Cellular Respiration, Pasteur Point, and AquaVivos™

By A. True Ott, PhD (Feb. 2007)

One of the true pioneers in microbiological research was a French chemist named Louis Pasteur. Trying to understand the root cause of common diseases and illness plaguing Europe in the 1800's, Pasteur utilized a crude microscope and discovered that tiny "micro" organisms called "germs" proliferating in milk caused the milk to spoil, ferment, and produce a sour smell. Pasteur eventually established a link between these same germs and a large number of common human disease conditions. What immortalized Pasteur, however, was his solution to the problem. He found that the germs could be effectively killed by rapidly heating the milk, then quickly cooling it. The process became forever known as pasteurization, and it has undoubtedly saved millions of lives globally.

What many people do not understand however, is that while analyzing the biochemistry of bacteria, Pasteur also discovered how different plant and animal cells utilized oxygen in the process of converting protein, glucose, and carbohydrates into energy. He basically uncovered and quantified that there are two methods by which energy is created at the cellular level by both plants as well as animals. In simplified terms, Pasteur discovered that cellular energy can either be produced by means of fermentation and creation of yeast, fungi, and molds – or it can be produced in a pure and simple bio-chemical process without fermentation and putrefaction by-products. One way contributes to a myriad of chronic disease states, (as evidenced by low pH levels in the saliva), the other way is designed by nature's God and is the formula for longevity and health. The specific "transition point" between the two metabolic realities is one of the very basic, and more important principles of nutrition – but one that is commonly overlooked. This critical metabolic crossroad is what is called the "Pasteur point" by the scientific community.

Without going into a full blown organic biology discussion, science has now proven that the human cell needs a substance called adenisone tri-phosphate (or ATP) in order to produce energy in the form of heat at the cellular level. Without ATP being produced, cells simply do not have enough energy to stay alive. The preferred

method of cellular ATP production occurs when the mitochondria of the cell utilizes abundant oxygen and hydrogen electrons to chemically alter carbohydrates and proteins in the diet by means of oxidization. When bio-available oxygen/hydrogen electrons reach a critical “low point” – the cells instead begin to utilize fermentation methods to create the all-important ATP molecule. This is what the “Pasteur point” is all about, and why it is so essential to understand this critical process in maintaining health at the cellular level.

To understand how disease states begin in the body, we need to realize that the fermentation method of ATP production is very inefficient – producing only 25% as much ATP from the same level of carbohydrates as opposed to the oxygen electron method. As the fermentation method begins to dominate the ATP cycle, it creates a very complex “oxygen debt” at the cellular level as rancid toxins accumulate in the form of “stored” fat lipids. As more and more rancid toxins (primarily undigested proteins) accumulate in and around the cellular terrain, oxygen electrons become increasingly scarce and the mitochondria of the cell eventually begin to shut down, resulting in energy imbalances in organs and tissues. Disease states such as cancer, heart disease, or diabetes (just a few examples) are then diagnosed. Instead of reversing the “fermentation method”, paying the oxygen debt, and repairing the cell tissue – well-meaning medical doctors typically prescribe the latest and greatest chemical pill designed to hide the symptom without ever addressing the root cause. Often the “prescribed” chemical compound causes other cellular energy imbalances, which are termed “side effects” by the medical community.

Pasteur also discovered that there are different types of bacteria in the human body just as there are good and bad bacteria in soil, plants, and animals - some are oxygen-breathing (aerobic) bacteria and then there are anaerobic bacteria that thrive on fermentation by-products and often wreak havoc on healthy cells as they contribute to disease states. When the human body maintains an oxygen/hydrogen level above the Pasteur point, fermentation is limited and the preferred aerobic microbial populations (aka pro-biotics) tend to flourish. In perfect harmonious synergy, the various pro-biotic microbes work with the hydrogen/oxygen molecules to decompose proteins into essential amino acids and polypeptide

chains that are the basic building blocks of human hormones and other endocrine system secretions. In short, the body is healthy, happy, and extremely well-adjusted. In sharp contrast, however, when oxygen/hydrogen electron levels remain below the Pasteur point for any significant period of time, fermentation and putrefaction begins a literal death-cycle for the cell as the preferred pro-biotic population die off and the organic proteins and carbohydrates as well as the dead microbes are devoured by pathogenic microbes and parasites associated with putrefaction and rancidity. People in this state often develop “chemical imbalances” and may become clinically depressed or exhibit neurosis. From a practical point of view, then, the Pasteur point becomes a very real dividing line between health and vitality, and chronic disease and pain.

