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Bio Impedance Analysis to Determine the Extracellular/Intracellular Water Exchange of MRET Activated Water Compared to Control Water

© By Dr. Howard W. Fisher, Dr. Colombe Gauvin, Prof. Dr. Karl J. Neeser, Dr. Igor V. Smirnov

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BIOIMPEDANCE ANALYSIS TO DETERMINE THE EXTRACELLULAR/INTRACELLULAR WATER EXCHANGE OF MRET ACTIVATED WATER COMPARED TO CONTROL WATER

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Abstract

A double blind study was conducted using bio-impedance analysis (BIA) Evaluation to determine if there was any change to intracellular water (ICW) status caused by the ingestion of 0.5 litres of water when compared to the ingestion of 0.5 litres of the same source water that had been activated by the MRET polymer magnetic field configuration for thirty minutes. Cellular hydration is indicated by intracellular water content and is a vital factor for optimizing physiological function.[1] Decreased hydration occurs in aging and disease and diseased elderly persons display reduced ICW and expanded ECW.[2,3,4] The reduced ICW ratio has also been found to correlate to cell death, apoptosis and systemic tissue damage in a dehydrated aging population.[5] Recent evidence suggests that the cellular hydration state is an important determinant of cell function and effect hormones, oxidative stress, nutrition and metabolism.[6,7]

ICW can be accurately measured by a simple non-invasive form of testing called bio-impedance analysis. Devices using single and multi-frequency bio-impedance analysis (BIA) to evaluate body water compartments, body composition, and nutritional status have been developed.[8,9,10,11,12,13]

A Russian-American scientist has developed a patented system, Molecular Resonance Effect Technology (MRET), for the alteration of the molecular organization state of water and other liquid substances using a controlled magnetic field.[14,15] This finding is not uncommon since weak magnetic fields have demonstrated the ability to change the properties of water.[16] These structural alterations to the water molecule caused by the MRET activation, can be demonstrated to ameliorate physiological and biochemical processes and positively influence cellular bio-structures.[17] The process of activation alters the configuration of the water molecules into a linear

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[1] Häussinger D. The role of cellular hydration in the regulation of cell function. *Biochem J.* 1996; 313:p.607-710. [2] Ritz P. Chronic Cellular Dehydration in the Aged Patient. *J Gerontol A Biol Sci Med Sci.* 2001; 56(6):p.M349-M352. [3] McManus M L, Churchwell K B, Strange K. Regulation of Cell Volume in Health and Disease. *N Engl J Med.* 1995;333(19):p.1260-1266. [4] McManus M L, Churchwell K B. Clinical significance of cellular osmoregulation. In: *Cellular and Molecular Physiology of Cell Volume Regulation*, Strange K editor. Boca Raton, FL: CRC. 1993;p.63-67. [5] Yong H J, Chung H N, Jong W C. Associations between body hydration status and serum markers for apoptosis in elderly persons. *Annals of Clinical & Laboratory Science.* 2008;p 38:88-91. [6] Häussinger D. The role of cellular hydration in the regulation of cell function. *Biochem J.* 1996; 313:p.607-710. [7] Häussinger D, Lang F Gerok W. Regulation of cell function by the cellular hydration state. *Am J Physiol.* 1994;Sep:267(3 Pt 1):pE343-355. [8] Chiu J S, Chong C F, Lin Y F, Wu C C, Wang Y F, Li Y C. Applying an artificial neural network to predict total body water in hemodialysis patients. *Am J Nephrol.* 2005; Sept-Oct:25(5):p507-513. [9] Donadio C, Consani C, Ardini M, Bernabini G, Caprio F, Grassi G, Lucchesi A, Nerucci B. Estimate of body water compartments and of body composition in maintenance hemodialysis patients: comparison of single and multifrequency bioimpedance analysis. *J Ren Nutr.* 2005; Jul:15(3):p.332-344. [10] Mohamed E I, Maiolo C, Linder R, Pöppl S J, De Lorenzo A. Predicting the intracellular water compartment using artificial neural network analysis. *Acta Diabetol.* 2003; Oct: 40: Suppl 1: S15-18. [11] Donadio C, Halim A B, Caprio F, Grassi G, Khedr B, Mazzantini M. Single- and multi-frequency bioelectrical impedance analyses to analyse body composition in maintenance haemodialysis patients: comparison with dual-energy x-ray absorptiometry. *Physiol Meas.* 2008; Jun:29(6):S517-524. [12] Powers J S, Choi L, Bitting R, Gupta N, Buchowski M. Rapid Measurement of Total Body Water to Facilitate Clinical Decision Making in Hospitalized Elderly Patients. *J Gerontol A Biol Sci Med Sci.* 2009; Jun;64(6):p.664-669. [13] Sun S S, Chumlea W C, Heymsfield S B, Lukaski H C, Schoeller D, Friedl K, Kuczmarski R J, Flegal K M, Johnson C L, Hubbard V S. Development of bioelectrical impedance analysis prediction equations for body composition with the use of a multicomponent model for use in epidemiologic surveys. *Am J Clin Nutr.* 2003; 77:p.331–340. [14] Fisher H W, Smirnov I V. Molecular Resonance Effect Technology: *The Dynamic Effects on Human Physiology.* Brittannia Press. Toronto. 2008;p.8. [15] Smirnov IV. The Anomalous Electrodynamic Characteristics and Polarized-Oriented Multilayer Molecular Structure of MRET-Activated Water. *Intl J Nanoscience.* 2008; Vol.7, (4 and 5): p.1-5. [16] Semikhina L P, Kiselev V F. Effect of weak magnetic fields on the properties of water and ice. *Russian Physics Journal.* 1988;(31)5:p.351-354. [17] Vysotskii V I, Smirnov I V, Komilova A A. *Introduction to the Biophysics of Activated Water.* Universal Publishers. Boca Raton, FLA. 2005.

stratified pattern and strengthens the hydrogen-bonding patterns. As a result, the molecular organizational state of the water is changed.[18,19]

Two samples of water, marked Sample A and Sample B were tested. The actual content of the sample bottles were unknown to both the Lab Technician and the subject. Subjects were allowed to select either sample. Each subject ingested 0.5 litres of the water sample for each phase of the experiment. The Maltron BioScan 920-II Bio Impedance Device was used in real time mode to measure the speed of change between ECW and ICW. The Biomarkers for ICW were taken at the onset and evaluated every twenty (20) minutes. Sample A showed no change in the ICW after forty (40) minutes. Sample B (MRET activated water) showed a 3.1% increase in ICW after twenty (20) minutes and a 4.2% increase in ICW after forty (40) minutes based on the biomarker changes.

The MRET activated water demonstrated a significantly increased ability to enhance intracellular water (ICW) volume and hydrate cells when compared to non-activated water which showed a negligible ability to hydrate cells over a forty minute period.

Key Words: Bio-Impedance Analysis, Hydration, Intracellular water (ICW), Extracellular water (ECW), Molecular Resonance Effect Technology (MRET), Total body water, hydration

Introduction

Decreased hydration occurs in aging and disease and diseased elderly persons display reduced intracellular water (ICW) and increased extracellular water (ECW).[20] "In males a modest to large decrease in intracellular water was noted in elderly subjects, whereas extracellular water was either slightly smaller, or slightly larger. In females, intracellular water was found to be considerably smaller in elderly subjects whereas extracellular water did not differ. The results of these studies indicate that the changes in total body water with age are mostly due to changes in the volume of intracellular water."[21]

According to a number of sources, the total water content in the average male varies between fifty-seven and sixty percent (57-60%) of body weight, ranging from approximately seventy-five percent (75%) in a neonate)[22,23,24] and decreasing progressively through aging and disorders such as obesity.[25,26] Aging has been defined as the progressive decrease of intracellular water leading to the progressive decrease of cellular, tissue and organ functions. The maintenance of a constant volume (hydration status) in the face of ECW and ICW is a critical problem faced by all cells.[27,28] Although mechanisms are in place to buffer dramatic cellular hydration changes, the volume deviation acts to initiate modifications of cellular function.[29] Total body water (TBW), a basic component of body composition, is influenced by many physiological and patho-physiological states and is the combination of both ECW and ICW in the ratio of 20% to 40% of total body weight respectively.[30] Knowledge of a patient's TBW may be extremely important to proper disease diagnosis and therapeutic regimens.[31,32]

