

# **Biological properties of Molecular Resonance Technology (MRET) activated water confirming its health benefits**

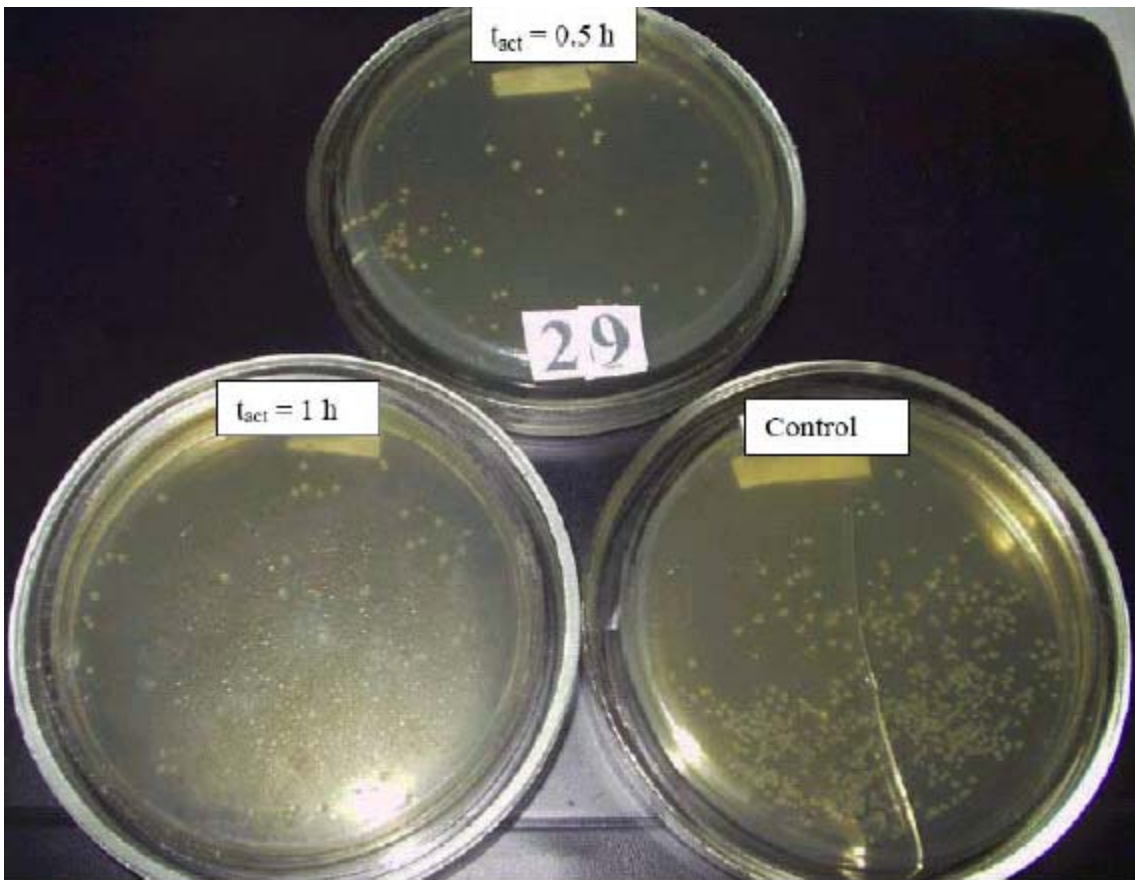
## **MRET activated water and its successful application for preventive treatment and enhanced tumour resistance in oncology**

MRET Activated Water is produced with the help of patented in the USA by Igor Smirnov, Ph.D. Molecular Resonance Effect Technology (US Patent No. 6022479). MRET water activator is the stationary source of subtle, low-frequency, resonant electromagnetic field with composite structure. MRET Activated Water with the modified molecular structure, physical and electrodynamic characteristics may enhance specific molecular mechanisms in living cells [Vysotskii, Smirnov 2005]. The research regarding the physical parameters of water confirmed that MRET treatment of distilled water led to substantial modification of basic physical-molecular properties of water.

The anomalous viscosity of MRET water (subject to very low tangent pressure) and electrodynamic characteristics of MRET water (subject to applied electromagnetic field of low frequency range) confirm the high level of long-range dynamic structuring of water molecules in polarized-oriented multilayer formations in activated water produced with the help of MRET activation process. The similarity of molecular formations of cell water and MRET activated water contributes to their compatibility, easy bio-availability and assimilation of MRET activated water in biological systems.

