presented at each stage of inflammation, and these are often misinterpreted as "bad," to be halted with drugs, herbs or other chemicals. Yet, if the process is interfered with, the body may not fully accomplish its mission to repair the tissue.

## **Certain requirements are needed by the cells to accomplish its process of inflammation and repair**

1. A constant blood supply to the area;
2. A constant nerve supply to the area;
3. Natural vitamin complexes, enzymes, minerals, trace elements, bioflavonoids, amino acids, etc., all in a food form.

If all these items are not present in sufficient supplies, the original problem is prolonged and repair may not be properly completed.

With inflammation comes swelling, blood flow, white blood cell migration, removal of damaged cells, mucus, pus, enzyme activity, nutrient utilization, heat and pain. These are all natural occurrences.

## **Five basic symptoms of inflammation are**

- redness
  - swelling
  - heat
  - pain
  - limited/impaired function

These symptoms of repair have been known since the ancient Greek and Roman era. These signs are due to extravasation [forcing the flow of blood or lymph from a vessel out into surrounding tissue.] of plasma and infiltration of leukocytes into the site of inflammation. Early investigators considered inflammation a primary host defense system.

## **The Stages of Inflammation**

- **Stage 1:** Little bags of enzymes called lysosomes make up a digestive system inside the cells. These enzymes break down or digest dead substances like proteins and carbohydrates, which surround the cell

cytoplasm (the substance which surrounds the nucleus). The lysosomes digest particles of injured cells. This digestive process releases histamine and other chemicals into the fluids surrounding the cells.

Histamine exerts action when released from injured cells, resulting in increased blood flow to the damaged area of tissue. This in turn creates a red flush and congestion called "brawny edema." Brawny means "swollen" and "hard." Edema is excess fluid in the areas around the cells. This swelling is the method used to isolate or fence off the injured area. The histamine provides the chemistry for this fence. Thus, for instance, a person can see a red, hard swelling in a specific area around a paper cut. A man with sinus headaches can see and feel the swelling and congestion around his nose and eyes.

Now that the area of inflammation is isolated, body signals bring about chemotaxis, the process which attracts white blood cells (called leukocytes) and macrophages ("big eaters") to the site of inflammation.

**Stage 2:** Increased blood supply, called hyperemia, brings more redness plus heat. With more blood, there is more congestion. Also, fever can be an accompanying symptom. Heat and fever are evidences that the body's first line of defense is working. This is a very constructive process, not destructive or harmful in any way.

Many biochemists conclude fever is a normal, purposeful mechanism. As with a little girl with a fever, the muscles around her bones heat up to borrow calcium from the bones to get it to the area of inflammation where it is needed to activate white blood cells. If the little girl has adequate calcium intake, fever (to borrow calcium from bones) is no longer required and will subside.

Grandma feels heat on her swollen arthritic knees. The teenager's bumps and scrapes are warm to the touch. All this is a normal part of the healing process of inflammation.

**Stage 3:** The next stage is phagocytosis. This means the ingestion ("eating") and digestion of dead particles. Thus, white blood cells, which perform this function are named phagocytes ("cell eaters"). In effect, they are scavengers which get rid of the waste from damaged cells or anything else which does not belong in healthy tissue. Essentially, there are four types of white blood cells which accomplish phagocytosis:

1. Segmented neutrophils (also called "segs," "polys" or "neutrophils") are first. They engulf or devour the cellular debris or dead protein from the damaged tissues.

2. As the neutrophils accomplish their primary responsibility, the eosinophils then are signaled to the scene. They perform a similar function of ingesting cellular debris. Further, the eosinophils carry an enzyme, histaminase, which neutralizes and regulates the histamine. The histamine provokes congestion; while histaminase begins reducing the congestion. At this point, the swelling and hardening are lessened. Now some relief and comfort can be appreciated.

3. Some highly "hungry" cells next come to the area of inflammation. These are macrophages. Not only do they ingest damaged or foreign particles, but they also ingest the dead neutrophils and dead eosinophils when they have completed their jobs. Macrophages clean up the cleaners, so to speak. They arrive in the area where dead neutrophils and eosinophils may remain.

4. Immature, not fully developed, macrophages are called monocytes (monos). At first they are incapable of being scavengers. But after a while, perhaps 8 to 12 hours, they swell and develop bags of enzymes for digestion. Now mature, they also can engulf and digest debris.

It can be seen that each type of cell arrives at the inflammation site in an orderly fashion according to its functional capacity. This is reflected in a blood test.

