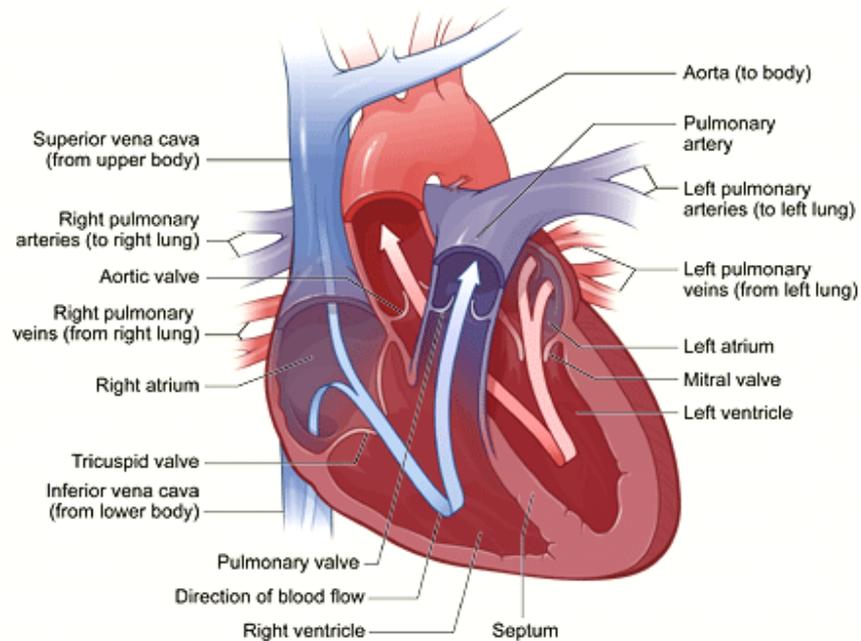


Nature has made our bodies in a miraculous way. Our heart pumps blood through our veins, arteries, and capillaries to every cell in our body. Imagine that your body is a country and the cells are its citizens. In order for the country to be strong, its citizens must have various jobs, proper tools to perform those jobs, proper nutrition to stay healthy, a transportation system, a communication system, a waste disposal system ...



The term pH stands for Potential Hydrogen, which is the concentration of hydrogen ions in a substance or solution. The pH range is 0 to 14. Human blood pH is ideally 7.35. Higher numbers indicate alkalinity.

Acidic conditions can cause muscles to constrict and inhibit the exchange of nutrients and waste products in muscle cells, causing fatigue, soreness, and pain. In fact, a pH imbalance affects all cellular activity in the body and can lead to a wide range of degenerative diseases and symptoms.

Among other things, **acidic blood blocks vitamin absorption**, creates toxic buildup in clogged cells, slows organ function, prevents proper digestion, creates excess gas and bloating, causes unhealthy weight gain, and speeds the aging process.

When pH is lower than 7.0, aging is accelerated because natural acid salts build up in the walls of your cells, causing them to stiffen and dry up. By the same token, **aging is slowed when acid waste is removed from the body**

The pH of your blood is tightly regulated by a complex system of buffers that are continuously at work to maintain a range of 7.35 to 7.45, which is slightly more alkaline than pure water.

So what's up with all the hype about the need to alkalize your body? And what's to be made of the claim that being too acidic can cause osteoporosis, kidney stones, and a number of other undesirable health challenges?

As usual, the answers to such questions about human health can be found by understanding basic principles of human physiology. So let's take a look at the fundamentals of pH and how your body regulates the acid-alkaline balance of its fluids on a moment-to-moment basis.

pH is a measure of how acidic or alkaline a liquid is. With respect to your health, the liquids involved are your body fluids, which can be categorized into the following two main groups:

1. **Intracellular fluid**, which is the fluid found in all of your cells. Intracellular fluid is often called cytosol, and makes up about two-thirds of the total amount of fluid in your body.
2. **Extracellular fluid**, which is the fluid found outside of your cells. Extracellular fluids are further classified as one of two types:
 - **Plasma**, which is fluid that makes up your blood.
 - **Interstitial fluid**, which occupies all of the spaces that surround your tissues. Interstitial fluid includes the fluids found in your eyes, lymphatic system, joints, nervous system, and between the protective membranes that surround your cardiovascular, respiratory, and abdominal cavities.

Your blood (plasma) needs to maintain a pH of 7.35 to 7.45 for your cells to function properly. Why your cells require your blood to maintain a pH in this range to stay healthy is beyond the scope of this article, but the most important reason is that all of the proteins that work in your body have to maintain a specific geometric shape to function, and the three-dimensional shapes of the proteins in your body are affected by the tiniest changes in the pH of your body fluids.

