# Acidity vs. Alkalinity

## The ACID Story

The primary response of the body to all stimuli is to produce an acid. As a result, we must effectively neutralize and eliminate these metabolic waste products to maintain the efficiency and integrity of the biological machines that we inhabit. Unfortunately, in our modern age of technological wizardry this is becoming increasingly more difficult, if not impossible.

In a nutshell, stress produces acid, and everything involves stress. Since the body does not differentiate the various types of stress, the net result is always the same – an acid must be produced. On any given day we are exposed to enough opportunities to overwhelm the biological buffering systems by producing excess acids. While acids are produced by the body as a normal function of cellular metabolism and are increased during times of stress – which are circumstances that stimulate the sympathetic nervous system – we are constantly challenged to neutralize and eliminate the waste product. In a 24-hour cycle any acid *not* neutralized and excreted must be stored. The storage systems of the body are as unique as the complex buffering systems. Ultimately, the goal is to eventually metabolize the excess acid out of the system. The more acid that is produced, multiplied by the length of time that it takes to produce it, will determine the level of storage and the nature and extent of damage produced by the stored waste product.

The first storage system utilized by the body is that of the interstitial fluids. These are the fluids that permeate all the tissues of the body, as well as the fluids in which all of the cells of the body's system *"float"* while conducting their *"business of the day".* When this storage facility is full the body begins to store the acid wastes in the tissues, organs, and glands. Finally, as the more superficial storage systems become overwhelmed, the last place the body begins to store waste is the last place that we would want it to be stored – and that is inside our cells. While symptoms and isolated dysfunction vary from individual to individual at every level of storage, by far the most dangerous and devastating damage occurs with the storage of waste products inside the cell.

When the pH deviates too far to the acid side of the scale inside the cell, cellular metabolism will stop, and as the cells become poisoned in their own toxic waste, they die. The nature and extent of symptoms manifested and functional disability expressed will inevitably correspond to the cellular environments affected, and will exhibit dysfunction to the degree that they are affected.

## Damage Caused By An Acidic pH Level

As we have learned, the kidneys are one of the organs responsible for removing acid from the body. Actually, they remove more acid than any other buffering system of the body. However, the only way to transport excess acid to the kidneys is through the bloodstream. When we combine the sensitivity of the blood to alterations in pH with the buffering capacity of the kidneys we can easily see how a potential bottleneck might occur as the body frantically attempts to dispose of this corrosive waste product.

For every *"action",* there is an equal and opposite *"reaction";* therefore, we can see how, eventually, every system of the body might be affected by the accumulation of excess acids and the inability of the body to continue to compensate for this. As more and more acid accumulates, storage capacity diminishes, and the body's ability to manage the accumulation falters and the body slowly begins to suffocate in its own acidic waste. By this time, cellular metabolism has become severely compensated, enzymatic reactions fail to occur, nutrients are no longer available for repair or regeneration, and wastes can no longer be removed from the body. In light of the cumulative nature of this phenomenon, it is easy to understand why

a chronically acidic biological environment is considered to be the seed-bed of most, if not all, degenerative diseases.

In reviewing the current medical literature, it is becoming increasingly evident that an acidic pH imbalance is destructive to critical biochemical functions. There is lots of evidence in the literature that this chronic imbalance is associated with corrosion of the vascular system, while it accelerates free radical damage and contributes to premature aging. There is evidence linking it to weight gain, diabetes and obesity. Obviously, this environment inhibits metabolism of stored energy reserves while causing cholesterol plaque to form. In addition, it can disrupt blood pressure, as well as lipid and fatty acid metabolism.

Finally, it has been associated with the inhibition of cellular regeneration, DNA and RNA synthesis, oxygenation of the tissues, and alteration of electrolyte activity. It has been linked directly to cardiovascular disease, arteriosclerosis, heart attacks, stroke, high cholesterol and high blood pressure. It has been demonstrated to be contributing to – if not the causal factor – in the formation of all cancers. In fact, scientists have found that cancer thrives in an acidic environment, but cannot survive in an alkaline medium.

Meanwhile, it has been bio-chemically linked with diabetes, insulin sensitivity, obesity, and neurological diseases, such as MS, MD, ALS, and Parkinson's. And, it plays an obvious role in liver and kidney diseases, while contributing to dementia, senility, Alzheimer's, immune deficiencies, osteoporosis, tooth loss, hair loss, hormonal imbalances, and prostrate problems.

## The Health Dangers of an Acid pH

To illustrate the health dangers of an acidic biological terrain: Crabs die when their water environment (terrain) reaches a pH level of 6.0; Fish die at pH level 3.0. The "soda pop" we, as humans, drink has a pH level of 2.5.

