

# The Gut and Inflammation: An Obscure But Critical Connection

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I remember our pediatrician describing our newborn as "a GI system with a pretty face". In many ways, we are just an earthworm, or tube-within-a-tube, with lots of bells and whistles. That inner tube is our gastrointestinal ("GI") system. The inside of this tube is actually external to our body; the role of the GI tract, at it's most basic, is to let in the good stuff and keep out and expel the bad stuff.

It works so well, processing nutrients and eliminating waste products, that we don't appreciate it's complexity or how it affects us long-term. Yes, we're told that "you are what you eat", and "an apple a day keeps the doctor away", but because our bodies are so forgiving, especially when we're young, that we develop habits of eating, and of thinking about our bodies, that just don't jive with a long, healthy life.

Chinese and Ayurvedic medicine emphasize the GI system in the evaluation and treatment of most illnesses. How and what we eat, and any symptoms of upper GI or lower GI dysfunction are critical pieces of information to such systems. Therapies often begin with attention to the GI system--including special diets, the addition or elimination of certain foods, herbs and spices, and treatments such as acupuncture.

Conventional (western) medicine is beginning to come around, as is the food industry, recognizing that many of our modern society's dis-eases can be caused, and healed by paying attention to our GI tracts, through foods and supplements. Unfortunately, the pharmaceutical industry, seeing this trend, is trying to gain control of the supplement industry via it's influence on the FDA.

Another recent development in our understanding of disease and aging is that inflammation is a root cause of many of our chronic ills. As discussed in detail in a prior article, inflammation can be thought of as a fire within. Just like the fires that we keep in our homes, in our furnace or stove, the fire of inflammation is very useful. It kills invading bacteria, viruses, yeast, parasites and cancer cells. It takes apart damaged tissues, such as bone and muscle, which allows them to be rebuilt stronger and better. A similar fire burns in each cell to generate energy (using oxygen).

However, like fire, if inflammation is not contained, it can rapidly spread and beget more inflammation. Just like a tiny spark coming from a fire can ignite an inferno, the "free radicals" generated by the inflammatory process can attack virtually every tissue of the body in a domino-like cascade. Such tissues include brain (depression and dementia), blood vessels (hypertension, cardiovascular disease), endocrine glands (thyroid disease, diabetes), and bone (osteoporosis, arthritis), just to name a few.

Inflammatory cells and molecules in our body can be turned on and off by multiple factors. While there is a current trend to "blame our genes", the vast majority of inflammation, more than 80%, is caused by lifestyle. This is because genes are like switches or seeds--they can be turned on or off depending upon their environment (and epigenes<sup>a</sup>).

Over 50% of our immune system resides in the gut, monitoring the function. We also have a complex nervous system in the gut (sometimes called "the second brain"), which generates and utilizes serotonin and other important neurotransmitters, the same used by the brain. This combination of immune and nervous function, modulated by the gut, can have significant, even severe effects on other systems of the body, including the immune and nervous systems.

Causes of inflammation, directly or via the gut, include: poor sleep, chronic stress, constipation, overuse of antibiotics, antacids, anti-inflammatory and other medications, lack of balanced nutrients in the diet, emphasis of animal proteins and fats in the diet, and lack of proper exercise, and a host of toxins, including the chlorine in our drinking water.

## Mechanisms By Which GI Dysfunction Cause Inflammation

- 1) Allergy to foods: the body reacts to the proteins in certain foods (dairy and wheat are the most common);
- 2) Toxins in foods: some toxic molecules occur naturally (such as from the mold in peanut butter), in addition to the thousands of additives, pesticides, and waste products from our water, soil and air;
- 3) Constipation: is another form of toxicity, where our internally-generated toxins ("endo-toxins") stay longer inside, and have more time to leach into our bodies;
- 4) Dysbiosis= infection by bad bacteria, yeast, and/or parasites: we normally carry in our GI system a farm of pounds of bacteria and yeast, representing up to 400 species and trillions of cells. If this ecology is altered, by things such as antibiotics, NSAID's, stress, toxins, etc, then the wrong organisms can dominate. These organisms can disrupt the lining of the GI system, allowing the organisms and their toxins to enter the bloodstream and cause a huge inflammatory reaction;
- 5) Leaky gut: dysbiosis or other factors can cause the intestines to become "leaky"; toxic molecules can get into the body and then overwhelm the liver and immune system;
- 6) Poor nutrition: a deficiency of critical nutrients can poison or deplete mechanisms that prevent or extinguish the inflammatory fires;
- 7) Poor absorption: due to many of the above reasons, even if the right supplements are taken, they may not be absorbed. Each nutrient has a unique mechanism of absorption--proper absorption of one doesn't assure absorption of another.
- 8) Not enough stomach acids: acid is needed to digest protein; if proteins are not broken down into amino acids, they can be seen by the immune system as foreign invaders;
- 9) Not enough pancreatic enzymes: enzymes in the right quantity (and in the right acid-base environment) are also needed to break down protein into amino acids;