The pH scale ranges from 0 to 14. A liquid that has a pH of 7 is considered to be neutral (pure water is generally considered to have a neutral pH). Fluids that have a pH below 7 - like lemon juice and coffee - are considered to be acidic. And fluids that have a pH above 7 - like human blood and milk of magnesia - are considered to be alkaline.

It's important to note that on the pH scale, each number represents a tenfold difference from adjacent numbers; in other words, a liquid that has a pH of 6 is ten times more acidic than a liquid that has a pH of 7, and a liquid with a pH of 5 is one hundred times more acidic than pure water. Most carbonated soft drinks (pop) have a pH of about 3, making them about ten thousand times more acidic than pure water. Please remember this the next time you think about drinking a can of pop.

When you ingest foods and liquids, the end products of digestion and assimilation of nutrients often results in an acid or alkaline-forming effect - the end products are sometimes called acid ash or alkaline ash.

Also, as your cells produce energy on a continual basis, a number of different acids are formed and released into your body fluids. These acids - generated by your everyday metabolic activities - are unavoidable; as long as your body has to generate energy to survive, it will produce a continuous supply of acids.

So there are two main forces at work on a daily basis that can disrupt the pH of your body fluids - these forces are the acid or alkaline-forming effects of foods and liquids that you ingest, and the acids that you generate through regular metabolic activities. **Fortunately, your body has three major mechanisms at work at all times** to prevent these forces from shifting the pH of your blood outside of the 7.35 to 7.45 range.

These mechanisms are:

1. **Buffer Systems**

- Carbonic Acid-Bicarbonate Buffer System
- Protein Buffer System
- Phosphate Buffer System

2. **Exhalation of Carbon Dioxide**

3. **Elimination of Hydrogen Ions via Kidneys**

It's not in the scope of this discussion to debate the mechanisms listed above in detail. We only want to point out that these systems are in place to prevent dietary, metabolic, and other factors that matters to healthy living.

When people encourage you to "alkalize your blood," most of them mean that you should eat plenty of foods that have an alkaline-forming effect on your system. The reason for making this suggestion is that the vast majority of highly processed foods - like white flour products and white sugar - have an acid-forming effect on your system, and if you spend years eating a poor diet that is mainly acid-forming, you will overwork some of the buffering systems mentioned above to a point where you could create undesirable changes in your health.

For example, your phosphate buffer system uses different phosphate ions in your body to neutralize strong acids and bases. About 85% of the phosphate ions that are used in your phosphate buffer system come from calcium phosphate salts, which are structural components of your bones and teeth. If your body fluids are regularly exposed to large quantities of acid-forming foods and liquids, your body will draw upon its calcium phosphate reserves to supply your phosphate buffer system to neutralize the acid-forming effects of your diet. Over time, this may lead to structural weakness in your bones and teeth.

Drawing on your calcium phosphate reserves at a high rate can also increase the amount of calcium that is eliminated via your genito-urinary system, which is why a **predominantly acid-forming diet can increase your risk of developing calcium-rich kidney stones.**

This is just one example of how your buffering systems can be overtaxed to a point where you experience negative health consequences. Since your buffering systems have to work all the time anyway to neutralize the acids that are formed from everyday metabolic activities, it's in your best interest to follow a diet that doesn't create unnecessary work for your buffering systems.

Acid and Alkaline-Forming Effects of Common Foods

Generally speaking, most vegetables and fruits have an alkaline-forming effect on your body fluids. Most grains, animal foods, and highly processed foods have an acid-forming effect on your body fluids.

Your health is best served by a good mix of nutrient-dense, alkaline **and** acid-forming foods; ideally, you want to **eat more alkaline-forming foods than acid-forming foods** to have the net acid and alkaline-forming effects of your diet match the slightly alkaline pH of your blood.

The following lists indicate which common foods have an alkaline-forming effect on your body fluids, and which ones result in acid ash formation when they are digested and assimilated into your system.

Foods that have a Moderate to Strong Alkaline-Forming Effect

Watermelon, Lemons, Cantaloupe, Celery, Limes, Mango, Honeydew, Papaya, Parsley Seaweed, Sweet, seedless grapes, Watercress, Asparagus, Kiwi, Pears, Pineapple, Raisins Vegetable juices, Apples, Apricots, Alfalfa sprouts, Avocados, Bananas, Garlic, Ginger, Peaches, Nectarines, Grapefruit, Oranges, Most herbs, Peas, Lettuce, Broccoli, Cauliflower.

