Aging with VITALITY

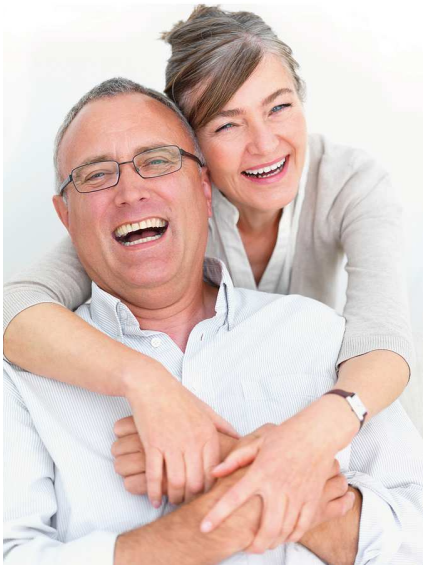
Redox Signaling Molecules

Optimizing Your Cells to Stay Healthier, Younger, Longer

In this special report *Aging with Vitality* examines Redox Signaling Molecules.

- What they are
- How they work
- How they can help you

Live longer
Stay healthier
Perform better



Introduction

You may have heard of the excitement surrounding a new health regimen of supplementing with stabilized Redox Signaling molecules. These essential molecules are only now becoming available as a supplement in a stable, perfectly balanced mixture.

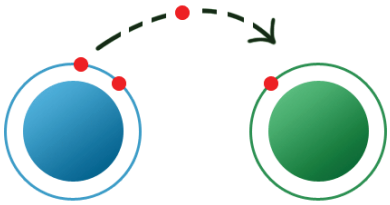
In this special report, we'll explain what these molecules are, why they are essential to your health—even life itself—and how supplementing with these vital components can vastly improve the quality of your health and daily physical performance and endurance.

We thank Gary L. Samuelson, Ph.D. in Atomic/Medical Physics for contributing most of the scientific content for this report.

What do we mean by redox signaling?

Redox is short for oxidation/reduction which is what happens when atoms exchange electrons as they combine together to form a new compound. For reasons beyond our discussion here, the atom that loses electrons is said to be oxidized and the atom that gains electrons is said to be reduced. The oxidation of one or more elements is accomplished by an equal and opposite reduction of one or more other elements in the formation of the compound. Therefore, the reaction as a whole is called a **redox** reaction.

"Redox" is the transfer of electrons from one atom to another



The atom being oxidized loses electrons

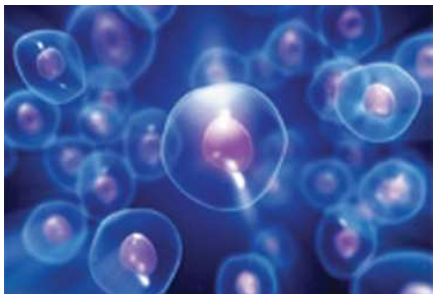
The atom being reduced gains electrons

Only in the last couple of decades has the scientific community begun to comprehend that our bodies use this redox process, this process of electron exchange between atoms, as a way of **signaling** and communication on an atomic level to coordinate the defense, repair and replacement of our tissues. When damage occurs to the body, the delicate mixture of certain special molecules becomes unbalanced causing them to unleash redox reactions sending signals to the body's defenses to respond.

What are Redox Signaling Molecules, and where do they come from?

Water—the Raw Material

Our bodies actually produce these special molecules called "Redox Signaling Molecules" specifically in a variety of special compounds that are more reactive. That is, they are less stable and more ready to exchange electrons.



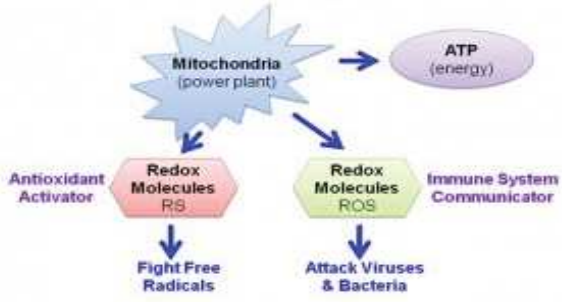
Our cells are filled and surrounded by salt water, the raw material for Redox Signaling Molecules.

