Extract from “Aqua Hydration Technology - Validation Study Report”

Introduction

Water is the solvent for every biochemical process in the body. Water has been termed the “most important nutrient” and the intracellular water fraction has been shown to be the most potent activator of, for example hepatic protein turnover in cultured liver cells. Several investigators have suggested that water may be viewed as a hormone because of this critical regulatory function. The essential energy producing biochemistry of the mitochondria depends on proper water fluxes, both for transport of low energy species into, and high-energy species out of, the mitochondria, and for the actual chemical reactions that take place. It has been suggested that mitochondrial insufficiency is the root cause of many “modern” diseases such as chronic fatigue and immune dysfunction.

The Aqua Hydration Technology™ promotes cellular uptake of water and so ensures that the cellular biochemistry is well supplied with this critical component. The Aqua Hydration Technology™ also increases cellular water fluxes ensuring that required cellular nutrients can enter the cell unimpeded and metabolic waste products can easily leave the cell. By promoting water fluxes, and consequently the movement of nutrients, intracellular kinetics are accelerated and cells function to optimal capacity. Optimal cell function leads to enhanced tissue function and improved organ reserve. Organ reserve is the most accurate single indicator of wellness.

Physiology

There are two critical issues in hydration physiology. The first is the mass transport of water from the gut following ingestion, through the gastric and intestinal mucosa into the circulatory system and then from the circulation, either via the interstitial space or directly into cells. This process requires the passive or active transport of water through up to a dozen membranes and each of these processes are under complex metabolic and cell physiological control. The availability of water for this complex cascade depends on the second process that is ingestion of water in response to the thirst reflex. This complex reflex is mediated by central nervous system receptors activating brain centres, which convey the sensation of thirst. Assuming hydrating liquids are available, drinking results.

The Aqua Hydration Technology™ acts on both processes. It resets the thirst reflex, which is often depressed or absent in adults because of many years of inappropriate responses to thirst reflex

activation such as drinking non-hydrating liquids or eating food. It also acts on the uptake mechanism to upgrade transport of water across the many membranes resulting in enhanced water fluxes both into and out of cells. The impact of this on metabolism is that increased quantities of nutrients can enter cells and, just as importantly, clearance of waste products is enhanced. The overall effect is an enhancement of cellular function (in particular, throughout the central nervous system and the immune system) leading to enhanced organ reserves and increased wellness.

Validation

The Aqua Hydration Technology™ has been developed and validated in-house using a proprietary biofeedback technique through which we are able to measure biochemical, physiological and behavioural responses to formulations. This technique is a refinement of a kinesiological technique described by Valentine and Valentine (ref 1).

In order to develop the Aqua Hydration Technology™ the effect of the various combinations of herbals extracts and the effect of the resultant hydration composition on several parameters were measured by the kinesiological biofeedback technique as described by Valentine and Valentine (ref 1) and modified by Hibbert and Boublik (ref 2). The samples were tested in a single blind, surrogate test experimental model on multiple subjects. The biceps muscle was used as the indicator with the test subject in a reclined position. A linear score (range 0-10) was used and final scores determined by iteration. Data represent means ± se of n subjects.

1. Synergism of the Herbal Extracts in Aqua Hydration Technology™

Following the initial identification of the candidate herbs we conducted a study to determine the synergism between the three herbal extracts. 1:1 extracts were studied but 1:2 and 1:5 extracts have also been shown to display this synergism.

The three herbal extracts were tested using our biofeedback methodology in six subjects. The first three bars in figure 1 shows that the mean effect of the individual herbs on the “hydration score” in these subjects was 2.5 ± 0.8 units for each of the three herbs. This is essentially a null result within the testing methodology suggesting that there was no effect on baseline hydration with individual herbs. The next three bars in figure 1 shows that the mean effect of the three possible pairs of herbs (mixed in equal proportions) on the “hydration score” in these subjects was 2.7-2.8 ± 1.2 units for each of the three herbs. This again shows that the pairs of herbs give a null result within the testing methodology

suggesting that there was no effect on baseline hydration with pairs of herbs. The last bar of figure 1 shows that the mean effect of the combination of three herbs on the "hydration score" in these subjects was 6.7 ± 0.5 units for the combination (mixed in proportions that are proprietary information). This represents a 3-fold increase in "hydration score" which equates to a 200% increase in the hydration of these individuals. This finding demonstrates the synergism between the herbal extracts.