Foods that have a Moderate to Strong Acid-Forming Effect

Alcohol, Soft drinks (pop), Tobacco, Coffee, White sugar, Refined Salt. Artificial sweeteners, Antibiotics (and most drugs), White flour products (including pasta), Seafood, White vinegar, Barley, Most boxed cereals, Cheese, Most beans, Flesh meats, Most types of bread

Please note that above lists of acid and alkaline-forming foods are not comprehensive, nor are they meant to be.

If you're eating mainly grains, flour products, animal foods, and washing these foods down with coffee, soda, and milk, you will almost certainly improve your health by replacing some of your food and beverage choices with fresh vegetables and fruits.

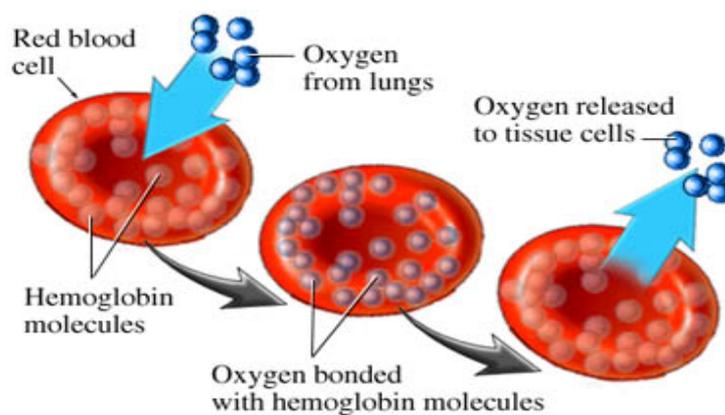
The primary purpose of this discussion is to offer information that explains why we believe that you don't need to take one or more nutritional supplements for the sole purpose of alkalizing your body. Your body is already designed to keep the pH of your body fluids in a tight, slightly alkaline range.

The ideal scenario is to make fresh vegetables and fruits the centerpieces of your diet, and to eat small amounts of any other nutrient-dense foods that your appetite calls for and that experience shows your body can tolerate.

Two-time Nobel Prize-winning German doctor, Otto Warburg, shocked the world when he revealed that **most disease is caused by insufficient levels of oxygen in the body**. In fact, his studies showed that if you deprive a cell 35% of its required levels of oxygen for 48 hours, the cell is likely to become *cancerous*. That's why cancer is so widespread in our modern society -- because most people suffer from oxygen deprivation. What most people don't know is that **lack of oxygen** is not only the underlying cause of cancer but is also the **cause of most diseases** -- from AIDS to yeast infections

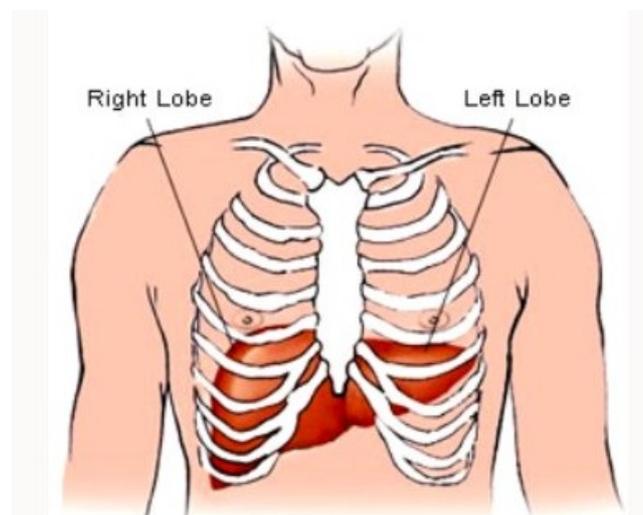
Since an oxygen-rich body is uninhabitable by disease, then the solution for eradicating disease seems simple enough, doesn't it? Just supply the body with an abundant supply of oxygen, right? Wrong! Here's why:

Oxygen Cannot Cure Disease Unless It's Delivered to the Cells and Tissues of the Body.



Liver:

The liver is an "incredible chemical factory," producing many important chemical compounds needed to survive, such as bile, albumin, blood clotting factors, cholesterol, Vitamin E. (*Secretion into bile is a major route for eliminating cholesterol. Free cholesterol is virtually insoluble in aqueous solutions, but in bile, it is made soluble by bile acids and lipids like lethicin. Gallstones, most of which are composed predominantly of cholesterol, result from processes that allow cholesterol to precipitate from solution in bile.) The liver weighs about three and a half pounds (1.6 kilograms). It measures about 8 inches (20 cm) horizontally (across) and 6.5 inches (17 cm) vertically (down) and is 4.5 inches (12 cm) thick.