The anomalous electrodynamic characteristics and viscosity of MRET Activated water provide some evidence regarding the possible effect of MRET water on the proper function of cells in biological systems. It is well known that cellular processes in biological systems are driven by the low energy of bio-chemical reactions inside and between the cells and cellular structures. Consequently, such processes create subtle low frequency electromagnetic field and low tangent pressures along water surfaces and the membranes between the cells. The anomalously low viscosity, dielectric permittivity and electrical conductivity of MRET water in the range of very low frequencies that exists in biological systems can contribute to the enhancement of the cellular transduction mechanism and result in improved intracellular/extracellular water exchange and the proper function of cells in biological systems.

Taking into consideration the ability of MRET water to enhance morphology of blood cells and to suppress mutated cells in vitro [Smirnov 2006-2, 2006-1, 2003], high germicidal activity of MRET water, the inhibition of growth of kaluss tissue (mutated cells of botanical origin) in MRET water already confirmed by previous researches, the investigation regarding the effects of different fractions of MRET water on mutated cells in tumours and on the cells of immune system in vivo was conducted at Kiev Institute of Experimental Pathology, Oncology and Radiobiology, Ukrainian Academy of Science [Vysotskii 2006].



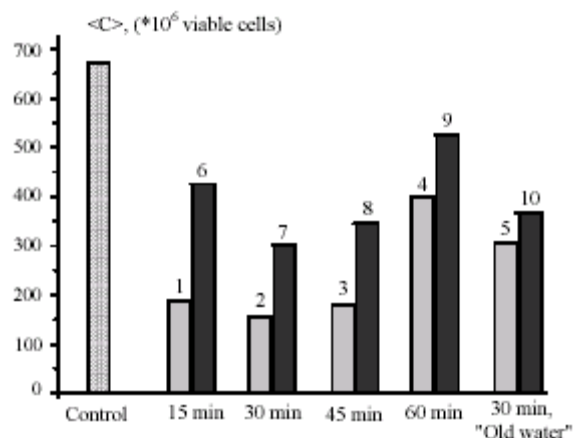
The view of the most representative Petri dishes with grown colonies of Escherichia coli K-12 in 29 hours after the beginning of experiments:

(a) **Control:** number of cells  $NC = 1.7 \times 10^8$  cells/ml; averaged diameter of grown colonies  $d = 1.2$  mm

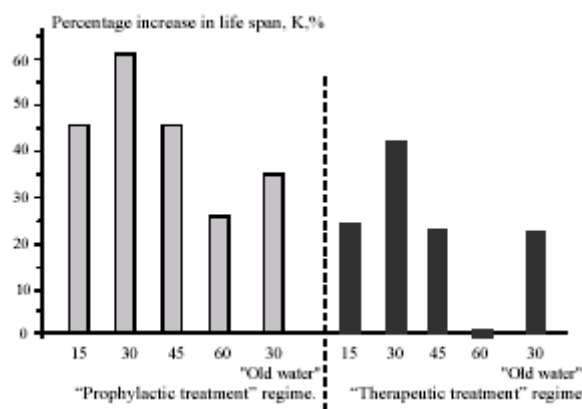
(b) **Time of activation 0.5 hour:** number of cells  $N_{0.5} = 6.4 \times 10^6$  cells/ml; averaged diameter of grown colonies  $d = 2.7$  mm

(c) **Time of activation 1.0 hour:** number of cells  $N_{1.0} = 5.6 \times 10^5$  cells/ml; averaged diameter of grown colonies  $d = 2.0$  mm.

The goal of this investigation was to study on mice the effect of MRET activated water as a potential agent for the prevention and treatment of two kinds of oncology diseases (laboratory models of Ehrlich's ascites tumour and Sarcoma ascites form). Significant positive effect of MRET activated water regarding the tumour resistance on animals was observed in the experiments conducted on 500 mice (22 groups with 20 mice in each group and 10 groups with 5 mice in each group). The best results were observed in the groups of mice on MRET water activated for 30 minutes (optimal regime of activation). The significant anti-tumour effect of MRET Activated Water on mice was close to the action of the chemotherapy agents and allowed to avoid the side effects that typically follow chemotherapy treatment in oncology.



**Fig 1:** The effect of preventive (1-5) and therapeutic (6-10) application of MRET activated water on average total number of viable cells <C> in an ascetic tumor, obtained from mice inoculated intraperitoneally with tumor cells of Ehrlich carcinoma.



**Fig 2:** The change of the percentage increase of life span of tumor-bearing mice with ascitic Ehrlich carcinoma which received different types of MRET activated water in "preventive treatment" and "therapeutic treatment" regimes. The digits under the charts correspond with the duration of water activation in minutes.

