



Health Matters

Great Smokies Medical Center of Asheville

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Acid Reigns

Holistic health principles tell us that, contrary to what drug manufacturers want you to think, stomach acid is good for you. However, few doctors are aware that a deficiency of stomach acid seriously undermines health.

Though we often think of malnutrition as resulting from limited access to food, malnutrition can occur even when adequate food is available if nutrient-poor junk foods are over-consumed or if digestion is impaired and vital nutrients can't be properly broken down, absorbed, and delivered to the cells. Selecting, preparing, and eating all the right foods is of little use if the body cannot digest and absorb them. We are what we assimilate. Healthy digestion, through the action of hydrochloric acid and digestive enzymes, breaks down food into its smallest components (glucose, amino acids, fatty acids, vitamins, minerals, etc.) that are necessary for the body to perform its vital functions.

Hydrochloric acid (HCl) is necessary to break down protein into amino acids and extract minerals from food. HCl is made

by specialized cells in the stomach lining called parietal cells. Parietal cells also produce "intrinsic factor," a protein that binds to Vitamin B12, enabling its absorption.



Acid

A healthy stomach lining can tolerate extremely acidic environments. *Normal* stomach pH is 1.5 on a scale of 1 to 14, with 1 being the most acidic.

Though disturbances in digestion can occur at each of its many stages from chewing to elimination, the most common digestive disturbance, HCl deficiency or *hypochlorhydria*, occurs in the stomach. Because HCl deficiency occurs relatively early in the process of digestion, it impacts all subsequent digestion in the intestines. An estimated 50 percent of people over the age of 60 have low HCl levels, as do 50 percent of people who seek medical care for chronic health problems.

Causes of hypochlorhydria include aging, stress, physical trauma, pernicious anemia, viral infections of the stomach,

gastritis, chronic *H. pylori* infections, and chronic use of drugs including stomach acid blockers, steroids, and antacids.

Since HCl has a sterilizing effect in the stomach, the deficiency or lack of HCl can lead to bacterial overgrowth in the intestines.

Signs and symptoms of low HCl include uncomfortable fullness after meals, gas, bloating, indigestion, heartburn, undigested food in stools, rectal itching, thinning hair, numbness, tingling, *Candida* (yeast) overgrowth, and thin or peeling nails.

Long term low HCl can cause chronic nutrient deficiencies, in particular deficiencies of amino acids and minerals. As such, hypochlorhydria contributes to osteoporosis, allergies (including food allergy), cardiac arrhythmias, asthma, acne, ulcerative colitis, rheumatoid arthritis, depression, auto-immune diseases, pernicious anemia, psoriasis, immune dysfunction, diabetes, celiac disease, vitiligo, hives, eczema, rosacea, and virtually all chronic degenerative diseases. (cont. p. 2)

Enzymes: Life's Labor Force

Enzymes are part of everyday life. They are present in many detergents and cleaners and are used in making cheese, beer, wine, corn syrup, paper, and in the manufacture of infant formulas from cows milk. The enzymes in meat tenderizers will tenderize your steak and, used topically, will treat the localized itching and stinging associated with insect bites and stings. Snake and stinging insect venoms are rich with enzymes that help degrade the body's natural defenses against venoms, enhancing their toxicity. Enzymes are the body's labor force. They are in every single cell (more abundantly in organs with high energy needs such as

the heart and liver) where they facilitate all of the body's bio-chemical tasks including tissue repair, energy production, detoxification, and limitation of harmful clot formation. Superoxide dismutase (SOD) and catalase, two examples of metabolic enzymes, function as antioxidants to limit cellular damage that would otherwise result in chronic degenerative diseases of aging. Some genetic diseases (e.g. muscular dystrophy) occur because of metabolic enzyme deficiencies or dysfunction.

Enzymes are also present in raw foods (cooking destroys enzymes) and are most



abundant in fresh vegetables and fruit.

The most well-known food enzymes are papain from papaya and bromelain from pineapple. (Note: People prone to allergies may find that raw foods are more likely to cause allergies than cooked foods.)

Nuts, seeds, and beans all contain substances that inhibit the action of their own natural enzymes—nature's plan to prevent premature sprouting. This fact makes sprouted beans and grains (barley green or wheat grass) particularly excellent sources of food enzymes. Eating an abundance of fresh, raw vegetables and fruit supports digestion by supplying enzymes that reduce the (cont. p. 2)

Acid Reigns, cont.

The likelihood of the underlying cause of these diseases being addressed is low because of the fact that they often become apparent many years after HCl declines.

In 2003 alone, more than 60 million Americans who experienced digestive pain, gas, belching, and bloating spent more than \$4 billion just for the acid-blocking prescription drug Prevacid, not to mention the money spent on its pharmaceutical cousins—Nexium, Propulsid, Pepcid, Prilosec, Protonix, Tagamet, Axid, and Zantac. Over-the-counter antacids such as Maalox, Tums, Rolaids, Alka Seltzer, and Mylanta are also commonly used to *neutralize* (rather than block) HCl.