Most cells respond to dehydration by activating specific metabolic or membrane-transport processes to optimize the water ratio, processes that are essential for the normal function and survival of cells. Normal and disrupted cellular hydration underlies many disease states and their complications. ECW is consistently higher in aged patients than in healthy elderly participants. There are pathophysiological consequences that occur when cellular hydration levels cause aberrant changes to cellular function.[33,34]

Devices using single and multi-frequency bioimpedance analysis (BIA) to accurately predict body water compartments, body composition, and nutritional status have been developed.[35,36,37,38,39] The comparison between BIA and dual energy x-ray absorptiometry, the accepted

[18] Vysotskii V I, Kornilova A A, Smirnov I V. *Applied Biophysics of Activated Water: The Physical Properties, Biological Effects and Medical Applications of MRET Activated Water.* World Scientific Publishers. Singapore. 2009. [19] Vysotskii V I, Smirnov I V, Komilova A A. *Introduction to the Biophysics of Activated Water.* Universal Publishers. Boca Raton, FLA. 2005. [20] Ritz P. Chronic Cellular Dehydration in the Aged Patient. *J Gerontol A Biol Sci Med Sci.* 2001; 56(6):p.M349-M352. [21] Schoeller D A. Changes in total body water with Age. *Am J Clin Nutr.* 1989;50:p.1176-1181. [22] Schoeller DA, van Santen E, Peterson DW, Dietz W, Jaspan J, Klein PD. Total body water measurement in humans with 18O and 2H labeled water. *Am J Clin Nutr.* 1980;33:p.2686–2693. [23] Watson P E, Watson I D, Batt R D. Total body water volume for adult males and females estimated from simple anthropometric measurements. *Am J Clin Nutr.* 1980;33:p.27–39. [24] Van Loan M D, Withers P, Matthie J, Mayclin P L. Use of bioelectrical impedance spectroscopy to determine extracellular fluid, intracellular fluid, total body water, and fat-free mass. *Basic Life Sci* 1993;60:p.67–70. [25] Guyton, A C. *Textbook of Medical Physiology* (5th ed.). Philadelphia: W.B. Saunders. 1976;p. 424. [26] Bedogni G, Borghi A, Battistini N. Body water distribution and disease. *Acta Diabetologica.* 2003;40(S1):s200-s202. [27] McManus M L, Churchwell K B, Strange K. Regulation of Cell Volume in Health and Disease. *N Engl J Med.* 1995;333(19):p.1260-1266. [28] McManus M L, Churchwell K B. Clinical significance of cellular osmoregulation. In: *Cellular and Molecular Physiology of Cell Volume Regulation*, Strange K editor. Boca Raton, FL: CRC, 1994; p.63–77. [29] Häussinger D. The role of cellular hydration in the regulation of cell function. *Biochem J.* 1996; 313:p.607-710. [30] Bedogni G, Borghi A, Battistini N. Body water distribution and disease. *Acta Diabetologica.* 2003;40(S1):s200-s202. [31] de Fijter W M, de Fijter C W, Oe P L, ter Wee P M, Donker A J. Assessment of total body water and lean body mass from anthropometry, Watson formula, creatinine kinetics, and body electrical impedance compared with antipyrine kinetics in peritoneal dialysis patients. *Nephrol Dial Transplant.* 1997; 12: p151–156. [32] Chumlea W C, Guo S S, Zeller C M, Reo N V, Baumgartner R N, Garry P J, Wang J, Pierson R N Jr, Heymsfield S B, Siervogel R M. Total body water reference values and prediction equations for adults. *Kidney Int.* 2001;Jun;59(6):p.2250-2258. [33] Häussinger D. The role of cellular hydration in the regulation of cell function. *Biochem J.* 1996; 313:p.607-710. [34] McManus M L, Churchwell K B. Clinical significance of cellular osmoregulation. In: *Cellular and Molecular Physiology of Cell Volume Regulation*, Strange K editor. Boca Raton, FL: CRC, 1994; p.63–77. [35] Chiu J S, Chong C F, Lin Y F, Wu C C, Wang Y F, Li Y C. Applying an artificial neural network to predict total body water in hemodialysis patients. *Am J Nephrol.* 2005; Sept-Oct:25(5):p507-513. [36] Donadio C, Consani C, Ardini M, Bernabini G, Caprio F, Grassi G, Lucchesi A, Nerucci B. Estimate of body water compartments and of body composition in maintenance hemodialysis patients: comparison of single and multifrequency bioimpedance analysis. *J Ren Nutr.* 2005; Jul:15(3):p.332-344. [37] Mohamed E I, Maiolo C, Linder R, Pöppl S J, De Lorenzo A. Predicting the intracellular water compartment using artificial neural network analysis. *Acta Diabetol.* 2003; Oct: 40: Suppl 1: S15-18. [38] Donadio C, Halim A B, Caprio F, Grassi G, Khedr B, Mazzantini M. Single- and multi-frequency bioelectrical impedance analyses to analyse body composition in maintenance haemodialysis patients: comparison with dual-energy x-ray absorptiometry. *Physiol Meas.* 2008; Jun:29(6):S517-524. [39] Powers J S, Choi L, Bitting R, Gupta N, Buchowski M. Rapid Measurement of Total Body Water to Facilitate Clinical Decision Making in Hospitalized Elderly Patients. *J Gerontol A Biol Sci Med Sci.* 2009; Jun;64(6):p.664-669.

standard in evaluating body composition, demonstrated no significant difference.[40]

Investigative evidence suggests that the cellular hydration state is an important determinant of cell function and effects hormones, oxidative stress, nutrition and metabolism.[41,42,43] Furthermore, protein and amino acid synthesis, fatty acid metabolism, and carbohydrate metabolism are all affected by cellular hydration levels.[44,45,46,47,48] Cell shrinkage (dehydration) generally inhibits overall protein synthesis however cell swelling (hydration) stimulates overall protein synthesis.[49] Decreased cellular hydration was found to increase viral protein synthesis by four to five times, while increased cellular hydration demonstrated a fifty percent (50%) reduction in viral protein synthesis.[50,51,52] Aberrant cell volume regulation significantly contributes to the physiological pathologies of several disorders such as liver insufficiency, diabetic ketoacidosis, hypercatabolism, fibrosing disease, sickle cell anemia, and infections and is evident in cases of heart failure, liver cirrhosis and chronic renal failure.[53]

A Russian-American scientist has developed a patented system, Molecular Resonance Effect Technology (MRET), for the alteration of the molecular organization state of water and other liquid substances using a controlled magnetic field.[54] This finding is not uncommon because weak magnetic fields have the ability to change the properties of water.[55] These structural alterations to the configuration of water molecules caused by the MRET activation, can be demonstrated to ameliorate physiological and biochemical processes and positively influence cellular bio-structures.[56,57]

The water-activating device used in Molecular Resonance Effect Technology (MRET) is made of a polar polymer compound mixed with certain amounts of pharmacologically active organic and inorganic substances. During the activation process, the MRET polymer compound is placed within an externally generated distinct electromagnetic field with a designed pro-biotic frequency. The activation of water occurs when the MRET polymerized epoxy is exposed to a homogenous magnetic field and oscillating optical light with a wavelength of 600-700 nanometres and a frequency of 7.8 Hertz.[58] The activating device itself consists of an arrangement of magnets that stimulate the MRET polymer into producing the required electromagnetic field. The process of activation alters the configuration of the water molecules and strengthens the hydrogen-bonding patterns. As a result, the water molecular organization state is changed and the physiological properties of the water are changed as well.[59]

One of these property changes relates to enhanced hydrating ability.[60] The process of activation alters the configuration of the water molecules into a linear stratified pattern and strengthens the hydrogen-bonding patterns. Agre (2006) has determined that there is another method for cellular hydration aside from diffusion: aquaporins.[61] Aquaporins are hydration channels through the cellular membrane designed for the rapid transport of water molecules in a single manner, while diffusion is a much slower process dependent primarily upon osmotic gradients.[62] In combination with the linear configuration alteration of the MRET activation of water, aquaporins should theoretically allow for a decreased transition time between ECW and ICW when water is ingested, increasing cellular hydration.[63,64]

Method

Subjects were placed in a supine position and two electrodes were placed on the hand and two electrodes on the foot. The Maltron BioScan 920 Multi-frequency Analyzer is a rapid, non-invasive, method for evaluating hydration and nutrition status. The advance circuitry and processing power of this bio-impedance device allows it to measure Extracellular (ECW) and Intracellular Water (ICW) volume without the need of complex clinical techniques like radioisotope dilution. The Maltron BioScan 920-II was used in real time mode to measure the change, if any, between ECW and ICW. All data is recorded and displayed immediately for analysis by the system.

