



Stomach Acid - an Overlooked Digestive Aid

Almost everyone has experienced an upset stomach due to improper eating at one time or another. Yet, chronic indigestion affects millions of people every day. Let's begin with a few facts, relevant to Canadians. More than 20 million suffer from digestive disorders every year, resulting in lost productivity and health care costs in excess of \$18 billion annually (2000). Five million Canadians experience heartburn at least once per week, while digestive disorders account for 10% of all hospitalizations. In fact, people with chronic upper gastrointestinal (GI) disorders have absenteeism rates nine times higher than healthy people. **(1)**

(1) <http://www.cdhf.ca/digestive-disorders/statistics.shtml#top>

For some, eating fatty foods can bring on heartburn. For others, complex carbohydrates (like breads and pasta) may cause gas and bloating. And some find, spicy foods or acidic foods can cause reflux or gastroesophageal reflux disorder (GERD). Individuals suffering with stomach and other upper GI problems most frequently assume that heartburn, indigestion, gas, and reflux are caused by overproduction of stomach acid. But is this the real issue? Let's explore stomach acid and the role it plays.

Stomach Acid – Just the Facts!

Stomach acid, also known as gastric acid, is a digestive fluid formed in the stomach in aid of food digestion. It is composed of mostly hydrochloric acid (HCl), along with potassium chloride and sodium chloride. The stomach is designed to produce enough hydrochloric acid to transform a large solid meal, as much as 3 litres (>12cups), into a semi-liquid soup known as chyme. In a healthy stomach, this liquid mass has a pH of 1.0 to 3.5, a very strong acid with a very low pH. Hydrochloric acid present in the stomach at a pH below 4.0 is responsible for starting a cascade of events necessary for the proper functioning of the entire digestive system. Without this low pH and sufficient production of hydrochloric acid in the stomach, food cannot effectively be broken down or maybe not at all.

Hydrochloric Acid's Vital Roles (2)

There are the 8 main reasons why we need to produce a large amount of hydrochloric acid during mealtime: **1.** Acidify the stomach and liquefy dry or solid food into chyme, **2.** Denature or unwind proteins, so they become more digestible, **3.** Activate the protein-digesting enzyme pepsin, thereby further assisting in protein digestion, **4.** Encourage the flow of bile & pancreatic enzymes, necessary for completion of protein and carbohydrate breakdown as well as fat and fat-soluble vitamin absorption, **5.** Assist in proper absorption of almost all minerals and trace elements, including Calcium, Zinc, Magnesium, & Iron, **6.** Support optimal absorption of several important nutrients, including folic acid, ascorbic acid, beta-carotene, and vitamin B12, **7.** Destroy micro-organisms (bacteria, viruses, parasites, yeasts and molds) which travel into the digestive tract from the human mouth or in food itself -- as with contaminated meat or produce, **8.** Act as protective barrier preventing pathogen overgrowth and infection in the small intestine, in an effort to support the immune system and decrease the occurrence of inflammation.

(2) Alternative Medicine Review, Volume 2, Number 2, 1997 25

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Underproduction of Stomach Acid rather Overproduction may be the Issue!

Symptoms of hydrochloric acid over-production and under production can be virtually identical: heartburn, indigestion, acid reflux, gas and bloating, among others.

Dr. Jonathan V. Wright, MD states "Since 1976, I've checked literally thousands of individuals complaining of 'heartburn' and indigestion for stomach acid production using a commercially available, extremely precise, research-verified procedure. Over acidity is almost never found, especially in those over age 35. The usual findings are under acidity (from 'just a little under' to no acid at all) or normal acidity, in which case the indigestion symptoms are caused by something else. The majority have under acidity (as might be expected in a no-longer-young stomach)" (3)