To understand how AquaVivos™ may help the human body to maintain the Pasteur point, one must acquire a basic knowledge of the vegetable kingdom from whence the product is derived. Healthy plants, especially root vegetables such as carrots, turnips, and onions are easily able to maintain a cellular oxygen/hydrogen level above the Pasteur point; that is, as long as they receive adequate water to their roots on a regular basis. The green leaves of the vegetables located above ground, are composed of cells that are called chloroplasts. Their sole function is harvesting solar energy from sunlight, which energy is then used to split water molecules into individual hydrogen and oxygen ions. Using a phyto-nutrient, polyphenolic enzyme called Rubisco, the hydrogen ions combine with carbon dioxide formed in the chloroplast cells to produce carbohydrates (carbon + hydrogen). Individual atoms of oxygen are by-products of this bio-chemical reaction; eventually forming pure oxygen (O_2) molecules that are excreted through the leaves into the atmosphere in a process called photosynthesis. It has only recently been proven that polyphenols such as Rubisco have the amazing ability to harness and store “free electrons” from the sun; electrons which are then utilized to energize electron-depleted oxygen molecules (commonly termed “free radicals”). This anti-oxidant activity keeps the chloroplast cells balanced, which of course is the key to keeping the plant healthy and free of internal toxicity.

A very similar process to plant photosynthesis occurs in the human body at the cellular level, except the process is a sort of a reverse

mirror image. In other words, instead of excreting oxygen, our lungs excrete carbon dioxide; instead of producing carbohydrates, our cells consume carbs and expel stripped hydrogen ions that are excreted (through urine and saliva.) This is why consuming more raw vegetables and fruit as opposed to animal flesh helps to maintain this symbiotic balance of nature.

It should be noted that the life forms found on planet Earth have developed specific defense mechanisms that allow them to survive the constant bombardment of oxygen radicals inherent in the atmosphere. These oxygen radicals result from the constant splitting of H2O molecules (water) when they are exposed to radiation from the sun (evaporation). These oxygen radicals are missing electrons, and so they constantly attack cells in a process called ageing. (This is the action that causes a cut apple to turn brown when left on the kitchen counter, and eventually causes its cells to decompose, and to spoil. This also explains why vacuum-packing meats and other perishable items keep them “fresher” for a much longer period.) Therefore, supplementing vegetable-based polyphenolic enzymes such as Rubisco may provide a much safer terrain or “haven” for the human cell – a safe haven consisting of extra-cellular fluid saturated with free electrons designed to keep the fluid well above the critical Pasteur point, but at the same time BALANCED so that the oxygen electrons will not become toxic. This is the natural wonder of AquaVivos™ - it is loaded with polyphenol enzymes from vegetables – including Rubisco. Truthfully, the biological activity and enzymatic action could well be called a marvel of nanoscale engineering --- however, nature developed the protocol millions of years ago – and she seeks no international patents!

AquaVivos™ has been independently analyzed by a leading laboratory to determine its total phenol count, as well as its anti-oxidant capacity to neutralize oxygen radicals. Both tests clearly determined that it has exceptional potential to help the body balance the all-important Pasteur point. The product contains no synthetic chemicals, and is completely produced from vegetable phenols.

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Report for Mother Earth Minerals

Sample ID	Brunswick Lab ID	$ORAC_{hydro}$* (μmoleTE/g.)	Phenolics [1] (mg/L)
Aqua Vivos	07-0179	7,701	1,360.12

*The ORAC analysis provides a measure of the scavenging capacity of antioxidants against the peroxyl radical, which is one of the most common reactive oxygen species (ROS) found in the body. $ORAC_{hydro}$ reflects water-soluble antioxidant capacity. Trolox, a water-soluble Vitamin E analog, is used as the calibration standard and the ORAC result is expressed as micromole Trolox equivalent (TE) per gram.

[1] The phenolic result is expressed as milligram gallic acid equivalent per liter.

The acceptable precision of the ORAC assay is 15% relative standard deviation.[1]

Testing performed by J. Theobald and J. Frietas.

Approved by:

Bexin Ou, PhD.
Vice President

B-5466 / 1-26-2007 lrh

Samples will be discarded one month from report date, unless otherwise notified by customer in writing.

[1] Ou, B; Hampsch-Woodill, M.; Prior, R. L.; Development and Validation of an Improved Oxygen Radical Absorbance Capacity Assay using Fluorescein as the Fluorescent Probe. Journal of Agricultural and Food Chemistry.; 2001; 49(10); 4619-4626