Two samples of water, marked Sample A and Sample B were tested. Actual content of the sample bottles were

[40] Ibid. [41] Häussinger D. The role of cellular hydration in the regulation of cell function. *Biochem J.* 1996; 313:p.607-710. [42] Häussinger D, Lang F Gerok W. Regulation of cell function by the cellular hydration state. *Am J Physiol.* 1994;Sep:267(3 Pt 1):pE343-355. [43] Häussinger D. The role of cellular hydration in the regulation of cell function. *Biochem J.* 1996; 313:p.607-710. [44] Häussinger D, Lang F Gerok W. Regulation of cell function by the cellular hydration state. *Am J Physiol.* 1994;Sep:267(3 Pt 1):pE343-355. [45] Grant A, Tosh D, Burchell A. Liver perfusion with hyper-osmotic media stimulates microsomal glucose-6-phosphatase activity. *Biochem. Soc. Trans.* 1993;21:p39S. [46] Peak M, Al-Habori M, Agius L. Regulation of glycogen synthesis and glycolysis by insulin, pH and cell volume. Interactions between swelling and alkalinization in mediating the effects of insulin. *Biochem J.* 1992; 282:p.797-805. [47] Al-Habori M., Peak M, Thomas T H, Agius L. The role of cell swelling in the stimulation of glycogen synthesis by insulin. *Biochem J.* 1992; 282:p.789-796. [48] Waldegger S, Busch G L, Kaba N K, Zempel G, Ling H, Heidland A, Häussinger D, Lang F. Effect of cellular hydration on protein metabolism. *Miner Electrolyte Metab.* 1997;23:p.302-205. [49] Stoll B, Gerok W, Lang F, Häussinger D. Liver cell volume and protein synthesis. *Biochem J.* 1992; October 1; 287(Pt 1): p.217–222. [50] Offensperger W B, Offensperger S, Stoll B, Gerok W, Häussinger D. Effects of anisotonic exposure on duck hepatitis B virus replication. *Hepatology*. 1994; 20:p1-7. [51] Agol V I, Lipskaya G Y, Tolskaya E A, Voroshilova M K, Romanova L I. Defect in poliovirus maturation under hypotonic conditions. *Virology*. 1970;41:p.533-540. [52] Waite M R F, Pfefferkorn E R. Effect of altered osmotic pressure on the growth of Sindbis virus. *J. Virol.* 1968;2:p.759-760. [53] Lang F. Mechanisms and Significance of Cell Volume Regulation. *J Am Coll Nutr.* 2007; 26:p.613S-623S. [54] Fisher H W, Smirnov I V. Molecular Resonance Effect Technology: *The Dynamic Effects on Human Physiology.* Brittannia Press. Toronto. 2008;p.8. [55] Semikhina L P, Kiselev V F. Effect of weak magnetic fields on the properties of water and ice. *Russian Physics Journal.* 1988;(31)5:p.351-354. [56] Vysotskii V I, Smirnov I V, Komilova A A. *Introduction to the Biophysics of Activated Water.* Universal Publishers. Boca Raton, FLA. 2005. [57] Fisher H W, Smirnov I V. *Molecular Resonance Effect Technology: The Dynamic Effects on Human Physiology.* Brittannia Press. Toronto. 2008 [58] Vysotskii V I, Smirnov I V, Komilova A A. *Introduction to the Biophysics of Activated Water.* Universal Publishers. Boca Raton, FLA. 2005;p.134. [59] Vysotskii V I, Smirnov I V, Komilova A A. *Introduction to the Biophysics of Activated Water.* Universal Publishers. Boca Raton, FLA. 2005. [60] Smirnov I V. Activated Water. *Explore Magazine.* 2002;11:2. [61] Agre P. (Johns Hopkins University School of Medicine), The Aquaporin Water Channels. *The Proceedings of the American Thoracic Society* 3:5-13. 2006. [62] Ibid [63] Nielsen S, King L S, Christensen B M, Agre P. Aquaporins in complex tissues II Subcellular distribution in respiratory and glandular tissues of rat. *Am J Physiol Cell Physiol.* 1997;273:C1549-1561. [64] Agre P. (Johns Hopkins University School of Medicine), The Aquaporin Water Channels. *The Proceedings of the American Thoracic Society* 3:5-13. 2006.

unknown to both the Lab Technician and the subject. Each subject was used in both tests to eliminate subject variation. The subject was not allowed meals six hours before the testing.

In the first trial the subjects ingested 0.5 litres of Sample A water. Immediately after ingestion BioMarkers readings for Intracellular water (ICW) were taken using the Maltron BioScan 920 device. Biomarker values were recorded immediately after ingestion and at three minutes, ten minutes, twenty minutes and forty minutes.

In the second trial subjects ingested 0.5 litres of Sample B water. Immediately after ingestion BioMarkers readings for Intracellular water (ICW) were taken using the Maltron BioScan 920 device. Biomarker values were recorded immediately after ingestion and at three minutes, ten minutes, twenty minutes and forty minutes.

Results

Time	Biomarker Sample A Average Values	Biomarker Sample B Average Values
Base-line	9.4	9.5
3 minutes	9.5	9.5
10 minutes	9.5	9.6
20 minutes	9.5	9.8
40 minutes	9.5	9.9

- Sample A Total change from base line (initial) = +0.1 Biomarker
- Immediate change after water consumed over 40 minutes = 0% (0.1) Biomarker
- Sample B Total change from base line (initial) = +0.4 Biomarker
- Immediate change after water consumed over 40 minutes = 4.2% (0.4) Biomarker

Discussion

There are several issues that merit discussion in this investigation since the experimental design intended to examine the effect of MRET activated water on cellular hydration when compared to the cellular hydration of water that had not undergone these molecular structural changes. Another issue to consider is the derived benefits of increasing cellular hydration levels when related to physiological function, disease, and aging.

The BioScan 920-II bio-impedance analysis device measures the time delay between the transmitted and received signals by electrodes placed on then hands and feet. Both Extracellular water (ECW) and Intracellular water (ICW) contain different ions which conduct electricity with measurable time delay in the measured voltage when a current is applied. Current passing through ICW has delay and current passing through ECW has no delay. The ratio of delayed vs. no delayed signal is therefore an indication of the ratio of ICW compared to ECW. ECW and ICW exist in the ratio of 20% to 40% of total body weight respectively, and therefore the average 75 kg. male is composed of 45 litres of total body water (TBW) with approximately thirty litres being ICW.[65,66]

Water, when first ingested, is absorbed as ECW and the subsequent effect is an increase in the direct or non-delayed signal reducing the indicated biomarker value. An increase in Biomarker is a clear indication of increase in ICW, thus Sample B results clearly showed the change and increase in ICW. From the results, the indication of a transition or lack of transition of the ingested water from ECW to ICW demonstrated a clear difference between the two water samples. When the untreated water was ingested (SAMPLE A), there was little or no movement into the ICW compartments and therefore caused no change to the time delay and no change to the Biomarker. When the MRET activated water was ingested, the water moved rapidly into the ICW compartments, causing a greater time delay which increased the biomarker value. In the test for water Sample A, it was determined that the change in the biomarker was unremarkable at an average value of 0.1. In the test for water Sample B (MRET activated water) the biomarker measurement increased markedly with an average value of 0.4 indicating a 4.2% increase in intracellular water. This finding is consistent with a previous preliminary non-blinded study of twenty patients in which the average intracellular water shift was a 6.4% increase in ICW in sixty minutes post ingestion of MRET activated water.

The biomarker change is not a fixed value in all subjects. The physiological parameters of the individual (height, weight gender and age), in conjunction with the biomarker index which is part of the algorithm built into the processor of the BioScan device, will dictate the increased or decreased percentage of ICW or ECW. The range of biomarker values and the relationship of the BioScan algorithm to hydration is categorized as below 3.7 very low hydration, 3.7 to 4.7 below average hydration, 4.7 to 6.5 average hydration, 6.5 to 7.5 above average hydration and 7.5 to 12.0 indicates a high level of hydration.