The boy with a head cold and his father with the flu both have mucus or phlegm, which is secreted from the nose, sinuses, throat and bronchial tubes. Glands in the mucous membrane lining of the respiratory tract constantly secrete some mucus. However, if there is irritation or injury to the cells of this lining (as with a cold or flu), increased mucus is secreted. The injured and dead cells of this membrane lining slough off, and the extra mucus keeps the raw areas coated and protected until new cells come up and fill in the gaps. The extra mucus is the phlegm, usually clear and thickish, which is secreted from the nose, throat, trachea and bronchial tubes.

Sometimes the mucus or phlegm has a yellowish-green tint as a result of added enzyme activity in the sloughing and repair process. Occasionally, if excessive sloughing of membrane cells takes place due to advanced deterioration of unhealthy tissue, the mucus may look pinkish. This indicates seepage of

capillary (small blood vessels) blood, which occurs just before some resolution of the problem or if the blood vessels are fragile.

The teenager's cuts may swell and leak pus; or the pimples of his acne may also produce pus. Pus is comprised simply of waste products or residue from the inflammation process. The white blood cells which have completed their tasks, the damaged particles which these cells have ingested and undigested bits of dead tissue make up the pus.

Neither phlegm nor pus is harmful; they are absolutely normal, even though they are annoying.

**Stage 4:** Finally the white blood cells called lymphocytes come to the area to organize repair. Evidently these cells produce, from nutrients in the blood, certain substances needed by the regenerating tissues in order to repair the damage. Thus, the matrix for renewal and rebuilding is laid.

## **Interference**

The biochemistry of inflammation and repair is an amazing system. When all the nutrients are present in adequate amounts, with plenty of rest AND without interference with **any** stage, the repair and regeneration can take place. But, in seeking quick relief of symptoms, this built-in, wonderful process can be sabotaged.

1. Drugs like antihistamines neutralize histamines. Swelling and congestion (brawny edema) will be diminished, giving some relief of symptoms, but this interferes with STAGE ONE of inflammation. Repair cannot fully take place.
2. Ascorbic acid, a synthetic fraction of the vitamin C complex, also interferes with histamine, neutralizing it. This phony "vitamin C" does not "cure" a cold or anything else; it interferes with a natural process as a drug does. Repair is inhibited. Ascorbic acid is, in essence, a sugar-based antihistamine.
3. Adrenal steroids like cortisol and prednisone (hydrocortisones) impair the SECOND STAGE of chemotaxis. The white blood cells (leukocytes and macrophages) are not properly attracted to the area of

inflammation. Additionally, STAGE THREE, the ingestion and disposal of debris, is hindered as well. Repair cannot be fully accomplished.

4. Aspirin, acetaminophen (Panadol, Dristan, Datril, etc.) and nonsteroidal anti-inflammatory drugs (Advil, Medipren, Motrin, etc.) impede STAGE TWO, the redness, heat and congestion. Symptoms may be eliminated, but there is interference with repair. The unhealthy state remains; reconstruction or replacement of cells does not fully take place.
5. Antibiotics destroy bacteria, the imagined disease-causing invaders. The word antibiotic literally means "destructive to life." They interfere with STAGE THREE, the engulfing and removal of debris and waste. Antibiotics also impair STAGE ONE, the attraction of white blood cells to the area, and STAGE FOUR, the organization of repair and restoration. Relief from symptoms can result for a while, but repair is interfered with. No solution, no resolution.
6. Refined sugars have been shown to reduce the efficiency of the white blood cells' ingestion and removing tasks. This capability was temporarily reduced about 70% after persons ate a piece of cherry pie a la mode. (Delta Gier, PhD)

## **Solution**

To obtain healthy tissue, reconstruction and replacement of damaged or injured tissue, three points need to be kept in mind.

1. Allow the normal, natural, intricate and well-designed biochemistry of inflammation and repair to proceed and complete its function without interference.
2. Supply all the needed nutrients from whole, natural foods and whole-food complex supplements. Avoid refined and processed foods.
3. Obtain plenty of rest, pure water, fresh air and sunshine to support and allow the process to reach a rapid and successful resolution.

## **Nutritional Requirements**

Inflammation carries with it a call for specific nutrients in food form to aid in the repair process, which in turn successfully completes the inflammation process. Needed are specific vitamins (A, C, E, K, etc.), minerals (calcium, phosphorus, zinc, selenium, potassium, etc.), amino acids, natural fats and bioflavonoids (rutin, quercetin, hesperidin, et.al.), all in their natural food or herbal complex form as found in nature. These are used by the body to increase the strength of capillaries (blood vessels) and to regulate their permeability as well as to rebuild damaged tissues.

Bioflavonoids assist the whole vitamin C complex in supporting collagen, which is the intercellular "cement," and are essential for the proper absorption and use of vitamin C. They also help to prevent Vitamin C from being destroyed in the body by oxidation and are beneficial in hypertension, hemorrhages and ruptures in the capillaries and connective tissues.