Acidosis

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One of the **key determinants of the speed of aging** and onset of degenerative diseases is the internal biochemistry and terrain of the body.

Internal biochemistry is best measured and discussed in terms of the pH. pH is a measurement of the amount of acid and base. It ranges from 1 to 14, with 1 being extremely acidic, and 14 being extremely basic. A neutral state has a pH of 7. The term **acidosis is relative** and only meant to convey a shift in total body chemistry towards the acidic direction.

pH

According to the research of Dr Enderlein, our bodies can only be healed of any chronic illness when our blood is at a normal, slightly alkaline pH.

What exactly does pH mean? pH is the short form for potential hydrogen. The pH of any solution is the measure of its hydrogen-ion concentration. The higher the pH reading, the more alkaline and oxygen rich the fluid is. **The lower the pH reading, the more acidic and oxygen deprived the fluid is. The pH ranges from 0 to 14, with 7.0 being neutral. Indicator above 7.0 is alkaline and below 7.0 is considered acidic.**

Our blood pH has a very narrow range of around 7.35 to 7.45. If our body's pH deviates from this range, we will be sick or have symptoms of falling sick. If our blood pH falls below 6.8 or above 7.8, our body cells will stop functioning and death will occur.

A normal healthy body will have an almost equal blood pH of acidity and alkalinity. **The most ideal pH balance is 7.4** , which means that it is slightly more alkaline than acid. Only when the pH level is balance that our bodies can then effectively assimilate vitamins, minerals and food supplements. As such, our body pH's determines everything.

An acid pH body is more prone to illness. **In an acidic environment, red blood cells cannot repel and stick together like a stack of coins, forming what is called rouleau formation. This formation limits the amount of oxygen carrying capacity because red blood cells sandwiched between the two ends are compressed against each other and therefore unable to carry oxygen. Reduced oxygen leads fatigue, lack of energy, and weakness, just to mention a few symptoms.** Furthermore, cancer cells strives in an oxygen deprived environment (anaerobic) much better than in an oxygen rich environment.
The importance of maintaining optimum pH is therefore a critical factor in balancing proper internal terrain to deter cancer, infection, and a host of inflammatory disease. The majority of these conditions worsen in an acidic environment. They do not do well in an acidic environment.

The normal human cell is slightly alkaline and has an abundance of molecular oxygen. The cancer cell is acidic and cannot survive in an oxygen rich environment. As such, we can conclude that pH balance is very important to one's health, especially for the cancer patient.

The pH indicators are an exponent number of 10. A small difference in pH will translate to a big difference in the number of oxygen or OH-ions. **A difference of 1 in a pH value means ten times the difference in the number of OH-ions**. A difference of 2 means one hundred times the difference in the number of OH-ions. In other words, a blood with a pH value of 7.45 contains 64.9% more oxygen than blood with a pH value of 7.30.

Acidosis

Acidosis is a pH imbalance where the body has accumulated too much acid and does not have sufficient acid neutralizer to neutralize the effects. Acidosis may result from a lack of insulin, a starvation diet or even a gastrointestinal disorder like vomiting and diarrhea.

The acidic biochemical type is not meant to represent the absolute pH measurement of the blood system, which generally requires a laboratory test performed in hospitals known as blood gases. **While certain areas of the body normally may have an more acidic environment (stomach, kidneys, bladder) than others, the overall pH of the body and blood**

normally must be maintained within a narrow range of alkalinity (pH 7.30 - 7.45. An absolute blood measurement of acidity (pH below 7.0) is incompatible with life.

The principal sources of acid buildup are:

1.) The metabolism and/or incomplete breakdown (oxidation) of foodstuffs or metabolic "waste" produced as a by-product of cellular activity. During normal cellular respiration and energy production , acids as produced as part or "waste" products. These acid must be "balanced", neutralized, or removed by the body's buffering and detoxification systems through the kidneys, lungs, liver, and blood.

2.) The consumption of acid present in the food, air, and water supply. Nitrogen emissions from automobiles and industrial plants, food dyes, sprays, waxes, preservatives, additives, artificial sweeteners, fertilizers, water pollutants, and even chloride and fluoride in tap water are just some of the highly acidic chemicals are ingested by millions everyday.

THE EFFECTS OF ACIDOSIS

Acidosis leads to serious problems with major organs such as the liver, heart or kidneys. In this article, we will be looking into some of the reasons as to why we should avoid acidosis.

1.) It corrodes arteries, veins, and heart tissues

Like acid eating into marble, acidosis erodes and eats into cell wall membranes of the heart, arteries and veins. During this process of erosion, our heart structures and inter connective tissues are weakened.