By rearranging the atoms in water (H20), salt (NaCl), and nitrogen (N2), your cells produce these molecules principally from the salt water with which they are filled and surrounded as the raw material. A few examples of redox signaling molecules are hydrogensuperoxide (HO2), hydrogen peroxide (H2O2), hypochlorous acid (HOCl) and Nitric Oxide (NO), and there are many more.

Two Classes of Redox Signaling Molecules

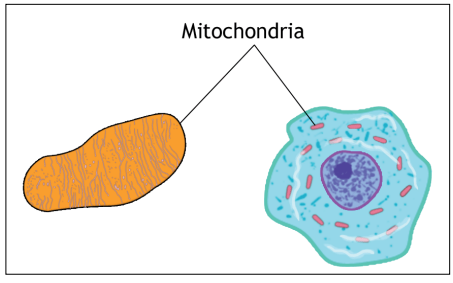
Redox Signaling molecules can fall into two classifications, Reactive Oxygen Species (ROS) and Reduced Species (RS). ROS molecules send messages to the immune system to fight invaders such as bacteria and viruses, whereas RS molecules activate antioxidants to neutralize free radicals. When isolated, most of the individual Redox Signaling molecules are potently toxic, reactive and unstable. However, in all forms of life on planet Earth, cells have learned to manufacture stable, non-toxic mixtures of ROS and RS that serve fundamental roles inside and outside the cells.

Produced by Mitochondria



The primary source of Redox Signaling molecules in living cells is the mitochondria. The mitochondria live inside the cells and produce 95% of all of the energy (ATP fuel) used in the body. There are anywhere from 10 to 5000 mitochondria in every cell. Collectively these organelles comprise more than half of the dry weight of the body.

As mitochondria metabolize simple sugars from the foods we eat into the ATP cell fuel, they also produce copious amounts of ROS and RS that are quickly mixed, stabilized and balanced by enzymatic action inside the cells to form balanced Redox Signaling complexes and mixtures. These

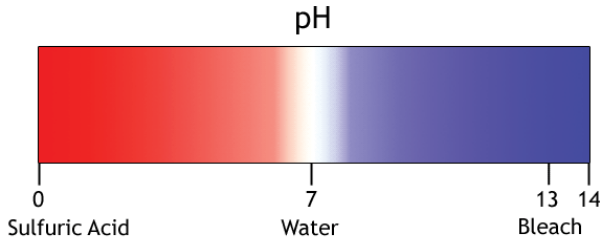


balanced Redox Signaling mixtures float around in the cell. They are easily neutralized by the antioxidant barriers that are placed in strategic areas in the cell to protect sensitive structures from potential damage, such as the DNA.

As long as these Redox Signaling mixtures are kept balanced, the antioxidant barriers are easily able to neutralize them, by turning them back into salt water and nascent oxygen. Such Redox Signaling molecules serve as signaling messengers and carriers in all cells and tissues of the body.

Perfectly pH Balanced (7.35) Mixture

In our blood, cells and tissues, perfectly balanced, stable mixtures of Redox Signaling molecules exist. It turns out that such mixtures have close to neutral pH (7.35) which is the average pH of blood and fluids carefully maintained in our bodies. It should be noted that such stable balanced mixtures of Redox Signaling molecules CANNOT be formed by simply stirring together individual components (which would be toxic and imbalanced). Non-toxic Redox Signaling complexes are formed electrochemically and enzymatically by complex reactions inside the cells and tissues. As long as these Redox complexes are pH and Redox Potential neutral, a balanced chemical equilibrium is easily preserved anywhere in the body. This is the beauty of Redox Signaling messengers. While they are unstable and reactive in isolation, they are everywhere and participate in all of the processes of life in safe, carefully balanced complexes.



What are the benefits of Redox Signaling molecules?

Aiding in the Preservation and Restoration of Healthy Tissues and Cells

When cells and tissues are damaged by everyday living (sunlight, toxins, cuts, scrapes, exercise, infections, radiation etc.), they send out Redox Signaling messages for help. This starts a cascade of messengers that are quickly spread throughout the affected area calling for action to start the healing process (blood supply is redirected, native antioxidants empowered and increased, DNA repair elicited, immune response initiated, inflammation, cell communication enhanced, regeneration efforts started, etc.).

