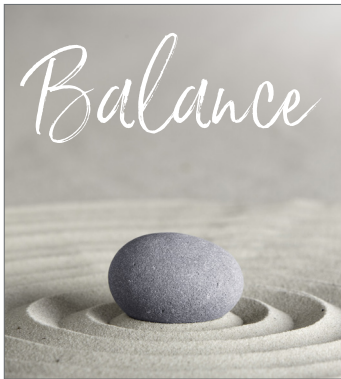




REDOX Modulating Influences on Nutrition:



The presence of a balanced REDOX potential (see definition below) in our cells as humans has profound influence on the absorption, assimilation, and utilization of nutritional elements in our bodies. It is so powerful that the lack of REDOX potential can lead to significant deficiencies in people, eventually causing sickness.

THE DEFINITION OF REDOX POTENTIAL

is characterized as the proper balance of internal tiny REDOX molecules, which provide a proper electrical cellular charge, chemical resources to potentiate chemical reactions, and messenger molecules for communications in and between cells.

I would like to introduce a series of papers that will address the REDOX nutrition interface, according to the nutritional elements identified below.

Macronutrients:

- Fats
- Proteins
- Carbohydrates

Micronutrients:

- Fat Soluble Vitamins
- Water Soluble Vitamins
- Minerals
- Trace Minerals
- Phyto-elements (Plant Components)
- Amino Acids

THE INTERFACE:

One basic question that can be considered as we contemplate the "REDOX potential/nutrition connection" is as follows ... What is the interface and how does REDOX balance affect nutrition?

We know that there is a cellular component to this topic. Healthy gut cells assimilate nutrients and minerals more efficiently than a gut riddled with dysbiosis. Endothelial cells that line our intestines have specific jobs. If they are half sick, and their REDOX potential is minimized, then assimilation of various nutrients will be reduced.

Going deeper, we also know that cellular machinery, like the cell membrane, actually have tiny doorways called nutrient transport systems, that open and shut to allow in nutrients. The cell lysosomes break down nutrients for proper distribution to the various parts of the cell. In order for these cellular parts to operate efficiently they, too, must have a proper REDOX potential.

In today's world, vitamin absorption is a real difficulty. Specifically, Vitamin B12 deficiency results in severe oxidative stress and can lead to memory retention deficits. Historically, pernicious anemia (severe Vitamin B-12 deficiency resulting in profound anemia) was a terrible disease

resulting in thousands of deaths annually in the US. This condition left many with the inability to manufacture proper red blood cells and death would eventually occur. The discovery of Vitamin B12 changed lives in the early 1900's. And in time, it was discovered that the proper assimilation of Vitamin B12 was connected to our stomach's lack of production of a co-factor in assimilation called intrinsic factor. Stomach cells lacking the ability to make this co-factor are normally imbalanced and have a poor REDOX potential.

Recently, it was discovered that when there is a lack of Vitamin B12 in a species of worms (*Caenorhabditis elegans*) there are always reductions in Glutathione, L-ascorbic acid levels and antioxidant enzyme activities. This indicates that a Vitamin B12 deficiency induces severe oxidative stress leading to oxidative damage of various cellular components. In humans, it has long been standard practice to check Vitamin B12 levels in people being evaluated for cognitive impairment (dementia) as a normal part of a medical work up.

The cellular micro-machinery in the stomach lining cells requires a healthy REDOX potential, not a toxic bath of oxidative stress, in order to operate. Therefore, eating or taking Vitamin B12 is not going to help in these cases. Today, in my medical practice in Utah, I find grade-school-age children lacking proper Vitamin B12 levels. They often are taking a regular source of vitamins, but they lack the REDOX balance in their cells to make use of the vitamins. Restoring our REDOX potential and providing the right amounts of absorbable Vitamin B12 is actually the ONLY way to create balance in our nutritional health.

This interface is also found with the deficiency of Selenium and Zinc in humans. These are REDOX modulatory minerals. This means that they directly impact our capacity to maintain, at a cellular level, a balanced REDOX potential.



They help cells keep a balance of "oxidants and reductants", which are positively and negatively charged tiny molecules in our cellular fluids. A British study from 2011 showed that there was a predictive understanding found that mortality rates in adults over 65 were significantly increased when there was a deficiency of Zinc and Selenium, and others. These minerals are now seen as critical in helping cells maintain a balanced REDOX potential.

In conclusion, if we want to absorb and assimilate vitamins and minerals like Vitamin B12, Zinc and Selenium, we must attend to our cellular needs in achieving a balanced REDOX potential. Activating this potential is best accomplished with a regular intake of an outside resource of REDOX molecules orally, as well as organic whole food sourced vitamin and mineral supplements. Combined with a diet designed to optimize balanced gut micro-bacteria, one will create the conditions for vibrant health. ■

References:

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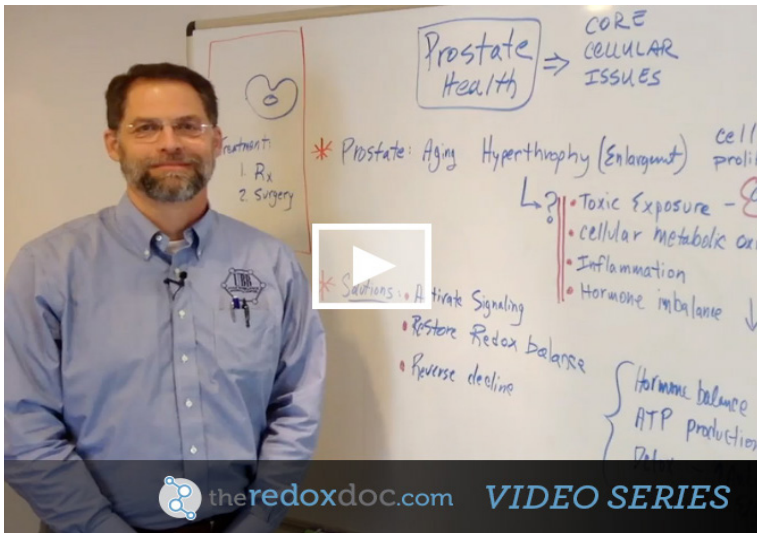
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For more details and videos on the emerging science of REDOX signaling, and how it affects our health, visit www.theredoxdoc.com.

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