All living tissues are sensitive to their chemical environment. The muscle cells of the heart are no different. The entire cardiovascular system is directly affected by blood plasma pH and works as one large working "system of tubular muscles" to carry blood and nutrients to all living tissue in the body. The pumping of the heart drives blood through the arteries, veins and capillary beds and helps to regulate blood pressure and the flow of blood circulation.

The heart is normal when the pH of blood plasma is slightly alkaline, having a pH of 7.35 to 7.41. **When the heart plasma rises to an acidic pH of more than 7.35, it gradually erodes away the smooth muscle tissues of the inner walls of the arteries and veins,** as well as the heart itself. This process will start to weaken the structural composition of the heart, arterial and venous walls, causing lesions and microscopic tearing throughout its framework. At the same time, an acid pH destabilizes free ionic balances within circulation, increasing the populations of positively charges particles (cations, an ion with a positive charge of electricity: H , Ca) which directly interfere with the muscle contractility (contraction and relaxation) of the heart and arteries.

Acid pH changes of blood are now thought to result in the following: -

A. Development of arteriosclerosis (hardening of the arteries)
B. Aneurysm (widening and ballooning of artery walls)
C. Arrthythmias (abnormal rhythms of the heart including tachycardia)
D. Myocardial infarction (heart attacks)
E. Strokes (a cardiovascular accident).

The structural weakening of the cardiocascularity also creates irregularities of blood pressure, which further exacerbates the above problems.

2.) It accelerates free-radical damage and premature aging.

Acidosis leads to partial lipid breakdown and destructive oxidative cascades accelerating free radical damage of cell walls and intracellular membrane structures. In this process, many healthy cells are destroyed.

Acidosis is the first step towards premature aging and accelerated oxidative cascades of cell wall destruction. Signs of acidosis may include wrinkling, age spots, failing hormonal systems, interfering with eyesight, memory, and a host of other age-related phenomena. Unwanted wastes not properly eliminated from the body actually poison the cells.

3.) It disrupts lipid and fatty acid metabolism.

Acidosis generally disrupts lipid and fatty acid, which are involved in nerve and brain function. This disruption causes neurological problems such as MS, MD as well as problems with hormonal balance within the endocrine system.

An acidic environment also causes LDL-cholesterol to be laid down at an accelerated rate in the heart, inappropriately lining and clogging up the vascular network. In other words, an acid pH initiates electrostatic potential, damaging arterial walls, which in turn initiates a PDGF-dependent immune response, causing cholesterol oxidation and the formation of plaque with heavy metals.

4.) It leads to weight gain and diabetes.

An acidic pH may result in weight problems such as diabetes and obesity. **When our body is too acidic, we suffer from a condition known as Insulin Sensitivity.** This forces excessive insulin to be produced. As a result, the body is flooded with so much insulin that it diligently converts every calorie into fat.

It is very likely that an acid pH, from an imbalanced diet, produces a condition, which stimulates the predetermined genetic response to starvation and famine. Thereafter, the body will have to increasingly hoard every calorie consumed and store it as fat.

Some people reckon that an acid pH immediately signals the powerful genetic response to an impending famine, directly interpreting with the all important and very sensitive Insulin-Glucagon Axis. When this happens, it makes the body produce more insulin than usual, and in turn, produce more fats and store it.

On the other hand, **a healthy and slightly alkaline pH will yield normal fat burning metabolic activities, making no demands on the body to produce extra insulin and make fats.** As such, this allows fat to be burned and naturally lost. A healthy pH diet is also less likely to have any yo-yo effects, or rebounding from a diet with additional weight gain. **We should try to maintain a healthy slightly alkaline pH** so as to allow fats to be burnt normally for energy, rather than hoarded and stored under the mistaken biochemical belief of an impending famine.

Acidosis also disrupts the insulin producing pancreatic beta cells. These beta cells are especially sensitive to pH and cannot survive if the body is too acidic. When this occurs, beta cells will lose phase with one another. Their cellular communication will be thwarted and the body's immune system will start to over-respond. Stress within the cells will increase, making them more difficult to perform adequately and survive.

5.) It alters the energy metabolism and reserve.

When your body has an acidic pH, it will prevent efficient cellular and body metabolism. Acidosis results in chemical ionic disturbances, interfering with cellular communications and functions. Acidosis reduces plus calcium binding of plasma proteins, therefore reducing the effectiveness of this intracellular signal. It also results in a disease of calcium cations (positive calcium) entry through positive calcium channels. This leads to a reduction of cardiac contractibility, or the ability of the heart to pump efficiently and rhythmically.