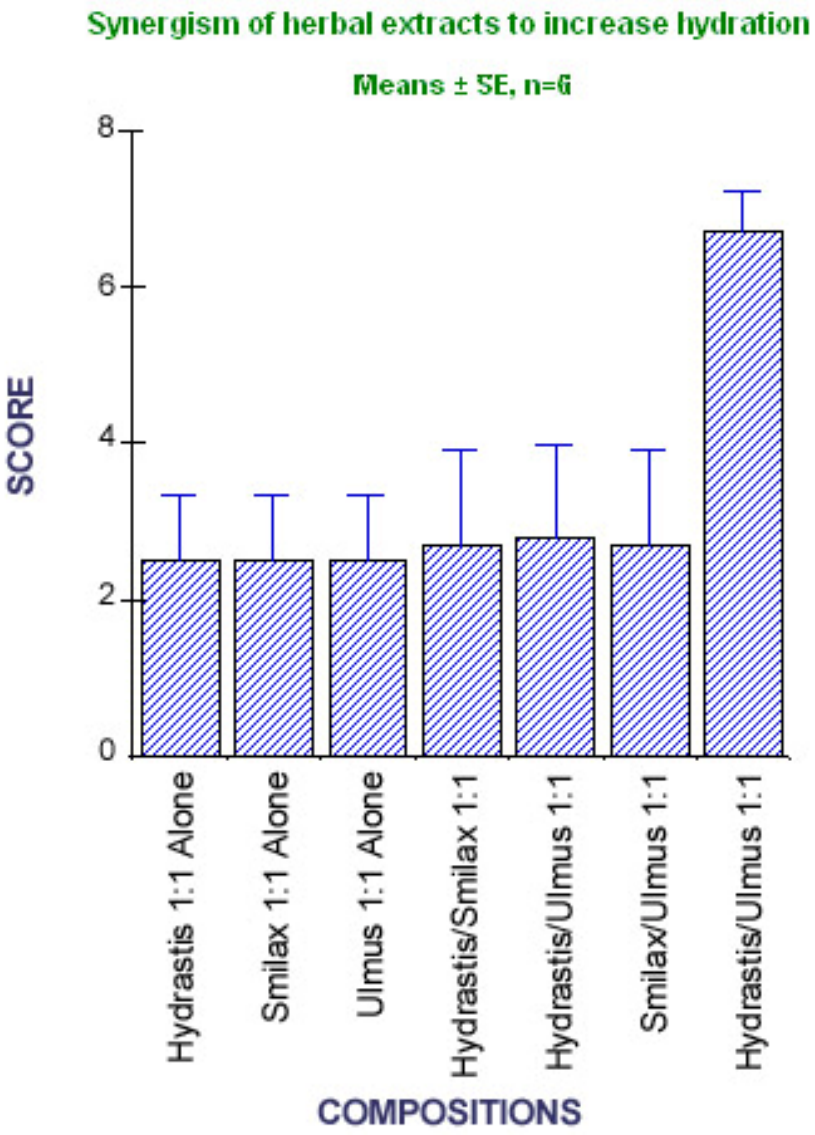

Figure 1

2. Changes in biochemical, physiological and behavioural parameters in response to the Aqua Hydration Technology™

In order to elucidate the mechanism of action of the Aqua Hydration Technology™ we studied the effect of the technology on a variety of parameters in sixteen subjects. In these studies The Aqua Hydration Formulas, a formulation in which homoeopathic dilutions of the three herbs are used together with other ingredients, were used.

The data shown gives “before” and “after” mean scores (± SE) for sixteen subjects. The first group of bars show the effect on “hydration score” for the hydration of whole body, brain, muscle, skin and gut. In all cases there was a 3-fold increase in hydration score suggesting that the effect of the technology is systemic. The second group of bars show the effect on “water flux score” between various body compartments. This is a measure of the rate of movement between the compartments and show that transport of water from gut into circulation (circ.), circulation into extracellular fluid (ECF), extracellular fluid to intracellular fluid (ICF) and the reverse transport to end in excretion (excr.) are all increased 2- to 3-fold by the action of the technology.