Both patients and doctors are quick to assume that heartburn, indigestion, and gastro-esophageal reflux disease (GERD) are caused by excess stomach acid. This likely results from the widespread availability of drugs that block HCl production, the desire for a quick fix, and the lack of knowledge and appreciation of the doctors and patients of the health-promoting benefits of HCl in digestive and general health.



Because heartburn, GERD, and burning stomach pain can be caused by either HCl deficiency or excess, many people being presumptively treated with drugs for *excess* HCl actually have a *deficiency* of HCl. Treatment based on a presumption of excessive HCl can compromise long-term health because blocking stomach acid impairs digestion.

Heidelberg Gastric Analysis is a non-invasive test that measures the acidity of the stomach. The test requires that a patient swallow a small capsule that contains a tiny transmitter which measures the acidity (pH) of the stomach and transmits its data to a radio telemetry receiver that hangs from a neck strap and rests on the patient's upper abdominal area. The signal is transmitted to a computer for processing. After getting a baseline pH reading, the patient swallows a small amount of an alkaline solution of bicarbonate that challenges the stomach's ability to re-acidify.

In addition to the Heidelberg Gastric Analysis, other testing that can suggest hypochlorhydria includes a stool analysis to establish the presence of undigested food, Candida organisms, and imbalances

in the normal gut bacteria; and laboratory testing for vitamin and mineral deficiencies and anemia.

Once properly diagnosed, hypochlorhydria can be successfully treated with approaches that restore optimal digestion. These can include the avoidance of acid-blocking drugs; the medically supervised supplementation of HCl by capsule with meals; and the supplementation of deficient minerals, vitamins (notably injectible vitamin B12), digestive enzymes, and "friendly" gastrointestinal bacteria (probiotics).

Dietary recommendations can include the avoidance of drinking water or other liquids with meals to avoid diluting HCl. People being treated with acid-blocking drugs should not stop taking them without supervision of a nutritionally-trained physician who can properly assess their HCl status and offer appropriate alternative medical treatments.

Recommended reading: [Why Stomach Acid is Good For You](#), by Jonathan V. Wright, M.D.

All content in this newsletter is intended to be informational and is not to be taken as medical advice or to replace medical care.

Enzymes, cont.

energy the body would normally require to digest foods. Sadly, the overall quality of our food supply is diminishing as our nation moves away from centuries of organic family farming ancestry and toward non-organic, non-sustainable mass production of food.

A third type of enzyme, digestive enzymes, are produced by the salivary glands, stomach, small intestine, and pancreas. The enzymes pepsin and protease are produced in the stomach where they digest protein. The stomach also makes a small amount of lipase to digest fats. The pancreas and, to a lesser extent, the salivary glands, make amylase, protease, and lipase that digest carbohydrates, protein, and fat, respectively. The small intestine is the source of sucrose, maltase and lactase, enzymes that digest sugars.

Digestion starts in the mouth where chewing mixes food with salivary enzymes. Chewing is considered sufficient when the food being chewed is nearly liquefied. The salivary glands make

between one and one and a half quarts of saliva each day.

The body's ability to produce digestive enzymes is limited by aging, chronic illness, a diet laden with "lifeless" overcooked and over-processed foods. Enzyme deficiency contributes to obesity, arthritis, food allergy, bloating, gas, acne rosacea, candidiasis, acidosis, auto-immune diseases, fibromyalgia, and many other chronic ailments.

Animal studies have shown that diets lacking in enzyme-rich raw foods result in pancreatic enlargement. Enlargement of an organ, whether it be the pancreas, heart or liver, occurs when the body attempts to compensate for cells that are unable to function properly. In one study, after 18 months (the average life span of a mouse), the pancreases of mice that were fed an enzyme-deficient diet were found to weigh two to three times as much as the pancreases of mice fed enzyme-rich foods.



Holistic practitioners often recommend supplementing enzymes to enhance digestive and overall health.

Pancreatic enzymes are naturally very alkaline and can be destroyed by stomach acid. Mixing the contents of an enzyme capsule or tablet with food as it is being chewed, or swallowing enzyme capsules at the start of the meal favors early action and the survival of enough enzymes to enhance digestion. Some tablets are enterically coated to reduce the loss of enzymes from contact with stomach acid. Taken away from meals, pancreatic enzymes are powerful mediators of clotting and inflammation, are used to thin mucus secretions, and are used in high doses as part of holistic cancer treatment protocols. Though some people notice improvement of digestive symptoms soon after starting to take enzymes, many will need to continue to take them for two to three months before assessing their benefits. Enzymes often need to be taken long term.