The ideal pH for the human body biological terrain is about 7.0 to 7.2; however, the human blood should be 7.35 to 7.45. Preserving this alkaline state (pH balance) is the bedrock on which sound health and strong bodies are built. When the blood loses its alkalinity and starts to become more acidic, the foundations of health are undetermined. This creates an environment where we become vulnerable to disease and runaway yeast and fungus overgrowth. The naturally-occurring yeast and fungi in the body thrive in a acidic environment. Those same yeast and fungi are responsible for secreting a large number of mycotoxins (poisons), and, as stated above, are believed to be one of the root causes of many diseases.

When yeast and fungus decline in the body, so does their production of mycotoxins, the poisonous waste products and byproducts of their life cycles. There are numerous varieties of these mycotoxins, many of which are harmful to the body and must be neutralized by our immune system. When our bodies are overwhelmed by large quantities of these toxins, our health becomes impaired and we become susceptible to disease and illness. Many cancers are linked to mycotoxins. For example, the fungus *Aspergillus flavus*, which infests stored peanuts, not only generates cancer in laboratory animals; but, it has been documented as the prime culprit in many liver cancers in humans. The unfriendly bacteria and fungi that populate our intestinal tracts thrive in an acid environment, and are responsible for secreting mycotoxins. In fact, many researchers believe that most diseases can be linked to blood and intestinal acidity that contributes to an acid-based yeast and fungus dominance.

By balancing the body's pH, and creating a more alkaline environment, you can rein in the microbial overgrowth and choke off the production of disease-producing mycotoxins. With pH balanced restored, the body can regain newfound vigor and health.

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contributes to an acid-based yeast and fungus dominance. *Disease cannot live and thrive in an Alkaline, Oxygen-Rich, pH balanced system!*

The symptoms of excess internal acidity include:

- Unexplained aches and pains
- Overweight conditions
- Low resistance to illness
- Fatigue/Low Energy levels
- Allergies
- Unbalanced blood sugar
- Headaches
- Irritability/mood swings
- Indigestion
- Colitis/Ulcers
- Diarrhea/Constipation
- Urinary tract infections
- Rectal itch/Vaginal itch

## How to Restore Alkalinity

1. **Carefully monitor your diet.** Avoiding yeast and fungus-promoting foods is a crucial factor in combating excess acidity and fungus over-growth. Meats, sugars, dairy products, mushrooms, and pickled and malted products can be especially acidic. On the other hand, garlic is excellent for controlling fungi and yeast. Other high-alkaline, fungus-inhibiting foods include green and yellow vegetables, beans, and whole, un-cracked nuts. The national ratio between alkaline and acid foods in the diet should be 4:1. In other words, 4 parts Alkaline foods, to 1 part Acid. In his book, ***"The Yeast Syndrome",*** Dr. Morton Walker outlines some beneficial antifungal diets.

   The pH of a raw food does not always determine its acidity or alkalinity in the digestive system. Some foods, like lemons, might be acidic in the natural state, but when consumed and digested, they are converted into highly alkaline residues. Thus, the true determinant of a food's pH is whether it is an alkaline-ash, or acid-ash food. In this case, lemons are an alkaline-ash food.

2. **Avoid the Use of Antibiotics.** The overuse of antibiotics for incidental, minor, or cosmetic conditions, not only increases the resistance of pathogenic micro-organisms, but it kills the beneficial bacteria in the body – leaving the mycotoxin-generating yeast and fungi intact. This is why many women suffer outbreaks of yeast infections after antibiotic use.

3. **Use Essential Oils.** Many essential oils possess important antimicrobial, antibacterial, and antifungal properties. French medical researchers in study after study have documented the healing properties of plant extracts and their ability to stimulate the immune system and inhibit bacterial growth. Essential Oils work best when the body's blood and tissues are alkaline. When our systems become more acidic – due to improper diet or excessive levels of stress – essential oils lose some of their effects. So, the best way to enhance the action of essential oils is to alkalize your body. Blends of essential oils high in sesquiterpenes, such as Frankincense, Myrrh, and Sandalwood, can produce profound balancing and calming effects on emotions. They work by affecting the limbic system of our brain, the seat of our emotions

4. **Use Alkaline Salts**. Alkaline salts can help reduce internal acidity. An alkaline environment is hostile to fungi, which require acidity to survive and thrive. Lowered yeast and fungus populations translate into lower levels of body-damaging, disease-inducing mycotoxins.

5. **Lower Stress:** Emotional and psychological tension can be especially damaging to bodily systems and act as a prime promoter of acid formation in the body. To properly appreciate how acidic stress can be, just think back to the last time you were seriously stressed out, and had to reach for an antacid tablet to soothe your heartburn, or stomach discomfort. Some of the most common varieties of negative bacteria, yeast and fungi that live in the intestines, are inactive. However, when the body is weakened by illness, stress, and excess acidity (caused by stress), these bacteria become active, damaging, and assuming an invasive mycelic form.