(3)*<http://tahomaclinicblog.com/digestive-theory-of-aging-part-2/>

Test before Taking Antacids or Acid-Blocking Drugs

For the purpose of reducing their seemingly excess stomach acid, most people take one or more of the following: antacids, or over-the-counter (Zantac, Tagamet) or prescription (Nexium, Losec, Pepcid) acid-blocking drugs. This may be the wrong choice, given just one 'pill' taken daily reduces stomach acid secretion almost completely for up to 24 hours. Medical doctors do not usually test for stomach acid before prescribing acid-blocking drugs. The Heidelberg pH test is probably the most accurate way to gauge HCl insufficiency. However the Heidelberg machines are not readily available. Another way to accurately gauge HCl insufficiency is through HTMA (Hair Tissue Mineral Analysis). Clinicians have identified direct correlations between the Heidelberg pH test and low HTMA values. Some blood tests such as, chloride and CO₂ values can help identify hypochlorhydria. Plus, there are a few at-home methods that can be tried, one is the Burp Test using baking soda and another is the Betaine HCl test. Betaine HCl is a stomach acid supplement. This test is useful for assessing the integrity of the stomach lining, the amount of hydrochloric acid (HCl) produced, and if your symptoms are actually caused by 'too much' stomach acid or 'too little' stomach acid.

Common Signs & Symptoms of Low Hydrochloric Acid Production

The below listed signs and symptoms can also help to determine if decreased gastric secretions and low HCl production are present (5):

- Excessive gas, belching or burping after eating
- Intestinal gas, bloating & distention, especially within 1 hour after eating
- A prolonged sense of fullness long after eating
- Nausea after eating or after taking supplements
- GERD, indigestion, heartburn, IBS, diarrhea, or constipation
- Bad breath (halitosis)
- Soreness, burning, dryness of mouth & tongue
- Multiple food allergies or sensitivities
- Itching around the rectum
- Weak or cracked fingernails and cracks in the fingertips
- Hair loss in women & poor quality nails
- Dilated blood vessels in the cheeks or nose (non-alcoholic)
- Skin break-outs or adult acne

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Iron and other mineral deficiencies
Undigested food in the stool
H. pylori, chronic candida or intestinal parasite infections

(5) Sharp GS, Fister HW. The diagnosis and treatment of achlorhydria: ten-year study. J Amer Ger Soc 1967; 15: 786-791

Which Factors Reduce Hydrochloric Acid? Or What could be Causing Low HCl?

Situations such as illness, stress, very low-salt diets (low chloride), gall bladder removal, chronic use of antacids and acid-reducing drugs, H. pylori infection, as well as normal aging, contribute to insufficient secretion of stomach acid. This process is exacerbated by diets high in red meat, dairy products and refined, processed carbohydrate foods which create an imbalance in the body's internal pH. Drinking large amounts of fluid with meals, eating too quickly and not properly chewing one's food, all contribute significantly to the decline in stomach acid.

Numerous studies over the past 100 years have shown stomach acid secretion decreases with age, resulting in low gastric acidity in more than 50% of all patients aged 60 years and older. (4)

(4) Davies D, James TG. An investigation into gastric secretion of a hundred normal persons over the age of sixty. Brit J Med. 1930; 1: 1-14.

Clinical Conditions associated with Low HCl

Many conditions can be correlated with increased incidence of impaired acid secretion. While these conditions may help assess an individual for hypochlorhydria there could be other causes as well.

Addison's Disease (chronic adrenal insufficiency)
Anemia (Iron or Pernicious – folic acid, B12)
Arthritis/Rheumatoid Arthritis & other auto-immune disorders
Asthma (of children)
Celiac Disease
Depression
Diabetes mellitus (type 1, 2 and gestational) + neuropathies
Eczema, Psoriasis, Rosacea, Urticaria & Vitiligo
Gallbladder disease

Gastric polyps, gastritis & carcinoma of stomach
Hypo-, hyperthyroidism and Graves disease
Lupus, Sjogren's disease
Osteoporosis
Ulcerative colitis

(5)Reference: Alternative Medicine Review, Volume 2, Number 2, 1997

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How are the above Symptoms & Conditions Caused by Low Stomach Acid?