Positive calcium and hydrogen regulate the activities of intracellular proteins and are driven out of the cells by the "Sodium-Potassium pump" (Na-K pump). This pump provides a strong incentive for sodium to be driven into cells. It also regulates the amount of both sodium and potassium in the body stores, and uses as much as 25 percent of our caloric input daily. Positive calcium exchanges the plus sodium, being forced out of cells, but naturally, the electrochemical gradient for positive calcium favors both positive hydrogen and positive calcium entry into cells, as there is less calcium and positive hydrogen in cells than in the extra-cellular fluids. In extra-cellular fluids, there is 10 times more the amount of positive sodium.

In acidic solutions, less plus sodium is available, therefore slowing down the processing and induction of nutritional items going into the cells. This increases positive hydrogen and calcium buildup within the plasma, making it more available to electro-statically bind with LDL-Cholesterol. As a result, with free positive calcium populations and channels being disrupted, calcium may become inordinately leached from the bone masses. This causes osteoporosis. **In a nutshell, an acidic pH drains us of energy and disallows stored energy reserves to be used.**

6.) It slow the delivery of oxygen into the cell.

Acidosis reduces oxygen in the blood. As all living tissues, especially the heart and brain need oxygen to function; a lack of it will lead to eventual death.
Having an acidic pH will reduce the amount of oxygen that is delivered to the cells. They will eventually die.

Diseases Associated with Acidosis.

It is important to note that the body's biochemistry is an important but just one of many tools to help the physician understand the whole body. **pH in an of itself is not a diagnostic tool and is not a medical diagnosis as a disease entity.**

What then happens when the body is too acidic? An acidic balance will:

1. Decrease the body's ability to absorb minerals and other nutrients

2. Decrease energy production in the cells

3. Decrease the body's ability to repair damaged cells

4. Decrease the body's ability to detoxify heavy metals

5. Enable tumor cells to thrive

6. Make the body more susceptible to fatigue and illness.

Some people who have high acidity levels tend to exhibit these symptoms such as: anxiety, diarrhea, dilated pupils, extroverted behavior, fatigue in early morning, headaches, hyperactivity, hyper sexuality, insomnia, nervousness, rapid heartbeat, restless legs, shortness of breath, strong appetite, high blood pressure, warm dry hands and feet.

Most of the time, **the body becomes acidic due to a diet rich in acids, emotional stress, toxic overload,** and/or immune reactions or any process that deprives the cells of oxygen and other nutrients. When this happens, the body will try to compensate for acidic pH by using alkaline minerals such as calcium. As a result, calcium is removed from the bones, causing osteoporosis.

Acidosis, which is an extended time in the acid pH state, can result in **rheumatoid arthritis, diabetes, lupus, tuberculosis, osteoporosis, high blood pressure and most cancers.**

Two main factors leading to cancer are an acidic pH and a lack of oxygen. As such, are we able to manipulate these two factors so as to prevent and control cancer?

Everyone knows that cancer needs an acidic and low oxygen environment to survive and flourish. Research has proven that terminal cancer patients have an acidity level of 1,000 times more than normal healthy people. **The vast majority of terminal cancer patients have a very acidic pH.** Why is this so?

The reason is simple. Without oxygen, glucose undergoing fermentation becomes lactic acid. This causes the pH of the cell to drop to 7.0. **In more advance cancer cases, the pH level** falls further to 6.5. Sometimes, the level can even **fall to 6.0 and 5.7 or lower. The basic truth is that our bodies simply cannot fight diseases if our pH is not properly balanced.**

How does the body overcome the acidity?

The body undergoes an natural and ongoing balancing act **constantly.** Underlying regulatory forces work continually to balance an acidic body chemistry to remove excess acid and return the body to a more neutral state.

These internal buffering mechanisms include:

a. The production of bicarbonate from the organs and cells of the body.

b. The removal of minerals such as calcium from bones to be used as buffering agent to neutralize the acid. This is one of the leading causes of osteoporosis.

c. The blowing off CO2 or carbon dioxide from the lungs. Carbon dioxide is an acid. It leads to symptoms of shallow breathing and hyperventilation.

d. The release of alkaline bile from the liver and alkaline digestive secretions from the pancreas and the retention of sodium from the kidneys in response to the secretion of the hormone Aldosterone. Aldosterone is produced from adrenal gland, and stimulation of this gland leads to the feeling of internal "stress".

