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**Optimal Wellness Test /Water Product Trials**

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Water is the most abundant component of the body and maintaining a proper level in the body is a key factor in health. Water composes 75 percent of all muscle tissue and 25 percent of fatty tissue and acts within each cell to transport nutrients and dispel waste. Nearly all of the biochemical reactions that occur in body cells depend on water and normal metabolic activity can only occur when cells are at least 65% water.

Water regulates the body's temperature, cushions and protects vital organs, aids the digestive system and is a powerful cleanser - many toxins are flushed from the body in urine. It is impossible to sustain life for more than a week without water. Water is vital to maintaining life but is also critical for physical and mental performance.

Some drinks such as coffee, beer and sodas can actually *increase* the body's need for hydration because they can have a diuretic effect. When the body becomes dehydrated, the brain does not work properly-creating a groggy feeling, there is muscle tone loss, loss of coordination, kidneys do not function-causing toxic build up in the body, there can be constipation, fats stored in the body are not metabolized, constant hunger, dry, itchy and saggy skin and there is trouble regulating body temperature. Dehydration is a factor in many disease states and therefore, proper hydration is essential for optimal health.

Numerous studies have shown that increased hydration may result in improved general wellness and wellbeing, enhanced immune system function, improved utilization of nutrients, increased oxygenation (which leads to better memory, increased endurance and faster recovery from physical activity), reduced hypertension, improved detoxification of tissue and organs and faster recovery from surgery and illness (including colds).

Water is the most important nutrient because it is responsible for so many functions and for the activation of cellular functions by other nutrients. When nutrients have reached the cells, water is necessary for the cells to function, maintain (catabolic phase) and build and repair (anabolic) phase. These two phases of cellular function are closely related to the cellular water flow or lack of its flow.

There are two types of water in the body, intra-cellular and extra-cellular. Extra-cellular is the fluid outside an individual cell while intra-cellular is the fluid found inside the cell. Both of these types of water are necessary for optimal health or wellness of every cell in the body. In order for the cells to be biologically active they must absorb water.

When the cells over hydrate it triggers an anabolic phase, one of the healing mechanisms in the body. The anabolic phase is triggered by a positive hydrogen balance, protein

synthesis, or growth hormone. When cells dehydrate, they put into motion the catabolic phase that can lead to inflammation and premature aging.

Typically, as aging occurs, cells lose their natural ability to expand and start to shrink, in part due to the loss of intra-cellular water as well as the loss of cellular **zeta potential**. Zeta potential is a basic law of nature and without it, life could not exist. Zeta potential is the key to understanding dispersion and aggregation processes. When tiny mineral or organic particles are suspended in a fluid, zeta potential maintains the dispersion or discreteness of the particles in suspension. Zeta potential in the body as a fluid system is an indication of how nutrients move into and toxins are moved out of cells.

Another benefit of increased zeta potential is in the blood. The high zeta potential or negative electrical charge on particles entering the bloodstream may help to increase the dispersion or discreteness of blood cells by helping to enhance the electrical charge on blood colloids which include blood cells. When blood cells are free flowing, they expose maximum surface area to the blood and are therefore able to hold and transport more oxygen and other nutrients throughout the body.

During the past 20 years, many tests have been developed to assess hydration levels in humans these include, changes in body weight, blood and urine parameters, bioelectrical impedance (BIA - which involves measurement of impedance at a single frequency) skinfold thickness, heart rate and blood pressure changes.

Changes in body weight, plasma osmolality, urine osmolality, color and specific gravity are widely used markers of hydration. Some other methods of measuring hydration levels involve the dilution of tracer substances in the subject's body. Many of these methods are invasive, and most are time-consuming (a typical measurement takes between 1 and 6 hours), and cannot be repeated until the diluted tracer substances leave the body.

Bioelectrical impedance analysis has found extensive application as a simple noninvasive method for the assessment of body fluid volumes. It proposes to measure fat-free mass, total body water, percent fat, body cell mass, intracellular water, and extracellular water. It is unlikely, however, that BIA is quite as versatile as its claims and it is difficult to determine whether BIA is specific for any or all of these compartments. Whereas BIA has potential as a quick, inexpensive, and quantitative technique to directly measure fluid gain or loss, BIA generally lacks the precision and accuracy necessary for hydration monitoring (a significant error may occur in the measurement of body composition from whole body BIA.) It has not found universal acceptance even with the introduction of multi-frequency BIA which, potentially, may improve the predictive accuracy of the measurement and there are a number of reasons for this.

Perhaps the major reason is that no single algorithm has been developed which can be applied to all subject groups, in addition, the measured impedance is not only related to the volume of fluid but also to its inherent resistivity. The primary determinant of the resistivities of body fluids is the concentration of ions, which may be variable. Actually

the BIA manufacturing companies report that BIA cannot be used as a standard to measure intra-cellular or extra-cellular hydration because of their inaccuracy. As for the other tests, body mass change, blood and urinalysis have been shown to be a valid and reliable method for determining moderate changes in fluid balance, but they do not give an indication of intracellular or extracellular hydration. Blood tests are also impractical because of cost and invasiveness. These tests can only provide a very limited look at the cellular properties of cells, cellular activity, toxic build-up, nutrient utilization and absorption rates.

Optimal Wellness Labs developed the Fenestra Analyzer after years of research into the fields of Bioelectric Impedance (an FDA approved system), Microscopy cellular analysis, Bio-Terrain Analysis, Dr. Carry Reams system called REAMS testing, symptomology, medical diagnosis, and intake questionnaires. Each one of these systems have several areas where they overlap or provide validation for the others as well as providing invaluable science.

Optimal Wellness Labs has developed a mathematically based, analytical test for measuring and monitoring health following consumption of a product. The measurement of resistivity, conductivity, surface tension, specific gravity by Optimal Wellness Labs and the calculation for zeta potential and anabolic-catabolic balance provide us with a look at the ability of the nutrients to flow into the cell and the toxins and waste to flow out of the cell. This look at the flow of intra-cellular and extra-cellular water is the key to understanding cellular hydration.

**Optimal Wellness Lab's assessment of hydration is the most advanced and accurate to date. The evaluation of the intra-cellular hydration measurement is a standard measurement and accepted by the natural products and the water industries.**

The results obtained by Optimal Wellness Lab show an increase in hydration by Product (1) water of 24.5% in subjects overall with the group drinking the Product (1) and increased 05.3% in the group overall drinking Water Product (2). The increase in hydration is scientifically significant. In order to demonstrate scientific significance, a difference of 10% is necessary. Since the difference was 24.5%, this is a substantial increase in hydration, especially when compared to Product 2 (only a 5.3% increase), which is a high quality drinking water. Since hydration is the end result of drinking water, Water Product (1) dramatically improves hydration, which is a major health benefit.

The only other parameter measured in which the Water Product (1) differed from Water Product (2) conductivity (6% increase vs. 0% Water Product 2). Conductivity gives an indication of how well cells are communicating with each other, so an improvement in this measure is likely related to hydration and is certainly beneficial to health.

In conclusion, the Optimal Wellness Labs test for hydration is an accurate and reliable test for measures of hydration that are related to physiological function. The study was well designed, with appropriate inclusion and exclusion criteria and protocol. The results

of the study demonstrated a dramatic increase in hydration in Water Product (1) VS Water Product (2) that indicates its usefulness in maintaining health.