The third group of bars show the effects of the technology on “Aquaporins” – water channel molecules known to exist in cell membranes and which exert control over water fluxes in many tissues. The observed increase in the water fluxes seen previously between extracellular and intracellular fluid may be explained by changes in any or all of the following: increases in the number of functional Aquaporins in a population, an increase in the net rate of flux for a population of Aquaporins, an increase in the number of Aquaporin molecules per cell or an increase in the rate of synthesis of new Aquaporins in response to the technology. The data show that to different extents all of these effects are seen with the greatest effect being a 10-fold increase in the number of Aquaporin molecules per cell. Last we measured the effect of the technology on the behavioural reflex arc that controls thirst. In these subjects the technology increased thirst reflex arc activation almost 4-fold. Note that because of the higher level control on the behavioural response to this activation this may not necessarily equate to a 4-fold increase in water-seeking behaviour but the data are consistent with increased thirst in these subjects.

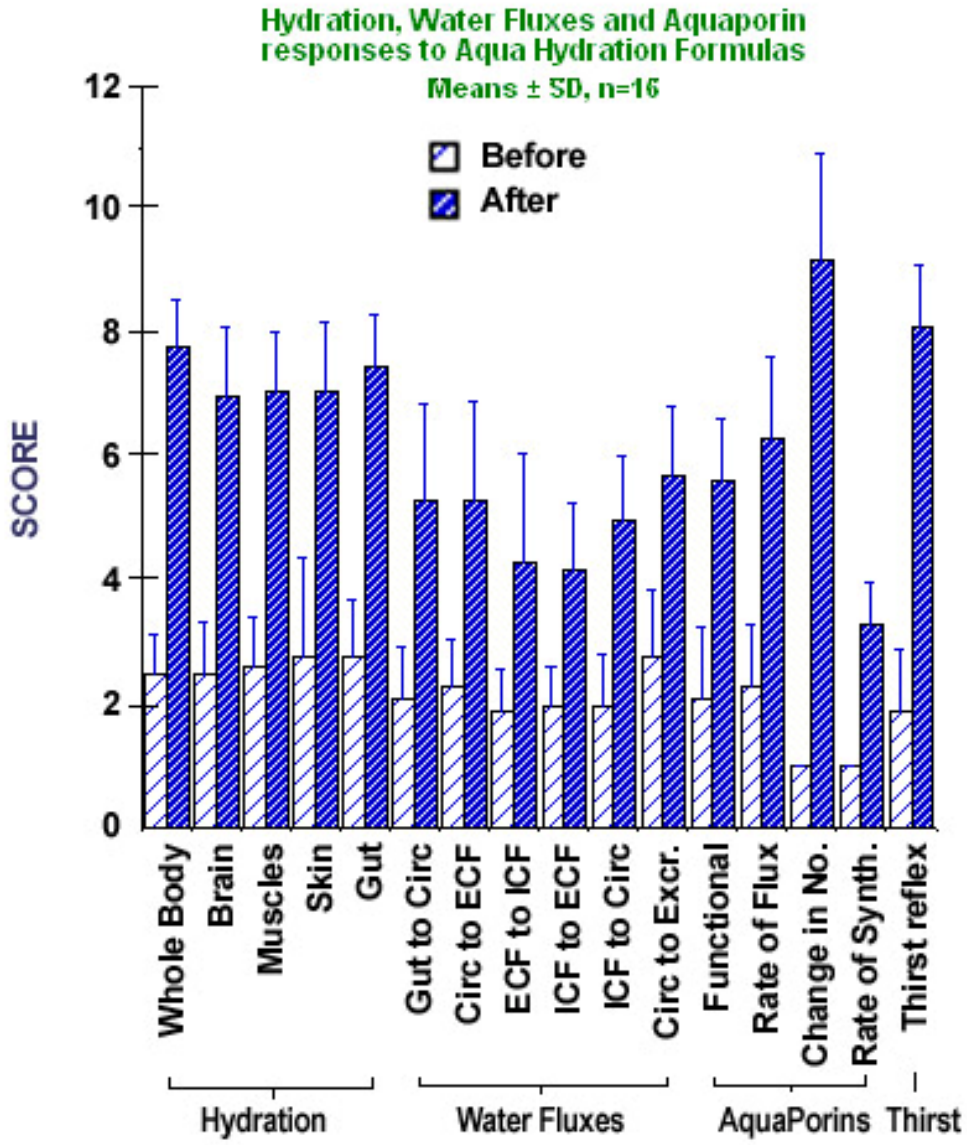

Figure 2

References:
1. Valentine T. & Valentine C. Applied Kinesiology : Muscle Response in Diagnosis, Therapy and Preventive Medicine; Pub: American International Distribution Corporation; ISBN: 0892813288
2. Hibbert L. & Boublik, J. AquaConneXions Operating Manual - Unpublished.