The liver has a multitude of important and complex functions. Some of these functions are to:

- Manufacture (synthesize) proteins, including albumin (to help maintain the volume of blood) and blood clotting factors.
- Synthesize, store, and process (metabolize) fats, including fatty acids (used for energy) and cholesterol
- Metabolize and store carbohydrates, which are used as the source for the sugar (glucose) in blood that red blood cells and the brain use
- Form and secrete bile that contains bile acids to aid in the intestinal absorption (taking in) of fats and the fat-soluble vitamins A, D, E, and K.
- Eliminate, by metabolizing and/or secreting, the potentially harmful biochemical products produced by the body, such as bilirubin from the breakdown of old red blood cells and ammonia from the breakdown of proteins
- Detoxify, by metabolizing and/or secreting, drugs, alcohol, and environmental toxins

What are the kidneys?

The kidneys play key roles in body function, not only by filtering the blood and getting rid of waste products, but also by balancing levels of **electrolytes** in the body, controlling blood pressure, and stimulating the production of red blood cells. The blood supply to your kidneys enables them to do the following tasks:

- Regulate the composition of your blood
- Keep the concentrations of various ions and other important substances constant
- Keep the volume of water in your body constant
- Remove wastes from your body (urea, ammonia, drugs, toxic substances)
- Keep the acid/base concentration of your blood constant
- Help regulate your blood pressure
- Stimulate the making of red blood cells
- Maintain your body's calcium levels



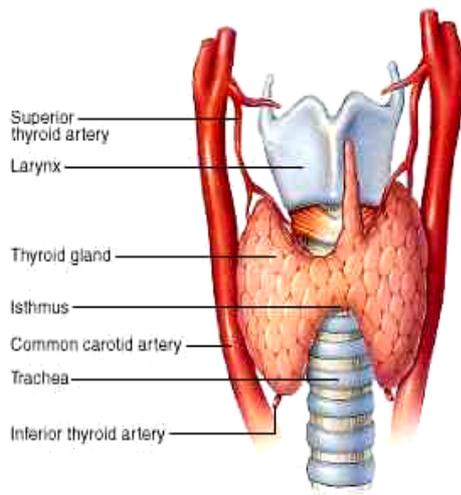
The kidneys have the ability to monitor the amount of body fluid, the concentrations of electrolytes like sodium and potassium, and the acid-base balance of the body. They filter waste products of body metabolism, like urea from protein metabolism and uric acid from DNA breakdown. Two waste products in the blood can be measured: **blood urea nitrogen** (BUN) and **creatinine** (Cr).

When blood flows to the kidney, sensors within the kidney decide how much water to excrete as urine, along with what concentration of electrolytes. For example, if a person is dehydrated from exercise or from an illness, the kidneys will hold onto as much water as possible and the urine becomes very concentrated. When adequate water is present in the body, the urine is much more dilute, and the urine becomes clear. This system is controlled by renin, a hormone produced in the kidney that is part of the fluid and blood pressure regulation systems of the body.

Kidneys are also the source of erythropoietin in the body, a hormone that stimulates the bone marrow to make red blood cells. Special cells in the kidney monitor the oxygen concentration in blood. If oxygen levels fall, erythropoietin levels rise and the body starts to manufacture more red blood cells. After the kidneys filter blood, the urine is excreted through the ureter, a thin tube that connects it to the bladder. It is then stored in the bladder awaiting urination.

Medications: Some medications are toxic to the kidney, including nonsteroidal anti-inflammatory drugs like **ibuprofen** and **naproxen**. Others are antibiotics like aminoglycosides [**gentamicin** (Garamycin), **tobramycin**], lithium (Eskalith, Lithobid), iodine-containing medications such as those injected for radiology dye studies.

THYROID



Blood test only measure T4/T3 (TSH- Thyroid Stimulating Hormone) hormone blood level, while temperature readings measures how much energy is actually being generated in the cells.

Allergy causing foods left over from incomplete digestion turn into acidic waste. Carried by blood, this waste lodges in the capillaries near the thyroid, blocking the flow of oxygen and glucose, materials the thyroids needs to generate energy. Toxic wastes from food allergies can have effect on the liver, further reducing energy production, since the liver stores sugar (glycogen) as well as converting thyroxin (T4) to active T3 when more energy is needed.

Thyroid function is also inhibited by the heavy metal residues in processed foods and food which come from the metal used in their manufacturing. Two examples are the aluminum used to hydrogenate oils, and sulfuric acid and chromium in the production of food additives.

Vitamin E, Vitamin A, Mineral complex in liquid form (as it converts tyrosine, an amino acid to thyroxin) . Vitamin B, Vitamin C to eliminate side effects of thyroid drug and 2 table spoons daily of coconut oil to counteracts the toxic effects of unsaturated oils on the thyroid gland.