Stomach acid plays a key role in the digestion of protein, carbohydrates and fat from the food we eat. When food is eaten, the secretion of stomach acid (HCl) triggers the production of pepsin. Pepsin is the enzyme required to digest protein. If HCl levels are depressed, so are pepsin levels. As a result, proteins are not broken down into their component amino acids and peptides. These undigested proteins putrefy in the gut, and may cause gas, bloating, heartburn and other digestive issues.

At the same time, proteins that escape digestion by pepsin may end up in the bloodstream. As large proteins are absorbed intact, the body might recognize them as foreign and create antibodies to them, resulting in an allergic response to the food. Since this is not supposed to happen, the body reacts to these proteins as if they were foreign invaders, causing allergic and autoimmune responses and inflammation.

Low stomach acid also impairs carbohydrate digestion. Stomach acid (HCl) supports the breakdown and absorption of carbohydrates by stimulating the release of pancreatic enzymes into the small intestine. If the pH of the stomach is too high (due to insufficient stomach acid), these pancreatic enzymes will not be secreted and the carbohydrates will not be properly broken down. As Dr. Norm Robillard explains in his book *Heartburn Cured*, undigested carbohydrates provoke an overgrowth of bacteria in the small intestine which in turn leads to increased gas production, extensive tension on the stomach opening the lower esophageal sphincter leading to acid reflux, esophageal inflammation and possibly hiatal hernia.

As well, the breakdown and absorption of nutrients can occur at an optimum rate only within a narrow range of acidity in the stomach. If there isn't enough acid, the normal chemical reactions required to absorb nutrients are impaired.

The first step is to replace the lost stomach acid until the underlying cause is discovered. **One of the most common methods of supplementing for low stomach acid is using Betaine Hydrochloride (HCL).**

How to Correct the Problem of low Hydrochloric Acid

Hydrochloric acid was routinely prescribed for many symptoms and clinical conditions until the introduction of acid-reducing drugs in the 1960's. According to Dr. Jonathan Wright, the decline in HCl replacement therapy was due to poorly designed and misinterpreted research, which convinced medical practitioners that HCl replacement therapy was not necessary. "Encouraged by the legal drug industry, medical students are not taught that hypochlorhydria (inadequate stomach acid production) is treatable only with unpatentable, natural replacement therapies. Instead, their education concentrates on hyperchlorhydria (excess stomach acid production) and its treatment with patentable acid blocker drugs and highly profitable over-the-counter antacids."

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Supplemental Hydrochloric Acid in the form of Betaine HCl

Betaine hydrochloride (HCl) is a nutritional supplement that has been used for over 100 years to safely restore normal gastric acidity and to support healthy gut function. Dr Jonathan Wright states, "I can say that in 24 years of nutritionally oriented practice, I've worked with thousands of individuals who've found the cause of their 'heartburn' and indigestion to be low stomach acidity. In nearly all of these folks, symptoms have been relieved and digestion improved when they've taken supplemental hydrochloric acid." The supplements also help restore the digestive system, which enables better absorption of nutrients, especially minerals, folic acid, ascorbic acid, beta-carotene, and vitamin B12.

Conclusion

Healthy digestion and absorption of nutrients is dependent upon the secretion of gastric acid. When gastric secretions are reduced, the result can lead to nutritional deficiencies and a variety of chronic disorders. Low secretion of gastric acid can also allow orally-ingested pathogens to prevail and contribute to their overgrowth in the stomach and small intestine. Betaine HCL supplementation, taken at mealtime, increases the level of hydrochloric acid in the stomach necessary for proper digestion and assimilation of nutrients from food. It is a safe and effective means of restoring normal gastric levels, particularly in cases where age or chronic conditions are a factor. If you are suffering from heartburn, look for a healthcare practitioner who is familiar with stomach acid level testing, who can help with the real cause of your digestive issues.

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