Platelets involved in wound repair release ROS molecules to call additional platelets and leukocytes to the injury.

The healing process is a well orchestrated effort to either repair the damaged cells or cause the un-repairable cells to die and be replaced by healthy ones, thus restoring healthy cells and tissue. Increasing the amount of balanced Redox Signaling carriers in your cells and tissues simply helps to make this whole orchestrated effort much more efficient. They "grease the wheels," so to speak, making it more likely that cells are repaired and replaced much more efficiently. Healthy cells are more likely to be able to defend themselves; the immune system is more likely to respond correctly, and inter-cellular communication channels are more likely to be clearer and more efficient.

The concept is elegant. These Redox Signaling carriers do not force the system to act or react differently than it already does. They simply clarify the signals that help the immune response and healing process proceed as it should, and do so much more efficiently.

Anti-aging Benefits

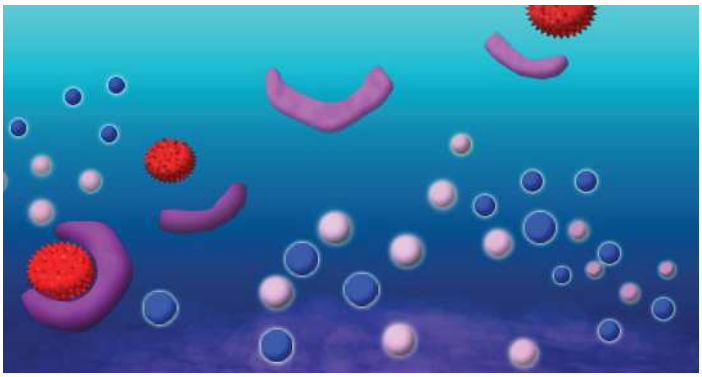
As we age, the healing process becomes less efficient. Cells and tissues that are damaged are not repaired or replaced as efficiently. Gradually these damaged or inefficient cells divide and proliferate, taking over the healthy "young" tissue and causing the downward spiral that leads to aging and death. The cells and tissues are simply not as good as they used to be at doing their job.

By Increasing the balanced mixture of Redox Signaling messengers that are already in the body, this has the effect of making the defend-repair-replace mechanisms in the cells and tissues much more efficient. Damaged cells are more likely to repair themselves or die and be replaced by healthy neighboring cells; healthy cells are more likely to be able to defend themselves against infections, toxins, stresses, etc. In essence, cells and tissues are more likely to stay young and healthy.

Powers up Cell Antioxidant Shields

Certain Redox Signaling molecules are used to recharge and activate the native antioxidants that protect healthy cells from oxidative stress and free radical damage. Your cells are already full of these native antioxidants. They are placed as barriers to protect the more sensitive parts of the cells, such as the DNA in the nucleus. Every microsecond, trillions and trillions of these antioxidants in every cell are doing their job to protect every cell from oxidants. Oxidants are also natively produced as part of the normal metabolism of sugars that provides our cells with energy. As long as the mixture of Redox Signaling molecules is balanced, the antioxidants in the cells and tissues are easily able to defend themselves against such oxidants.

Increasing the amount of balanced Redox Signaling molecules in the cells and tissues helps recharge and activate the native antioxidants that are already in the cells, making them much more efficient. This enhances the natural protection mechanisms of the cell, naturally powering up the antioxidant shields that are already in place, making the healthy cells and tissues better able to defend themselves.

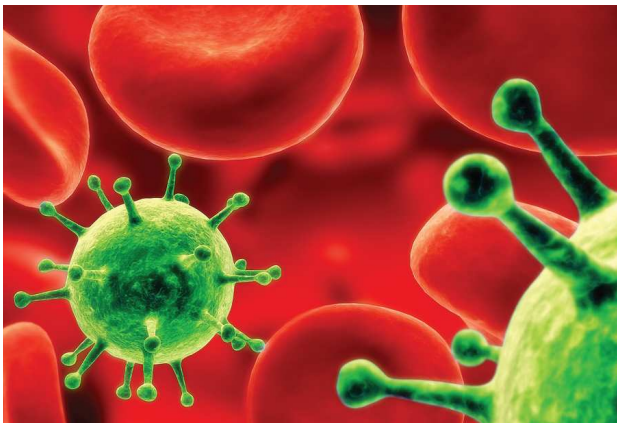


As long as there is a balance of ROS molecules (Pink) and RS molecule (Blue), the anitoxidants (purple) can do their job neutralizing oxidants (orange) that might destroy or damage sensitive cell tissue.

