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# Understanding pH and Pathogens

## *What is pH?*

**pH stands for "potential of hydrogen" and refers to the concentration of hydrogen ions (H+) in water or whatever liquid is being measured. In more everyday terms, pH is a unit of measure for determining if a liquid is acidic or basic (alkaline). Something that is neither acidic nor basic is referred to as neutral.**

## *pH measured in numbers*

**The pH scale was developed because the concentration of the solution can vary by so many factors discovered over time, and a pH scale was the easiest way to express the variation of the solution.**

**Basically a pH scale measures the concentration of H+ and OH-. The pH of a solution is defined as a negative logarithm of the hydrogen ion concentration and the pH scale measures this and places a value on it ranging from 0 to 14. A pH of 7.0 indicates a neutral liquid. One pH unit reflects a tenfold change. So liquid with a pH of 6.0 is ten times more acidic than neutral (pH=7.0).Liquid with a pH of 5.0 is one hundred times (10x10) more acidic than neutral. Liquid with a pH of 8.0 is ten times more basic than neutral. Liquid with a pH of 9.0 is one hundred times more basic than neutral etc**

## *The Biological Effect*

**An acid adds hydrogen ions to a solution, whilst an alkaline base has the opposite effect with an increasing OH- concentration. Under normal circumstances the buffering capacity of the blood prevents swings in the pH level.**

**The internal pH of most living cells is close to 7. When there is even a slight change in the pH, this can be extremely harmful. It is harmful because the chemical processes of the cell are sensitive to the concentration of hydrogen and hydroxide ions. Biological fluids can resist change to their own pH when acids and bases are introduced because of the presence of buffers. Buffers in human blood for example maintain the blood pH very close to 7.4. But over time, and through attrition, the body's natural defences can weaken and cellular activity becomes affected.**

**The body's cells are slightly acidic within and are surrounded by slightly alkaline interstitial fluid around them. If the body becomes too acidic the polarity essential for chemical and energy interchange of the cells is impaired. Energetically, pH balance for the various body fluids is essential for most cellular functions.**

## *Pathogenic Conditions*

**As ph levels deteriorate then various conditions can gradually start to manifest themselves. Research continues to reveal just how crucial pH levels can be. In one recent research project at the Royal London Hospital, Doctors D. Rampton and D. Evans found that measurements of pH in the normal gastrointestinal tract have shown a progressive increase in pH from the duodenum to the terminal ileum, a decrease in the caecum, and then a slow rise along the colon to the rectum. Some data in patients with ulcerative colitis suggest a substantial reduction below normal values in the right colon. High acidity would appear to be precipitating the subsequent colonic condition. How does this happen?**

**In his experiments, the researcher GuntherEnderlein found that every living cell contains two distinct kinds of microorganisms called endobionts (which means "inside life"). These microorganisms live inside the cell and cannot be removed from it. They play an important role in cellular health. The state of a person's health is determined by the stage of development of these organisms. Enderlein found that all microbes that live permanently in our bodies go through three stages:**

**The Primitive Stage (microbe)**
**The Middle Stage (bacteria)**
**The End Stage (fungus)**

**Other scientists were later able to confirm that there was a fourth stage which occurs only after extreme toxicity in which the fungus goes through a transformation, mutating into the Virus.**

**Most of the diseases in modern society today are not caused by the "pathogenic bacteria" that enter from outside us, as was taught by Pasteur. Disease occurs as these endobionts are transformed from the microbe stage to more virulent forms of life. The state of development of these organisms depends upon the state of the medium in which the germ lives. In other words, the microbes which live in our cells and assist the cells in maintaining a healthy state will mutate into bacteria, fungus, and viruses when the tissues of our bodies in which they live change to provide a medium for their growth. They begin to become "pathogenic" when the pH of the tissues becomes more acidic.**

**Primitive phases live in a strong alkaline pH**
**Bacterial phases live in mild alkaline pH**
**Fungal forms live in a medium acid pH**
**Viral forms live in a strong acid pH**

**These primitive organisms can live in our bodies in the microbe stage indefinitely, and do not cause disease, but rather perform a restorative function.**

**Scientific evidence has shown us that the microbes which live in our bodies are pleomorphic, meaning they can take many forms. As the pH of the body changes toward a more acidic level, the harmless microbes which are always present there transform themselves into more dangerous disease-causing bacteria, fungi or viruses. These disease germs do not originate from outside our bodies, but from inside. They grow and mutate based upon the kind of internal environment we provide for them to live in.**

## *Treatment*

**Practitioners utilising BioTerrain analysis will be all too familiar with the importance of pH levels. But any practitioner, utilising litmus paper, can get some indication of a client's acid-alkaline ratio. By dietary changes, acid levels can drop considerably and the recovery curve from a condition being treated can be greatly speeded up. Many carcinogenic conditions have been successfully addressed by a combination of pH adjustment and ozone/oxygenation treatment. Whatever your approach to natural medicine, incorporating pH evaluation into your screening will always reap dividends**

**and sometimes reveal an underlying cause.**