Associated metabolic effects:

a. Calcium Imbalance
Many minerals and other factors involved in maintaining a normal body chemistry fluctuate throughout the day in response to variations in serum and electrolyte concentrations, as well as

dietary influences. Such minerals acts as a buffer and a balancer to maintain the body in a balanced chemistry state in order for proper enzyme activations to occur. **Long term acidosis can lead to mineral depletion and osteoporosis.** Calcium, for example, has been shown to enter the intracellular compartment in an effort to maintain ionic balance when magnesium is deficient, resulting in calcification of the cell and resulting hypertension. **High dose of calcium supplementation has been shown to reduce hypertension.**

b. HIGH URIC ACID levels, resulting from the breakdown of meat byproducts (purines), contribute to the development of an acidotic condition. **Excessive protein intake, including meats, viscera, leguminous vegetables increases uric acid production.** Other causes of hyperuricemia include gout, renal failure, lactic acid buildup (alcohol abuse, extreme exercise and pregnancy, malignant neoplasms, and the use of diuretics.

c. HIGH TRIGLYCERIDE levels, resulting from the breakdown of endogenous fat or **excessive ingestion of sugar (including grains). Diets excessive in complex carbohydrates (such as pasta, breads and starches) is the most common cause of elevated triglyceride levels.** Only 20% of the ingested sugar load can be burned or stored as glycogen at any one meal. The remainder 80% will be converted to triglyceride which can contribute to the buildup of acidity, or stored as fat deposits.

HOW TO TEST YOUR pH LEVEL

1. Salivary pH Test

Just **wet a piece of litmus paper with your saliva 2 hours after a meal** and this will give you a reflection of your state of health.

Although saliva is generally more acidic than blood, it is a fairly good indicator of health. It tells you what your body retains. Salivary pH is a fair indicator of health for extracellular fluids and their alkaline mineral reserves.

The optimal pH for saliva is between 6.4 to 6.8. A reading lower than 6.4 means that there is not enough alkaline reserves. After meals, the saliva pH should rise to 7.8 or higher. If there is no increase, it will imply that the body has a deficiency in alkaline minerals especially calcium and magnesium. Food will not be absorbed and assimilated well. To deviate from an ideal salivary pH for an extended time will lead to illnesses.

If the salivary pH level remains too low, we should take more fruits, vegetables and mineral water and avoid strong acidifiers such as sodas, whole wheat and red meat to maintain its balance.

2. Urinary pH Test

The pH of the urine is an indication as to how well the body is working to maintain a proper pH of the blood. It **reflects the efforts of the body via the kidneys, adrenals, lungs and gonads through the buffer salts and hormones. The urine also shows the alkaline building (anabolic) and acid tearing down (catabolic) cycles.** By taking urine samples, we can have assess to a fairly accurate picture of our body chemistry as our kidneys filter out the buffer salts of pH regulation and provide values based on what the body is eliminating. **The urine pH can vary from around 4.5 to 9.0, but the ideal range is still 5.8 to 6.8.**

To increase the alkalinity in our blood, we can consume these foods: almonds, aloe vera, apples, apricots, bee pollen, buckwheat, cabbage, cantaloupe, celery, carrots, cucumbers, dairy products except hard cheese, dates, pulse, poached eggs, figs, grapefruit, honey, lettuce, millet, parsley, raisins, peaches, fresh red potatoes, pineapple, soy products, sprouted seeds, cooked spinach, turnip tops, wakame miso soup, azuki beans, rice and mineral water.

In conclusion, balancing your pH is a major step towards optimal well-being and better health. **Acidosis is the main cause of calcium deficiency disease. After many studies, scientists can safely conclude that healthy people have body fluids that are alkaline (high pH) whereas sick people have body fluids that are acidic (low pH).**

Food Plan to Reduce Acid

The blood is normally maintained in an alkaline state. **An acidic state reduces blood oxygen carrying capacity and promotes a higher valance state of polymorphism.**

Foods are generally broken down and converted into either acidic or alkaline substrates with digestion. **A person with an acid metabolic condition should emphasize the consumption of alkaline forming foods in the diet, with 60-70%**

alkaline forming foods, and 30-40% acid forming food by volume.

Do not simply eat all alkaline forming food, as some acid formation is necessary to generate metabolic activity and maintain homeostasis. Too alkaline a body can predispose the body to certain types of infection.

Here are some of the common acid and alkaline forming foods. These categories are based on the body's reaction to a moderate amount of each. Excess amounts may produce the opposite effect.
A general rule of thumb, vegetables and fruits are alkaline and high protein food and high sugar food are acidic.

Acid Producing Foods:

Dairy, Eggs, Meat, Poultry, Fish, Grains, Processed flour products, Sugary foods, Cranberry, Pomegranate, Plum, Prune, Tomato, most Legumes, most Grains.

Most Alkaline Producing Foods:

Kelp, Sea salt, Seaweeds, Parsley, Onion, Miso, Daikon, Sea Vegetables, Burdock root, lotus root, Sweet Potato/Yam, Nectarine, Persimmon, Raspberry, Watermelon, Tangerine, Pineapple