



HCl - Hydrochloric Acid, a powerful digestive ally

Digestion is a complex assembly line. It works north to south...so if "somebody" isn't able to do their job up north (like stomach acid), then the whole project of digestion is disrupted, all the way down to the end of the line.

A Brief Overview of Optimal Upper GI Workings

The reason we have the following organs as well as the rest of the GI tract can be summed up in one word: "absorption"

Brain - If we see and smell our food before eating, this sets us up for better metabolizing of that food and sends signals to the salivary glands to start releasing their enzymatic solutions.

Mouth - We then eat the food and our teeth physically break down the food (the more chewing, the more nutrients extracted).

Esophagus - We pass the food down to the stomach via the esophagus and keep it there by a valve called the LES. This valve is only supposed to open one way.

Stomach - Where the fun begins! There are multiple types of specialized cells and numerous secretions of hormones and enzymes for digestion. Parietal cells secrete HCl, a very potent acid that is part of many reactions and lowers the stomach pH to a range that is optimal for digestion and absorption. This pH range, between 1.5 and 3.0, would burn a hole in your carpet (!) but the stomach lining is protected by special mucous secretions.

As I have said there are numerous other stomach functioning's, but my intent with this article is to focus on the roles of Hydrochloric Acid and why we Do Not want to suppress acid production.

Roles of HCl

- Converts pepsinogen into pepsins which are the primary stomach enzymes for **breaking down proteins**.
- This protein breakdown is important because the ultimate product of protein digestion is **amino acids, which make neurotransmitters, which make us happy**, keep us remembering, help us to sleep well, etc.
- Amino acids also make up our muscle tissue. **Good amino acids=strong muscles**
- **Chelates minerals**...which we only obtain from the food we eat
- Increases folate absorption
- **B₁₂** is typically bound to animal proteins and requires stomach acid and pepsin to separate the vitamin molecule from the protein, in order to be absorbed
- Stomach acid **kills bacteria** and is one of our best non-specific defense mechanisms. People with a stomach pH too alkaline may be susceptible to bacterial infections such as *salmonella, cholera, dysentery, typhoid, and tuberculosis*.
- Bacterial overgrowth due to low stomach acid can steal nutrients
- Stomach acid **kills parasites**
- **Sends off our food with enough acidity to trigger the rest of our digestion processes (hormones, enzymes, etc)**

What happens if HCl is suppressed?

- The stomach pH is raised to a level at which our proteins cannot be broken down properly (pH of 5 or more)
- By suppressing the secretion of HCl, pepsin, & intrinsic factor, acid suppressing drugs are quite capable of causing a **vitamin B₁₂ deficiency**.
- Low stomach acid, along with poor absorption of B₁₂, has been linked to **asthma** and can exacerbate **emphysema**
- Weak digestion and low HCl leads to **gas, belching, indigestion, heartburn, acid reflux**, as well as **putrefaction** of proteins, **fermenting** of carbs, and **rancidifying** of fats
- A high fiber diet, along with low stomach acid allows for the fiber to lock onto our dietary minerals and take them right through. A fiber constituent, phytic acid, which comes in many grains, cereals, seeds, and nuts, combines with numerous minerals including zinc, copper, nickel, manganese, calcium and iron. Just one byproduct of this nutrient loss could be **hair loss and weak fingernails**.
- We are left susceptible to **bacterial infections** in the stomach
- Atrophic gastritis combined with low stomach acid is a major risk factor for **stomach cancer**

- Low stomach acid can lead to **autoimmune diseases**
- **Food does not go into small intestine acidic enough to signal the chain of digestive enzymes/hormones to finish the job of digestion.**

As one can see the role of Hydrochloric Acid is very important in the body. I will give you instruction in how to do a simple HCl test to determine if you need supplemental HCl and how much. The good part is that supplementation is only temporary and is gradually tapered off as the body's own stomach acid mechanisms start working optimally again.