There were two significant results determined by this experiment. The first is that the results demonstrated a meaningful difference between the two water samples in terms of the water's ability to hydrate the cells. The control water (not activated and therefore no change to the linear molecular configuration) did not change the intracellular water (ICW) content or cellular hydration levels. The activated water caused a marked 4.2% increase in ICW, increasing the hydration level of the cells. Another aspect of this finding is that the subjects were well

[65] Bedogni G, Borghi A, Battistini N. Body water distribution and disease. *Acta Diabetologica.* 2003;40(S1):s200-s202. [66] Guyton, A C. *Textbook of Medical Physiology* (8th ed.). Philadelphia: W.B. Saunders. 1991;p. 274.

hydrated initially and hydration values moved toward a more ideal value.

The second significant finding is that the amount of increase in ICW is much greater than the volume of water consumed. The test was considered to be extremely revealing considering the amount of water that was consumed (0.5 litres) was only 1.1% of Total Body Water (TBW), and yet it caused a 4.2% increase of ICW, in this case causing an increase of 1.2 litres in ICW volume or the movement of 3.75% of TBW. Similar findings have occurred in other testing and those findings are consistent with these results. The ability of the MRET activated water to move directly into the cells and cause a subsequent increase in ICW and hydrate the cell while decreasing ECW has beneficial implications: a super-hydrating effect and an anti-inflammatory effect since extraneous ECW has been reduced. These hydration benefits merit further investigation.

Professor Neeser, who has conducted comprehensive research into BIA assessments, states, "Water is the underlying element in all body fluids, serving as the primary medium of transport for the body's complex biochemical exchanges. Ideally, healthy women should have approximately 55 to 60 percent total body water content, while healthy men have 60 to 65 percent total body water content (athletes sometimes up to 70%). The ideal ratio ICW to ECW is approximately 3 to 2 for both sexes. Obese people with excessive storage of fat (body fat > 30%) have a reduced body water content of approximately 40 to 50 percent or less, and ICW levels are in most cases lower than ECW levels. There is a strong correlation between ICW and fat metabolism activity as my many studies of obese people have shown...ICW is for me the most significant biomarker of aging."

Conclusion

The MRET activated water has demonstrated the ability to transition from ECW to ICW quickly and efficiently when compared to non-activated water. Hydration has health benefits by influencing cell function and the synthesis and homeostasis of many necessary physiological functions and countermands the effects of dehydration. [67,68,69,70,71,72,73]

ABOUT THE AUTHOR

***Dr. Howard W. Fisher*, B.Sc., B.Ed., M.B.B.S., D.C.,** *is a natural physician with degrees in medicine and chiropractic, specializing in Anti-Aging medicine. "The goal of anti-aging physicians is to optimize the physiological function of the body. In an effort to help people move from the chronological clock to the physiological clock, we must find a way to diminish the harmful environmental factors. EMR is certainly one of the most significant environmental factors." Dr. Howard W. Fisher is the Director of the Banipur Institute of Medical Sciences and a member of the Scientific Committee of the Dubai Congress on Anti-Aging & Aesthetic Medicine (DCAAAM).*

Being widely recognized for his ability to easily assimilate what many view as daunting scientific and clinical information, Dr. Fisher transforms essential knowledge that would otherwise remain inaccessible to the public into readily available life-altering information. He has written scores of articles for trade publications and is a featured guest on many radio and television broadcasts. In addition to authoring thirteen health oriented books, his research has also been published in peer-reviewed journals. His books and lectures have been translated into seven languages and are sold in North America, Europe and Asia.

[67] Häussinger D. The role of cellular hydration in the regulation of cell function. *Biochem J.* 1996; 313:p.607-710. [68] McManus M L, Churchwell K B. Clinical significance of cellular osmoregulation. In: *Cellular and Molecular Physiology of Cell Volume Regulation*, Strange K editor. Boca Raton, FL: CRC, 1994; p.63–77. [69] Häussinger D, Lang F Gerok W. Regulation of cell function by the cellular hydration state. *Am J Physiol.* 1994;Sep:267(3 Pt 1):pE343-355. [70] Grant A, Tosh D, Burchell A. Liver perfusion with hyper-osmotic media stimulates microsomal glucose-6-phosphatase activity. *Biochem. Soc. Trans.* 1993;21:p39S. [71] Peak M, Al-Habori M, Agius L. Regulation of glycogen synthesis and glycolysis by insulin, pH and cell volume. Interactions between swelling and alkalinization in mediating the effects of insulin. *Biochem J.* 1992; 282:p.797-805. [72] Al-Habori M., Peak M, Thomas T H, Agius L. The role of cell swelling in the stimulation of glycogen synthesis by insulin. *Biochem J.* 1992; 282:p.789-796. [73] Stoll B, Gerok W, Lang F, Häussinger D. Liver cell volume and protein synthesis. *Biochem J.* 1992; October 1; 287(Pt 1): p.217–222.

The Perfect Hydration

MRET Activated water enables cellular hydration which results in miraculous health benefits

Bio Available
Intra Cellular Hydration

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The Comparative Estimation of MRET Treated and Regular Water Absorption by Human Tissue with the Electro Physical Method

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Introduction:
Drinking water results in gradual penetrating it into human cells and inter-cells fluid.
Depending on the physical quality of the water and its compatibility with a certain organism, dynamics of this process has different rates.

Physical process in water-containing system can be studied using a complex dielectric permittivity.

This is a complex value:

$$\varepsilon^{*} = \varepsilon^{'} - i\varepsilon^{''} \quad (1)$$

Its real component characterizes an ability of particle to follow external alternating electric field, while the imaginable portion relates to lagging the polarization processes due to structural features of the object. The majority of the polarization processes are those of relaxation type characterized with the relaxation time τ_i which is an individual characteristic of a certain structure. Due to an evitable statistic dispersion of τ, even among same class of the relaxation component, it's possible that not all of them can follow the external field as the external frequency increases, what results in their collision and emanation of the heat called dielectric losses.
For each the type of the relaxation component having the relaxation time τ_i maximum of the dielectric losses takes a place at the frequency

$$\omega_i = \frac{1}{\tau_i} \quad (2)$$

This is a frequency where value of $\varepsilon^{"}$ reaches its maximum. If the studied object is composed of a set of various τ, this will result in origination of the set of the corresponding energy losses bands.

On the other hand, as the frequency of the external field increases, it results in leaving the polarization process by those objects which can't follow the polarization due to their relaxation time τ. As a result, the dielectric permittivity ε' decrease as the frequency increases, Fig. 1.

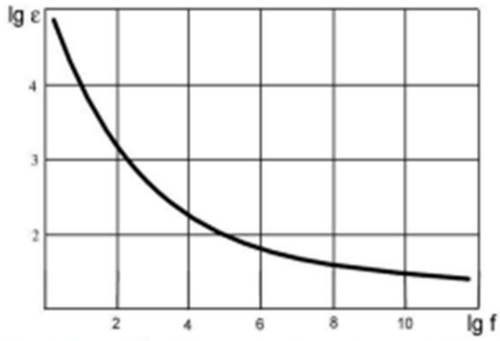

Fig.1. Generalized frequency dependence of the real part of the dielectric permittivity of a leaf

In this brief research, the water absorption was studied as a variation of the complex dielectric permittivity ε" with Q-meter method and instrument at the fixed frequency of 40 kHz.

This method and the instrument enable to measure components of the complex dielectric permittivity, which characterizes polarization processes in alternating field as an indicator of structural patterns of molecular/atomic aggregates.
The Q-meter is a resonance instrument where the quality of the object, the Q-factor (the merit factor) and the frequency allocation of the resonant process of the instrument depends on the connected external capacitance containing the studied object.

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The dissipation factor $\varepsilon''=\varepsilon' tan\delta$. For measurements with the Q-meter,

$\varepsilon' = (C_0 - C_x)/C_0$, where $C_{x,0}$ are values of the Q meter capacitor at the resonance with object X and without it, respectively. Here: $tan\delta$ – a tangent of dielectric loss angle.

The basic formula of the Q-meter measurements:

$$\tan\delta = \frac{C_o(Q_0 - Q_x)}{(C_0 - C_x)(Q_0 Q_x)} \quad (3)$$

Method and Materials:

The experiment on measuring water absorption was conducted with TESLA BM-560 Q-meter. Simplified allocation of the setup is shown in Fig.2.