Tunes Up Cell Communication Channels

Every cell in the body MUST be able to communicate with its neighboring cells in order to function correctly. Communication channels exist that allow messengers to run back and forth between cells. These messengers actually program the DNA in the cells to act as it should. The discovery of stem cells (that are programmed to act as heart cells or brain cells or whatever tissue they stick to) emphasizes how important these communication channels are. Redox Signaling carriers help move these messengers from cell to cell as well as sending the signals inside and between cells.

An increase in the amount of balanced Redox Signaling molecules makes the cell's communication channels more efficient. This is especially important when the tissues must respond to a stressor or invader. Quick and accurate response is important. Efficient communication channels make it more likely that the cells and immune systems will respond as nature intended.



Communication signals help the immune system determine when, where and what to attack.

Optimizes Correct Immune System Function

In order for the immune system to function as it should, a myriad of communication signals need to be carried between cells. These signals detect damage, control blood flow and control inflammation. They also activate the immune system response and help determine when, where and what the immune cells attack (and what they do not attack). The immune response is a coordinated effort that depends heavily on Redox Signaling and other types of signaling.

Increasing the amount of balanced Redox Signaling molecules helps make the signaling processes between cells more efficient. With clearer signals, the immune system will be more likely to detect and attack threats that it should engage and less likely to attack healthy cells that it should not engage. This action tends to normalize the immune system function. If overactive, it will help decrease its activity; if underactive, it will help increase its activity. In short, the immune system will tend to operate more efficiently.

Enhances Aerobic Performance

As the energy requirements of the cells and tissues increase during aerobic activity, oxygen and sugars in the blood must be able to be transferred from the lungs and energy stores into the muscle cells and tissues. Waste products like CO2 and excess lactates must be transferred out of the cells and tissues and back into the blood and out of the body. The efficiency at which the cells can move oxygen fuel and waste products back and forth through the blood and cellular membranes determines how long the body can sustain aerobic activity.

A balanced Redox Potential in the tissues makes the aerobic processes more efficient.

When the oxygen and energy demands of the muscle tissues exceed the ability of the body to maintain adequate delivery, the muscle cells and tissues start to burn internal energy stores anaerobically (without the use of oxygen). Athletes often refer to this threshold as “hitting the wall.” Waste products (CO2 and lactates) start to build up and further interfere with the aerobic processes. When the internal energy stores of the muscle cells are exhausted, no more energy can be provided and muscle activity ceases completely.

Increasing the amount of balanced Redox Signaling molecules in the body helps normalize the Redox potential in and around the cells and tissues. A balanced Redox potential in the tissues increases the efficiency at which oxygen, fuels and wastes can be transferred in and out of cells and tissues, making the natural aerobic processes more efficient. If aerobic capacities are increased, then the natural length of time that aerobic activity can be sustained under high energy demands is also increased. The time that it takes to recover normal aerobic balance after an intense anaerobic effort is also shortened.

Conclusion

The relatively recent discovery of how Redox Signalling molecules work in the body is indeed exciting news. It opens a whole new world of possibilities for improving health, longevity, and vitality because of the ability to supplement our bodies' natural production of these molecules. Now that we know how important it is to maintain a healthy, balanced level of these essential molecules in our bodies (particularly as we age), we can take action to ensure that our immune system is working at its peak efficiency and that our bodies are functioning their very best on a cellular and molecular level.

Where can you get Redox Signaling molecules?

The only available source for stable Redox Signaling molecules outside the body is a product called ASEA. Through research and development over a period of 16 years, ASEA has developed a process for producing a set of Redox Signaling molecules that are perfectly balanced to supplement your body's natural production. This product is only sold through private distributors such as Aging with Vitality and many others.

Can ASEA Help You?
Call Fiona Fry at Aging with Vitality
for More Information Today:
302-658-7914

Source Material for this report:

1. "What are Redox Signaling molecules?" by Dr. Gary Samuelson, Ph.D. in Atomic/Medical Physics; http://www.askdrgary.com
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