

Acid, Alkalinity and pH - Sorting Out the Confusion

Blood pH

by Glenn R. Hoey, ND, CSCS, ACSM

There seems to be a lot of misunderstanding in the natural supplement world about the subject of what makes our bodies “acid” or “alkaline” and how we measure them. Do we measure urine, saliva or blood to determine pH? What is the term pH, anyway? I will do my best in this article to sort out this tangle of misinformation, beginning with blood pH.

First of all, pH is the term used to describe the concentration of hydrogen ions in solution. It is used this way because hydrogen ion concentration is a very cumbersome process. Very strong acids, like stomach acid, have a pH of 1 to 3 (strong hydrochloric acid). As the pH rises, the hydrogen ion concentration decreases, becoming less acidic. As the pH approaches 7, a solution becomes more neutral (water is a good example). As the pH rises higher, the hydrogen concentration is very low and the solution becomes basic or alkaline (lye is a good example).

Sodium hydrochloride burns

Just because a solution is not acidic does not mean it cannot be caustic (cause burns). Very alkaline solutions also can burn, and quite a few cases of “heartburn” or stomach burning are caused by a production of sodium hydroxide (a strong base). The condition is then typically treated with antacids, making the problem worse.

Normal Blood pH

Arterial blood pH has a pH of 7.4 while venous blood and interstitial fluids (between the cells) are about 7.35 (a bit more acidic because of carbonic acid formed by the extra carbon dioxide).

Signs and symptoms I watch for:

- * muscle and joint pain (fibromyalgia-type symptoms)
- * osteoarthritis
- * osteoporosis (poor mineral solubility and availability)
- * high blood pressure
- * migraine headaches
- * tension headaches (inability of smooth muscles to relax)
- * frequent infections or prolonged chronic infection (typically coupled with other nutrient- deficiency states, i.e. chronic sinusitis)
- * cystitis
- * inability to “hold” an adjustment
- * mineral insolubility

Anion-Gap test

One measure of blood acidity or alkalinity is a test called the Anion-gap. This test measures the “gap” of electrical potential between positively charged ions called cations (*cat-I-ons*) and negatively charged ions called anions (*an-I-ons*). It is calculated by taking the sodium and potassium scores and adding them together and then subtracting out the chloride and carbon dioxide values. This is a very helpful indicator of the relative pH of the blood. The greater the Anion-Gap, the greater the degree of alkaline imbalance in the blood. The more alkaline the imbalance, the more symptoms the body will manifest.

I have found great success in treating many of these conditions with acidifying supplements like Betaine Hydrochloride and Ammonium Hydrochloride. I also tend to increase the protein in the diet as the amino acids also increase the hydrogen ion concentration and decrease the pH. Until this underlying biochemical imbalance is addressed, the use of other vitamins and minerals will not be very effective.

My Symmetry Analysis Program is specifically designed to determine what vitamins, minerals, nutrition, exercise and life style program is best suited for each patient. If you have any of the above problems, call me for an appointment.

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