6. **Boost Friendly Flora:** From three to four pounds of beneficial bacteria permanently reside in the intestines of the average adult. Not only are they the first line of defense against foreign invaders, they are also absolutely essential for health, energy, and optimum digestive efficiency. These intestinal houseguests not only control mucus and debris, but they produce B Vitamins, Vitamin K, and maintain the all-important pH balance of the body. These friendly flora are also important in counteracting and opposing yeast and fungus overgrowth. When our natural cultures are compromised or disrupted by taking antibiotics, or by poor dietary practices, yeast and fungus start growing unopposed, and begin colonizing and invading larger swaths of our internal terrain, secreting ever-increasing volumes of poisonous mycotoxins.

Using an acidophilus or bifidus supplement, may be especially valuable in boosting levels of naturally-occurring beneficial bacteria in the body and preventing fungal and yeast overgrowth. They also help the body maintain proper pH balance for nutrient digestion and absorption. Ideally, the lactobacillus, acidophilus and bifidobacterium bifidus cultures must be combined with plantain to promote implantation on the intestinal walls.

Research indicates that a significant proportion of friendly bacteria from many acidophilus supplements do not reach the lower intestine alive, or they arrive in such a weakened state that they are not of much benefit. This is why combining acidophilus and bifidus cultures with plaintain is so important, because plantain helps these cultures adhere to the intestinal walls.

An even more effective means of fortifying the friendly flora in our intestines is by consumption of Fructo-oligosaccharides (known as FOS). FOS is one of the most powerful natural agents for feeding our friendly flora. FOS is made up of medium-chain sugars that cannot be used by pathogenic yeast and fungi. The end result i that FOS starves fungi while feeding the acidophilus and bifidus cultures that are our main defense against disease. But FOS is far more than just an outstanding means of rebuilding and protecting the beneficial bacteria inside the body. Over a dozen clinical studies have documented the ability of Fructo-oligosaccharides to prevent constipation, lower blood sugar and cholesterol levels, and even prevent cancer.
*(Hidaka et al, 1991; Briet et al, 1995; Bouhnik et al, 1996; Kawaguchi et al, 1993; Luo et al, 1996; Rochat et al, 1994; Tokunaga et al, 1993).*

# Proper pH Potential

## The Importance of Proper pH

**What is pH?** The term “pH” stands for *“potential of Hydrogen”*. It is the amount of hydrogen ions in a particular solution. The more ions, the more acid the solution – the fewer ions the more alkaline base the solution. The pH skill is “water arithmetic – like the skill of earthquakes. Small changes in the numbers mean large differences in Acidic, or Alkaline. A pH of 6.0 is ten times more acidic than a pH of 7.0. At rest, muscle pH is about 6.9, while arterial blood pH is about 7.4.

Body pH is measured on a scale of 0 to 14, with 7.0 being neutral. The lower the pH number the more acid it is, consequently, the higher the number the more alkaline. For example, a pH of 3.0 is more acidic than a pH of 5.0, and a ph of 8.0 is far more alkaline than a pH of 6.0.

**What is a normal pH range?** As humans, a normal pH of all tissues and fluids of the body – except the stomach – is slightly alkaline. The most critical pH is in the blood. All other organs and fluids will fluctuate in their range in order to keep the blood a strict pH between 7.35 and 7.45 (slightly alkaline. This process is called *"homeostasis."* The body makes constant adjustments in tissue and fluid pH to maintain this very narrow pH range in the blood.

**What are the results of being too acidic?** To be too acidic, or too alkaline, in the body can have far-reaching consequences. For example: If the blood is too acidic:

- It takes some of the alkaline forming elements from the enzymes in the small intestine to stay balanced. The small intestine then becomes too acidic to digest foods optimally. The pancreas, gallbladder, and liver are then forced to make up for this deficiency in order to metabolize foods properly. This has a direct bearing on metabolic enzyme production, which is literally involved in every biochemical reaction in the body. The result is lowered immune function, fatigue, hormonal imbalances, absorption and digestive problems, etc.
- The bones will leach calcium, the most alkaline mineral. This can lead to reduced absorption of supplemental minerals and bone density problems.
- Insulin levels increase and fat is stored, instead of being metabolized. When malnutrition or starvation sets in, the body becomes acidic, and as a safety, insulin is over-produced so that all available calories are stored as fat for future use. As a result, weight gain is common and weight loss becomes more difficult.
- Electrolyte imbalances occur which have a direct bearing on the "fluid transport system". Electrolytes are important because they are what the cells – especially the nerve, heart and muscle cells - use to maintain voltages across their cell membranes.
- An additional stress is placed on the kidneys, gallbladder, pancreas, and other organs.