In the experiment, the participant drunk 250 ml. of water of 10 C° temperature, either regular water, or specially MRET activated one. Then the participant put his/her hand on the plate sensor and the reading of the resonant variable capacitance C of the instrument and its Q were measured, based on the reading of the voltmeter V. The variable capacitor C had 0.1 pF for the division. Each reading was taken in one minute. For studying the dynamic of the process, it's not necessary to measure a real dielectric permittivity, but rather the variation of the capacitance $C_0 - C_x$ when the hand was put on the plate-sensor.

Moreover, the deviation of this value was measuring with respect to the initial capacitance $C_0 - C_x$ before drinking the water. So, the very first reading for the capacitance in all the diagrams is zero.
The relative dynamic of the dissipation factor was estimated as a product of the variation of the capacitance and the tangent of dielectric loss angle.

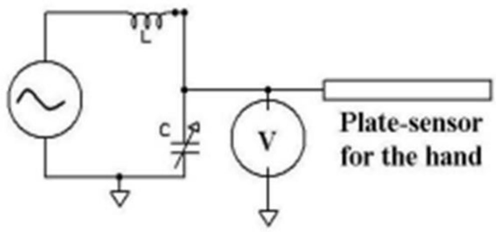


Fig.2. A simplified setup for measuring a dynamics of the water absorption with Q-meter

Results:

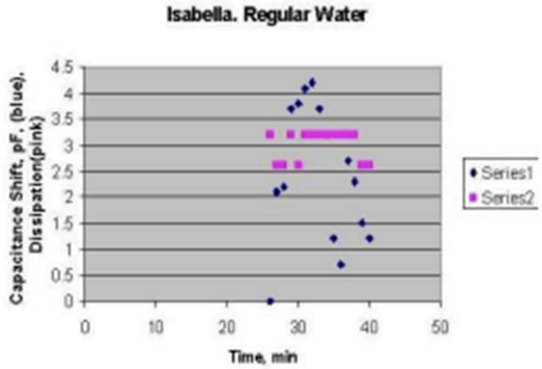


Fig.3. Initial capacitance =85.3 pF

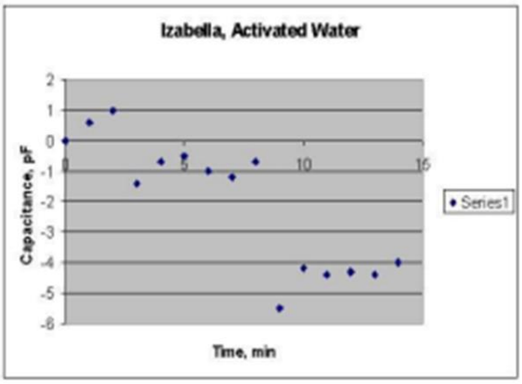


Fig.4. Initial capacitance=87.4 pF.

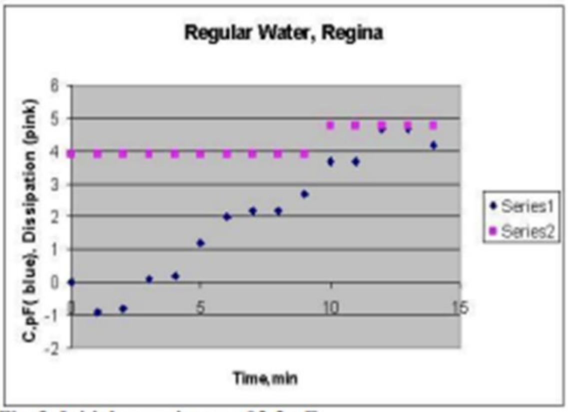


Fig.5. Initial capacitance=93.2 pF

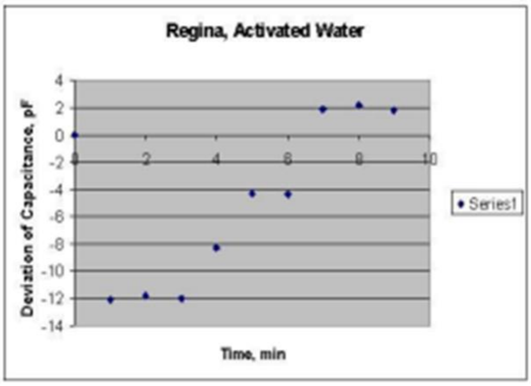


Fig.6. Initial capacitance=95.9 pF

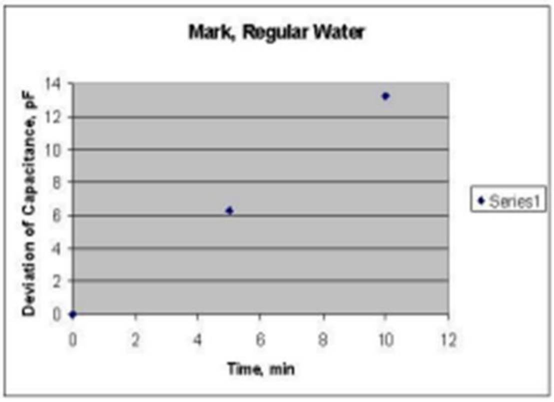


Fig.7. Initial capacitance=101.0 pF.

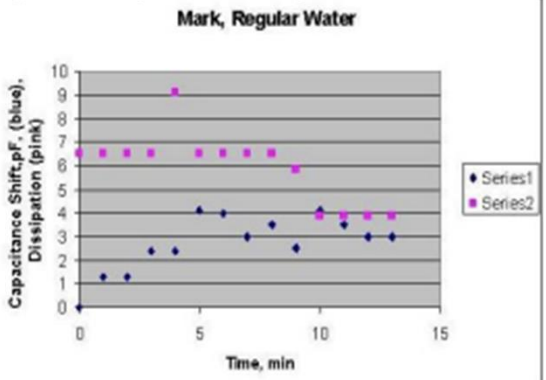


Fig.8. Initial capacitance= 102.5 pF

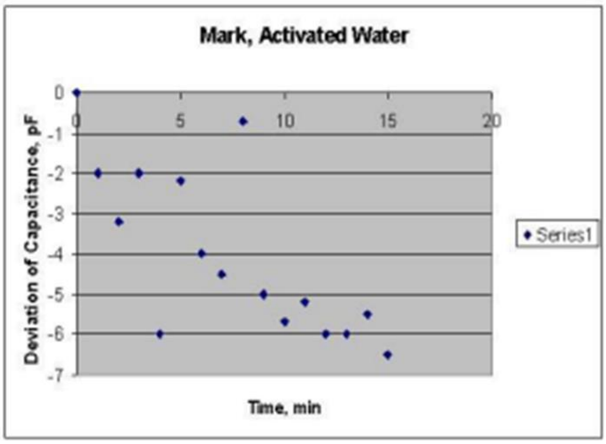


Fig.8. Initial capacitance = 113.2 pF

Discussion:

First of all, it has to be taken into consideration, that original water had 10 C° temperature, while the temperature of the human body is ~ 37 C^0. Therefore all the consumed water experienced a heating inside the human bodies. Therefore, we have to discuss a temperature dependence of the dielectric permittivity, $\frac{\partial \varepsilon}{\partial T}$ or its technical representative, *dC/dT*. The value is a considerable component of the entropy *S*. Both the free energy and the entropy are important indicators of surviving any system.

$$A = A_o(T) + \frac{1}{2}\varepsilon_0 \varepsilon E^2 \quad (4)$$

$$S = S_0(T) + \frac{1}{2}\varepsilon_0 \frac{\partial \varepsilon}{\partial T} E^2 \quad (5)$$

The role of $\frac{\partial \varepsilon}{\partial T}$ in the entropy of living organisms can not be overestimated. It's a coefficient before the value of E^2 (*E*- the field strength inside the objects, for instance –the living cells). Taking into consideration that *E* inside the living cells can reach as order of

10^5 V/m the $\frac{\partial \varepsilon}{\partial T}$ plays a special role. The systems with minimal entropy and free energy are more stable. Moreover, the entropy and free energy can predict a quality of functioning objects [1].

The results of the experiment have shown that drinking regular water causes increasing dielectric permittivity of the tissue, the positive $\frac{\partial \varepsilon}{\partial T}$, while drinking MRET activated water results in the negative value of $\frac{\partial \varepsilon}{\partial T}$. Therefore, the regular water increased the entropy of the tissue which makes it less stable, while the activated water reduces the entropy and makes the tissue more stable.