## Evidence That The GI System Is Connected to Inflammation

- 1) Sick creatures lose their appetite;
- 2) Rheumatoid arthritis (and other auto-immune diseases) improve during a fast;
- 3) If people with Inflammatory Bowel Disease ("IBD", another auto-immune disease) are fed bacteria from healthy people, they have improvement equal to that of medication;
- 4) Pain and fatigue often improve when people are given probiotics (good yeast and bacteria), pre-biotics (supplements that support the GI system), and other digestive aides.

### Evaluation of GI Dysfunction (as a cause of inflammation)

Conventional medicine offers many tests of GI structure and function including endoscopy and stool tests. They often reveal non-specific findings, and medications are offered to reduce stomach acid or to aid in motility, hoping that they will work. They should be done first, to rule out any serious medical conditions that might require acute treatment, such as active ulcers and cancer.

From an holistic point of view, the history and physical exam give lots of information. What a patient eats, how they eat, and the associated symptoms of upper GI dysfunction (belching, heartburn, reflux and bloating), and lower GI dysfunction (bloating, flatulence, cramps, diarrhea and constipation) provides the most important clues. A physical exam, where the belly is palpated, including the liver, and important acupuncture points, give additional information.

If this information is not adequate, or a patient does not respond to treatment, then additional specialized tests may identify, factors which contribute to illness, such as parasites, bad yeast (candida), heavy metals, adrenal fatigue, or other biochemical or hormonal issues.

### Holistic Treatment

Treatment of inflammation (whether the person is experiencing GI dysfunction or not) often begins with improving the diet: eliminating or reducing known toxins, such as hydrogenated oils, commercial dairy, gluten and artificial sweeteners, and emphasizing foods and supplements that reduce inflammation, such as whole vegetables and fruits, omega-3 and omega-6 fatty acids, anti-oxidants and others.

Depending upon the response, specialized diets can be both diagnostic and therapeutic, including elimination, rotation, detoxification, anti-yeast, etc. As stated above, special tests may guide the choice of interventions, including, sometimes, antibacterial and anti-yeast agents.

One of the more challenging aspects of this approach is that the results are often subtle. How our GI system functions today reflects, and the very least, the last three days of eating (which is the basis of the four-day rotation diet). The way our diet and GI system then affects inflammation can take weeks to months to observe. Therefore, it is vitally important when developing a plan to make a real commitment and to stick to it for a period of time to evaluate its effectiveness.

Keeping a food journal simultaneously with a log of symptoms: daily rating, on a scale from 1-10, symptoms such as pain, stiffness, diarrhea, gas, etc, can sometimes identify a subtle pattern. Sometimes the patterns are not apparent on a

day-to-day basis, but become clear when looking back over a month or two (especially when symptoms are associated with hormones, travel, etc).

Despite what the TV ads say, many of our chronic ills do not require medication for the rest of our lives, and can be substantially healed by working on the gut as a part of the holistic approach.

**IMPORTANT NOTE: This general information should not be used to make decisions about medical care without the involvement of an experienced practitioner.**

### Footnotes and Reading Materials (Books followed by ISBN number)

- <sup>a</sup> Epigenes are molecules that are passed by generation to generation and modulate gene expression. How your grandmother lived her life and make you more or less prone to disease, apart from the genetics.
1. See Dr. Cheikin's website, [www.cheikin.com](http://www.cheikin.com), for related articles related articles on: the Gut-Brain, Stomach Acid, Stress, Fasts and Detoxes and others as well as other topics, holistic health information and workshops.
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