Similar problems may occur if we become too alkaline, though this is much less likely. Obviously maintaining the proper pH in the blood, digestive tract, tissues, and fluids, is essential to support optimal health.

**What are some symptoms?** Symptoms include, but are not limited to, heart burn, acid reflux, indigestion, weight gain, difficulty losing weight, poor metabolism, mineral deficiencies, constipation, fatigue, brain fog, frequent urination, hypoglycemia, hormonal imbalances, sore muscles - and the list goes on.

**What are contributing factors?** Factors include stress, environmental pollutions, not enough or too much exercise, and the most important factor – diet. The more acid-forming foods we eat, the more acidic we become. The more alkaline-forming foods we eat, the more alkaline we become. Generally speaking, fruits and vegetables are more alkaline-forming, while meats, sugar, caffeine, beans, dairy, and grains are more acid-forming. Notice the term *"generally speaking".* Gabriel Cousins, in his book, *"Conscious Eating",* mentions the complexity of this topic. His research showed that about 30% of the people he counseled nutritionally responded the exact opposite way. In other words, the fruits and vegetables made them more acidic. So we must be willing to take the time to determine individually – for ourselves – what foods will work best for us.

**How can I tell?** One of the best ways to determine whether or not we are maintaining a proper pH is to test the urine. This is because one of the most efficient ways for our bodies to maintain balance is to utilize the kidneys. If we become too acidic, our kidneys will eliminate acid through the urine. This will help make the blood more alkaline. So, the urine pH will be acidic. The urine then is an excellent indicator to determine if our diet is too rich in foods that make us acidic or alkaline.

Though many people believe the best indicator of urine pH is to do a urine collection first thing in the morning, we believe that the best indicator is to test the urine pH over a 24-hour period of time. Simply keep track of the pH throughout the day, and then average it out. This, too, can be a great education for

you and your loved ones. For example, if you do this for several days you will quickly determine foods and drinks that make you more acidic, or more alkaline. You will then be able to make the necessary adjustments to stay in balance through dietary changes.

The optimal urine pH is between 6.0 and 7.0 on the pH scale. If your average is below 6.0 you are too acidic. If your average is well above 7.0 you are too alkaline. In either case, you should immediately consider lifestyle changes to support the proper pH for your body.

**What about the pH of saliva?** Most authors agree that the pH of saliva is an indicator of alkaline reserve and the condition of the pH of the cells. The body does not create alkalinity – it has an alkaline mineral reserve based on the dietary intake of alkaline foods. The healthy pH of saliva tested fist thing in the morning, or on a empty stomach, should bed between 6.2 and 7.2. After a meal it should become more alkaline. One theory is that if the pH is between 5.8 and 6.2, the body is too acidic, with little alkaline reserve left. If the morning pH is below 5.8 with no rise after meals, there is no alkaline reserve left and the body is extremely acidic!

**What dietary and lifestyle changes can help?** Diet is probably the most important change. Avoid the over consumption of meat, alcohol, soft drinks, caffeine, coffee, most nuts, eggs, vinegar, sauerkraut, ascorbic acid, pasteurized milk, cheese, white sugar, and medical drugs. Add more ripe fruit, vegetables, soybeans, bean sprouts, water, raw milk, onions, figs, carrots, beets, miso, calcium citrate, and Vitamin K to your diet.

It also helps to reduce anxiety when possible, and include moderate exercise in your daily regimen. Strenuous exercise can actually contribute to an acid environment in the body because of he increased production of lactic acid.

**How can proper supplementation help?** Our product – pH Basic – is specifically designed to raise the pH level of people who are too acidic. It contains a synergistic blend of minerals, enzymes, superfoods and herbs. It can be taken for maintenance or therapeutically to elevate the body's pH, if it is difficult to make an impact via diet.

The **mineral blend** consists of the same minerals often depleted in an acid environment and make up the electrolyte mineral ratio. They are amino acid chelated and pharmaceutical grade for safety and absorbability.

The **organic super food** (greens) is called *hydrilla*. Hydrilla is naturally alkaline, and is nature's most potent source of calcium and one of the richest plant sources of many trace minerals and amino acids.

The **enzyme blend** is specifically formulated to promote the uptake of the minerals, herbs and greens.

Two **herbs** are added – marshmallow and papaya leaf extract – to help soothe the common discomfort associated with high acidity, acid reflux.

## Testing pH levels

You can easily test your pH level at home by purchasing a pH Test Kit. To get the most accurate reading, expose the strip to a sample of your saliva immediately after awakening in the morning and before drinking or eating anything, and before brushing your teeth. Color changes on the test stick will determine pH. In addition, test the pH of your urine by dipping a test stick in a small vial of "first collection urine" after awakening in the morning. Then do a periodic test over the next 24 hours (appx every 4-6 hours), chart the readings, and average the results. Check the instructions in the test kit for specific details on how to read the results.

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