These results very well correlate with the findings of MRET activation effect on electrodynamic characteristics of water (complex dielectric permittivity and conductivity) conducted at the laboratory of Moscow State University, Russia. In this study, the significant modification of electrodynamic characteristics of distilled water was observed after MRET activation. The electrodynamic parameters of water as functions of applied external EMF frequencies are presented at Fig 9 (non-activated water), Fig 10 (water activated for 30 minutes), Fig 11 (water activated for 60 minutes) and Fig 12 (30 minutes activated water heated up to 72˚C).

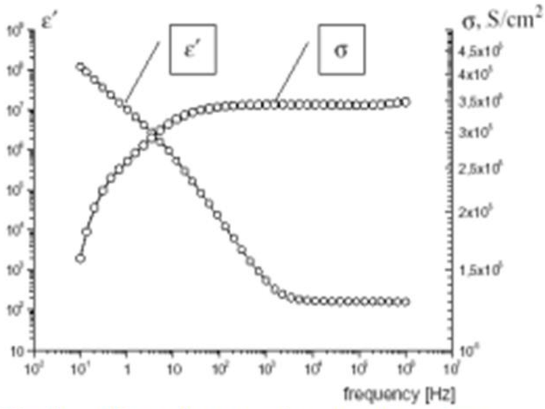


Fig 9: *Electrodynamic characteristics of non-activated distilled water at temperature 20˚ C.*

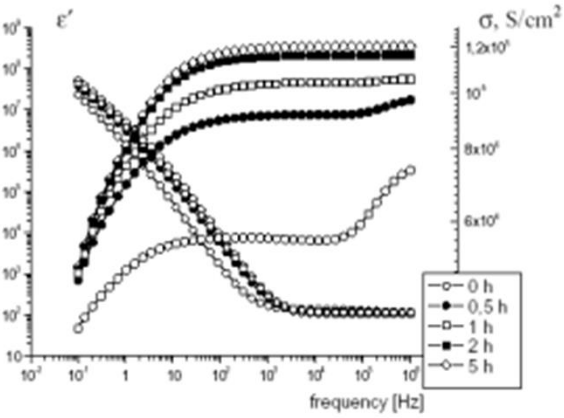


Fig 10: *Electrodynamic characteristics of MRET water (30 minutes of activation) at temperature 20˚ C and different periods of time of storage: 0 h, 0.5 h, 1.0 h, 2.0 h, and 5.0 h respectively.*

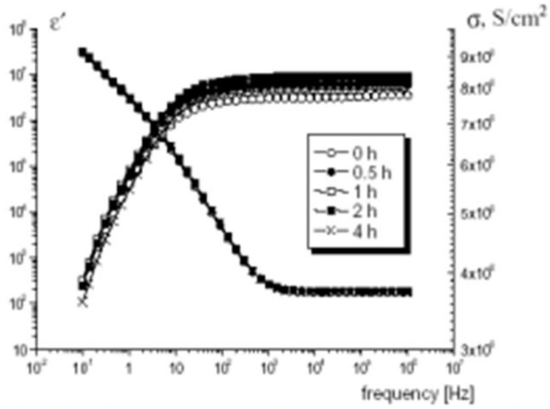


Fig 11: *Electromagnetic characteristics of MRET water (60 minutes of activation) at temperature 20˚ C and different periods of time of storage: 0 h, 0.5 h, 1.0 h, 2.0 h, and 4.0 h respectively.*

The dielectric permittivity in the very low frequencies range of **0.1 – 1000 Hz** decreased **by 80 – 90%** and in the range of frequencies of 1 – 100 kHz it decreased by 18% in 30 minutes activated water; the decrease by 70 – 85% was observed in the range of 0.1 – 1000 Hz in 60 minutes activated water compared to non-activated water. The significant reduction of values of dielectric permittivity confirms the relatively high, long-range dynamic structuring of water molecules in activated water produced with the help of MRET activation process. The investigation regarding the electrodynamic characteristics of MRET water also revealed that the long-term storage of activated water (up to 5 hours at 20˚C) did not significantly affect the modified electrodynamic characteristics of **30 minutes activated water** (the conductivity had the level of decrease **66 – 70%** and dielectric permittivity had the level of decrease **50 – 55%** in the range of 0.1 – 1000 Hz and 18% in the range of 1 – 100 kHz respectively). The storage of **60 minutes activated water** under the same conditions practically did not affect its electrodynamic characteristics (maximum difference is **2%**).

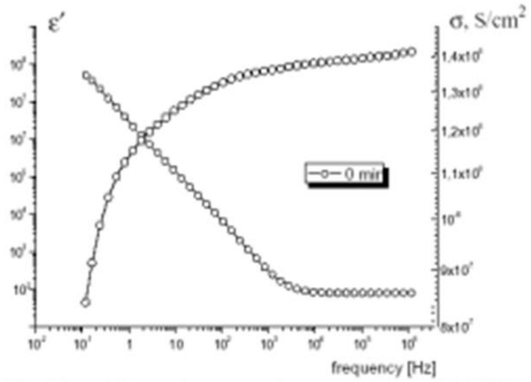


Fig 12: *Electrodynamic characteristics of MRET water (30 minutes of activation) at temperature 72˚ C.*

The significant reduction of dielectric permittivity kept by MRET water activated for **30 minutes** after it was heated to **72˚C** confirms its stability to thermal effects. The reduction of dielectric permittivity of MRET water **by 50 – 75%** in the range of **0.1 – 1000 Hz** (compare to non-activated water at 20˚C) provides the confirmation of the phenomenon of stability of MRET water to heating effect. According to [2] the reduction of dielectric permittivity due to the increase of water temperature is about 4.3% per 10˚C. It means that the reduction of dielectric permittivity due to the increase of water temperature was about 22% and the reduction of extra 38 – 43% most likely was related to the effect of MRET activation process. Such anomalous behavior of dielectric permittivity confirms the stability of MRET water to thermal effect [3].

Such anomalous stability of activated water electrodynamic characteristics to thermal effect and long time storage can be explained by entropy reduction of the physical system, in this case water molecular structure.

A Seeming Paradox of Abnormally High Dielectric Permittivity of Water at Low Frequencies

In the Figs.9-12 the real portion ε' of the dielectric permittivity of water looks abnormally high within 10^{-1} - 10^{4} Hz, yet looks frequency-descending.

The classical dielectric permittivity of water is 80.4 at 20° C from static fields up to hundreds of MHz. The descending ε'(f) dependence is caused by relaxation processes in a near-electrode layer formed by a water-meal contact. The water-metal contact forms an Electrical Double Layer, EDL, having its own relaxation time τ. Molecules of water are polar ones and polarization is an important component of forming EDL. The equivalent schematic of EDL–bulk water system is shown in Fig.13.

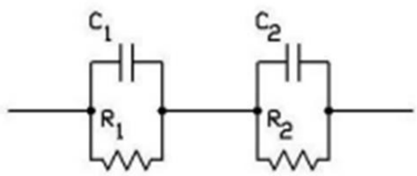


Fig.13. Equivalent circuit of a measuring cell taking into account the near-electrode EDL and the bulk water between the electrodes

Here, C_1R_1 represent EDL, while C_2R_2 represent a bulk water occupying most of the space between the electrodes, and finally can be reduced to one parallel RC circuit.

The admittance of the equivalent system is

$$Y = g + ib = \frac{1}{R} + i\omega C \quad (6)$$

According to general theory of dielectric dispersion in two-layer systems [5], the efficient capacitance of this system is

$$C_{eff} = \frac{b}{\omega} = \frac{\tau_1 + \tau_2 - \tau + \tau_1\tau_2\tau\omega^2}{R_0\left[1 + (\omega\tau)^2\right]} \quad (7)$$

Here: $\tau_{1,2}$ –relaxation times of layers 1 and 2, τ is a system relaxation time, R_o is a DC resistance of the effective capacitor.

According to [5], the system relaxation time τ is

$$\tau = \frac{\tau_1 R_2 + \tau_2 R_1}{R_0} \quad (8)$$

As it follows from (7), value of C_{eff} can be much higher at low frequencies than at the high frequencies. This results in a seemingly high, frequency-descending ε' at lower frequencies because traditional calculations of ε' are based on the total distance between the electrodes rather than that of EDL. The seeming phenomenon of high ε' at low frequencies is mostly related to behavior of the EDL rather than to the bulk water between the electrodes.

However, the MRET phenomenon affects both the near electrode EDL layers as well as the bulk portion of the water.

Conclusion

- The complex dielectric permittivity method enables to study the dynamics of water absorption;
- The regular water makes $\frac{d\varepsilon}{dt}$ and $\frac{\partial\varepsilon}{\partial T}$ of the tissue positive and increases the entropy;
- The activated water makes $\frac{d\varepsilon}{dt}$ and $\frac{\partial\varepsilon}{\partial T}$ of the tissue negative and reduces the entropy.

Reference:

1. M. Krinker (2016) "*The Experience of Predicting the Quality of Functioning Objects*", Journal of Unconventional Science. Vol. 12.
2. Chaplin, M. (2005) "*Water Dielectric and Microwave Radiation*", London South Bank University, http://www.lsbu.ac.uk/water/microwave.html
3. Smirnov, I. (2008) "*The Anomalous Electrodynamic Characteristics and Polarized- Oriented Multilayer Molecular Structure of MRET Activated Water*", International Journal of Nanoscience, vol.7, 1-5.
4. https://en.wikipedia.org/wiki/Double_layer_(surface science)
5. P.T. Oreshkin (1977), *Physics of Semiconductors and Dielectrics*, Moscow, Russia.

tekst: Peter van der Vleuten – www.brainportbiotechsolutions.com

Super-hydratatie van de lichaamscellen

Structuurverandering van het drinkwater

Nu trof ik in het boek van Ty M Bollinger met als titel "The truth about cancer, what you need to know about cancer's history, treatment, and prevention"[1] een hoofdstuk aan, waarin de ontwikkeling en de eigenschappen van hoog-energie water, in relatie tot behandeling van kanker worden beschreven.

De schrijver vermeldt dat de Russische wetenschapper, dr. Igor Smirnov in opdracht van de Russische regering, na de Tsjernobyl kernramp in 1986, onderzoek heeft gedaan naar het aantal en de aard van de kankergevallen in het gebied. Zijn opdracht was om te onderzoeken waarom een klein deel van de plaatselijke bevolking geen kanker had gekregen.

Super hydratie

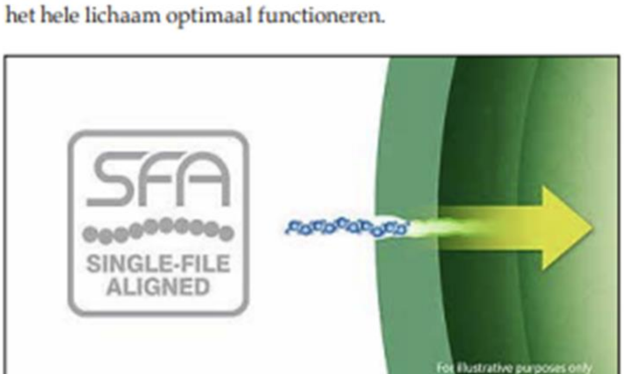
Dit bleek het geval te zijn bij mensen die hun leven lang in het nabije Kaukasus gebergte hadden gewoond en als drinkwater het door het (vulkanisch) gebergte naar beneden sijpelend water hadden gedronken. Bij nader onderzoek bleek dat de structuur van het betreffende water anders was dan de structuur van normaal drinkwater. Door die structuur ontwikkelden die mensen een soort van bescherming tegen de radioactieve vergiftiging. Dit had, volgens dr. Smirnov en zijn mede-onderzoekers te maken met een super hydratie van de lichaamscellen door dit water. Waardoor voedingsstoffen optimaal aan de cellen kunnen worden toegevoerd en afvalstoffen optimaal kunnen worden afgevoerd. Hierdoor gaan de cellen en bijgevolg het hele lichaam optimaal functioneren.

Aquaporiën

De betere hydratie van de cellen werd mogelijk door de structuurverandering, waarbij de waterclusters werden omgevormd van een piramidale structuur naar een lineaire structuur (zie afbeelding 1). Hierdoor kan het gestructureerde water 3 tot 5 keer beter, via de zeer dunne "aquaporiën", de cellen in- en uitgaan, de cellen dus beter voorzien van voedingsstoffen en in de cellen opgeslagen afvalproducten en toxines beter afvoeren. Toen duidelijk was dat het door de bergen geactiveerde drinkwater de oorzaak was van de goede gezondheid van de mensen die geen kanker hadden, zijn Smirnov en zijn team gaan kijken of ze het op deze manier geactiveerde drinkwater zelf konden maken. Zo is de "Moleculaire Resonantie Effect Technologie" (MRET) ontstaan.

Het werkt als volgt:

Het water, dat in vulkaangesteente in een tijdsverloop van vele duizenden jaren naar beneden sijpelt verandert van structuur. Die wordt dan lineair in plaats van piramidaal. Dat water met lineaire structuur gaat gemakkelijker de cellen in (met voedingsstoffen) en uit (met afvalstoffen) via de daarvoor bestemde zeer nauwe aquaporiën. De cellen gaan daardoor



beter functioneren en als gevolg daarvan gaan de organen en overige delen van het lichaam, dus het gehele lichaam, beter functioneren. Dit alles heeft een positieve invloed op ons afweersysteem en verbetert dus ook de afvoer van in ons lichaam opgeslagen toxines. Jonge mensen beschikken over voldoende energie om de piramidale structuur om te zetten in een lineaire structuur. Deze capaciteit wordt geringer naarmate de leeftijd vordert, met als gevolg dat oudere mensen doorgaans slechter hydrateren. Ze kunnen wel genoeg drinken, maar als dit niet voldoende wordt opgenomen wordt het vocht weer afgevoerd voordat het in de cellen wordt opgenomen. Ter verdere verduidelijking: als mensen zijn "uitgedroogd", wat vaak een kwaal is bij oudere mensen, hoeft dit niet te betekenen dat ze te weinig drinken; wel dat de cellen te weinig vocht opnemen.

Geactiveerd drinkwater

MRET is een unieke, gepatenteerde technologie, die werkt door het activeren van water met een laagfrequent magneetveld met een geringe intensiteit. Dit magneetveld komt overeen met het natuurlijk geomagnetisch veld dat we allemaal nodig hebben om gezond te blijven. Onze cellen zijn dus beter geholpen met op deze wijze geactiveerd drinkwater dat dus beter hydrateert.

Eenvoudig en betaalbaar

Dit water is niet per definitie een remedie voor kanker, maar verhoogt wel het weerstandsvermogen van je lichaam en kan daardoor helpen bij het voorkomen en genezen van kanker en van vele andere aandoeningen. Er zijn geen chemicaliën of andere vreemde stoffen nodig om MRET-water [2]. Iedereen kan het thuis doen met behulp van een eenvoudig MRET-water-activator-systeem. Het is een effectieve en betaalbare optie om gezond te blijven en ziektes buiten de deur te houden.
De positieve gezondheidseffecten van MRET geactiveerd drinkwater zijn in Spiegelbeeld al meerdere malen belicht. Het in oorsprong Amerikaanse boek met bovengenoemde titel is door ondergetekende in het Nederlands vertaald en wordt gratis meegeleverd bij aankoop van een MRET Water Activator.

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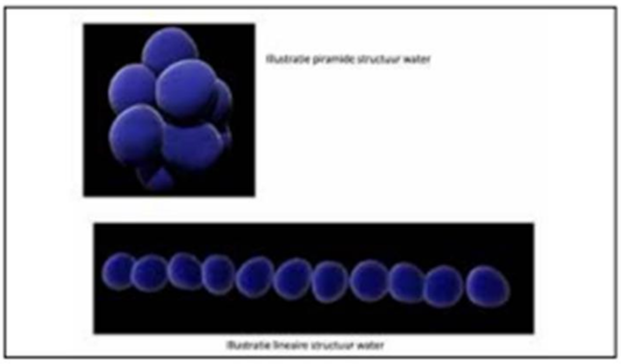
[1] Bollinger, Ty M, "The truth about cancer; what you need to know about cancer's history, treatment and prevention", 2016.
[2] Zie: www.mretwateractivator.nl.



Illustratie piramide structuur water

Illustratie lineaire structuur water

The Effect of Water Environment on the Psychosomatic Development of Babies

Abstract

Childbirth in water was first conducted in 1970s by the method devised by the Moscow researcher Igor Charkovsky. By now hundreds of children have been born in water environment. Follow-up observation on these children has shown that their psychosomatic development is considerably ahead of the standard integral characteristics. 'Water babies' begin to stand up and move about the age of 2-3 months, they understand the meaning of speech symbols much earlier than their coevals, they respond better to subsequent training, do not exhibit aggressiveness in their behavior, and they also display telepathic and other extrasensory abilities.

It is a scientifically-based fact that water plays an important role in the vital activity of living organisms. Water is an essential component of cells and it participates in the formation of physically active conformations of biopolymers, and also of the medium in which the principal metabolic reactions take place. Water molecules participate in cell communications and in principal metabolic functions. One of the main ideas of the method of childbirth in water is based on the scientifically proved ability of water to store and transduct (transformation of electromagnetic signals into biochemical signals) certain bioenergetic information to a living being immersed in it.

The Effect of Water Environment

During water delivery the effect of the force of gravity on the pregnant woman is reduced, so that she may relax better during the contractions and pain is also relieved. The main advantage is that childbirth in water enables a smooth and stress-free transition from a liquid environment *(amniotic fluid)* into another liquid environment. Under these circumstances there is no sudden exposure to the force of gravity on the unadapted newborn infant.

Figure 1. The baby feels comfortable in the water.

During childbirth in water the baby does not cry, but smiles. It indicates harmonious relations of the infant with the world that it has entered, and as a result of this, such a child has no negative aggressive tendencies. The first few minutes and hours of life of the newborn infant are tremendously important to his or her subsequent mental development. Dr. Jampolsky from St.Petersburg University, Russia showed in her scientific research that the psychological homeostasis of the child, formed during these first moments of life, is a unique matrix for subsequent development of mental functions. One of her investigations make a special point of interest. Dr. Jampolsky recorded the first cry of newborn babies delivered in the traditional way in hospital, and made a sonogram. Then she compared this sonogram with the sonograms of different physical sounds in the nature. She found out that the first cry of a baby resembled to the cry of a very angry adult person, indicating that the birth experience gave negative imprinting to the psychological homeostasis of a child. The process of water delivery and spending the first minutes of life in the water environment has another profound effect on the alteration of psychosomatic development of a child. Due to reduction of energy expenditure to overcome the force of gravity, and due to the impossibility of activating certain physiological functions of the newborn infant (breathing, crying, perception of sounds, smells, etc.), the introspective plane functions are activated and they undergo accelerated development. According to the law of heterochronicity and inequality of the development of psychological functions, it is possible to control the activity of these functions using the method of selective sensory deprivation. By suppressing one psychological function this vital energy is conveyed to the development of another psychological function. For example, the famous English writer Jonathan Swift wore a bandage over his eyes to stimulate fantasy and imagination capacity. The monks of Russian Orthodox Church often gave a promise to keep silence for many years in order to receive enlightenment and an ability to

Figure 2. The breath holding techniques.

Figure 3. The baby sleeps in the water (inhaling).

Figure 4. The baby sleeps in the water (exhaling).

operate on the superconcious level of reality. Many Yoga exercises use breath-holding techniques to modify human psychic and physical capacities. The breath holding techniques promote the lack of oxygen and as a result the penthose metabolic system is activated. Penthose system in the human body is much older than that of oxygenation or Krebbs system. The penthose way of metabolizing accumulates the energy in the organism, this *closed* system of metabolic process does not need oxygen, and there are no burning process and no chaotic loss of energy that leads to the expenditure of energy. On the contrary, the ordinary oxygenation system promotes burning of oxygen and secretion of heat, meaning chaotic loss of energy. The energy collected in the metabolistic process is used for the development of introspective psychic functions and extraordinary physical capacities.

Water training in early childhood is the only way to teach a human being the breath holding techniques from the first days of life. The infant spends a large part of time in the water environment and learns to hold its breath, to feed and to sleep in water. This leads to a modification of the rates of development of the mental and somatic functions.

Modifications of Psychosomatic Functions

To shed light on this fact, children who took part in regular swimming from the first days of their lives were studied. This investigation was conducted at the *Infant's Hospital #10* with collaboration of Psychological Department of St.Petersburg University, Russia. This study was conducted on infants at the age of 1 and 2 years old, and it involved an examination of integral parameters of the rates of physical growth of the child and various parameters of cognitive functions, such as involuntary visual attention with or without the inclusion of a motor components, involuntary auditory attention, voluntary attention, pictorial and verbal auditory memory, classification of objects by shape and color, and imitative construction, characterizing the development of functions of attention, memory and thinking.

The integral parameter of the rates of physical growth of the child was 4 times higher in swimming children than in nonswimmers. Experimental results demonstrating marked acceleration and qualitative changes in the rate and character of development of mental functions are particularly interesting. The mean values of 5 of the 9 tested parameters show an increase in 1.5 – 10 times *(in the initial units of measurement)*. The results are statistically valid with p between 0.95 and 0.99. The mean values of 4 parameters of the swimming children were actually a little higher than the maxima of the monthly averages for nonswimming children at the end of the second year of life *(δM is between σ_0 and $1.2\,\sigma_0$, where $\delta M = M - M_0$ denotes the difference between the mean annual values of the parameters for swimming and nonswimming children, and σ_0 the standard deviation of the scale estimate of the parameters for nonswimming children)*.

It can be concluded from analysis of the results of development of attention, memory, and thinking functions, based on a combination of parameters, that the mean values of these functions for 18-month-old swimming children virtually reach the maximal level of respective functions in nonswimming children at the end of the second year of life. In other words, children who swim during early development are about 6 months ahead of their coevals in their development.

Early swimming has the greatest effect in the second year of life on the development of thinking: not only quantitative, but also qualitative changes are observed under these circumstances in the course of evolution of the corresponding parameters. Nonswimming infants are virtually unable to do classification by shape and color before 1.5 years of age, whereas swimming children begin to classify objects and to respond adequately to the experimenter's instructions after 13-14 months. Similar results were obtained with respect to parameters of audioverbal memory: children swimming early begin to respond monosyllables, and sometimes even words of two syllables after 12-14 months, whereas 95% of nonswimming children cannot repeat even monosyllabic words after the experimenter before the age of 1.5 years. This fact indirectly shows that the water environment promotes the earlier development of speech.

Correlation analysis showed the presence of much closer correlation in the development of cognitive functions in swimming children than in their nonswimming coevals: in the course of the year, the level of integration of correlation between functions increased by 2.2 times. Correlation pleads for swimming infants also form ring structures, including both positive and negative connections; whereas correlation pleads for nonswimmers are mainly close to linear in character and do not include any significant negative correlation. The results are statistically valid with $p = 0.95$. This suggests a clearer manifestation of the law of heterochronicity and inequality of development of mental functions in children who swim in early ontogeny, and acceleration of their mental development in accordance with this law.

Infants born in the activated water showed the best results in the development of psychosomatic functions. Activated

Figure 5. The baby plays underwater.

Figure 6. Feeding milk to a baby underwater.

water is produced with the help of the patented non-chemical Molecular Resonance Effect Technology. The process of water activation induces the formation of water molecular clusters similar to water molecular structures found in living cells. The basic idea of Molecular Resonance Effect Technology is the direct transmission of prerecorded molecular activity signals to biological systems with the help of Activated Water. These messages are imprinted in water during the process of activation *(see I.V. Smirnov's 'Activated Water', in Explore! For the Professional Journal, Vol. 11, No.2, 2002)*. The effect of Activated Water on the body immersed in it can be explained by the fundamental physical phenomenon of electromagnetism, such as resonance and constructive interference. ◆

References

G.I. Akinshikova, 'Human Somatic and Psychophysiological Organization', St. Petersburg University Press, 1977

G.H. Gizatulina, 'Formation of Cognitive Functions in Early Ontogeny' St. Petersburg University Press, 1984

I.V. Smirnov, 'Effect of Water Environment Factor on Psychosomatic Development of Children Swimming in Early Ontogeny' St.Petersburg University Press, 1986

R. Zazzo, 'Mental Development of the Child and Effect of Environment' Journal of Psychology No.2, 1967

V.A. Ganzen and L.A. Golovej, 'Systematic Description of Human Ontogeny' Journal of Psychology No.6, 1980

T. Bauer, 'Mental Development of the Infant' Moscow University Press, 1979

I.V. Smirnov, 'Activated Water' Explore magazine, vo.11, No.2, 2002