### References:

- Smirnov, I.V. (2006-2) "The Physiological Effect of MRET Activated Water on Patients Suffering from AIDS" *Explore*, Vol.15, No.2: 37-40, USA
- Smirnov, I.V. and Peerayot, T. (2006-1) "The Physiological Effect of MRET Activated Water" *Explore*, Vol.15, No.1: 38-44, USA
- Smirnov, I.V. (2003) "Mechanism of Activated Water's Biological Effect on Viruses" *Explore*, Vol.12, No.4: 34-36, USA
- Vysotskii, V.I. (2006) "Investigation of Physical Properties of MRET Activated Water and its Successful Application for Prophylaxis and Treatment of Oncology" *Program and Abstract Book, International Congress on Medical Physics and Biomedical Engineering, August 27 - September 1 of 2006, Seoul, Korea*
- Vysotskii, V.I., Smirnov, I.V. and Kornilova, A.A. (2005) "Introduction to the Biophysics of Activated Water," *Universal Publishers, USA*

According to Molecular Resonance Effect Theory developed by American scientist Igor V. Smirnov, Ph.D. MRET activated water is beneficial for biological systems due to its long-range dynamic polarized-oriented multilayer molecular structuring compatible with the cell water structuring described by Dr. Gilbert N. Ling (2003) "A New Theoretical

Foundation for the Polarized-Oriented Multilayer Theory of Cell Water and for Inanimate Systems Demonstrating Long-range Dynamic Structuring of Water Molecules" *Physiol. Chem. Phys. & Med. NMR* 35: 91-130, USA. MRET water hydrates the cellular structures in the body, enhances the intracellular/extracellular water exchange, the metabolism and the reactions of immune system.

MRET Activator is a household appliance, not a medical device. Any pure drinking water or other liquid food substances like milk, vegetable oil, juice and wine can be activated. You also can use MRET water for cooking and keep cooked food in the refrigerator. Biological and physical tests conducted on MRET water confirmed that it had the best properties beneficial for health right after the activation and kept substantial part of them after storage at room temperature, refrigeration (during at least 45 days) and heating.

Interview of Dr. Smirnov "MRET technology":

[http://www.youtube.com/watch?v=RB0A\\_MqcmF8](http://www.youtube.com/watch?v=RB0A_MqcmF8)

### **MRET activated water inhibition effect on metabolic activity and growth of the pathogenic *Escherichia coli* K-12 microbial culture in aerobic conditions**

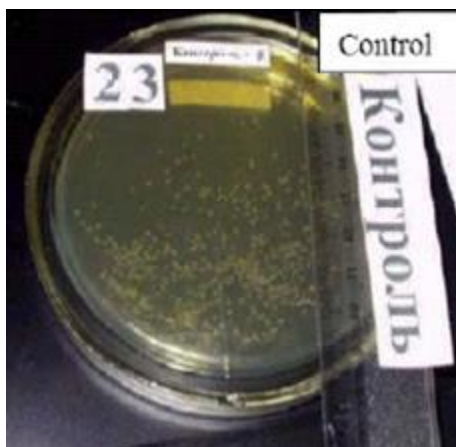
MRET water effect on the growth of strain *Escherichia coli* K-12 microbiological cultures in nutrient medium meat broth with 1.5% agar was carried out at Zabolotny's Institute of Microbiology and Virology, Ukraine Academy of Science. The goal of investigation was to find out the definition of the influence of MRET activation process of nutrient medium on a survival rate of *Escherichia coli* K-12 cells, growth of colonies on the surface of agar during 32 hours and size of grown cells. The significant effect of MRET activated water on the process of cloning of *E. coli* microorganisms, their division, the size of microorganisms' colony and the form of cell-like division has been discovered in aerobic conditions. It was observed for the first time that at low initial concentration of cells of investigated culture *Escherichia coli* K-12 MRET water activated during 0.5 hour and 1 hour have inhibited culture growth 27 - 303 times. Cultivation of colonies was produced at 20 C in aerobic conditions. Initial view of Petri dishes with different variants of activated nutrient medium at the beginning of experiments is presented on Fig 1.



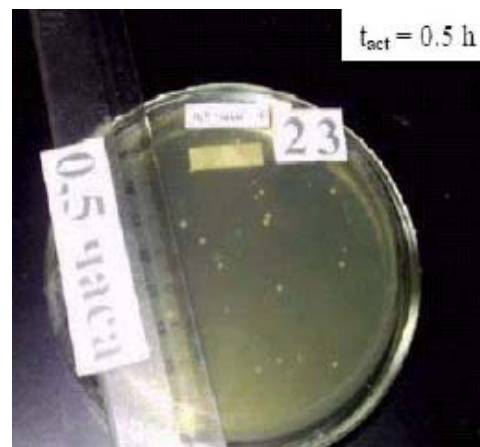
*Fig 1: The view of Petri dishes in the beginning of experiment. Identical very small amount of *Escherichia coli* K-12 cells was*

inoculated on a surface of non-activated nutrient medium of control dishes and on a surface of dishes with activated nutrient medium ( $t_{act}=0.5h$  and  $t_{act}= 1.0h$ ). Colonies of microorganisms are absent in all dishes.

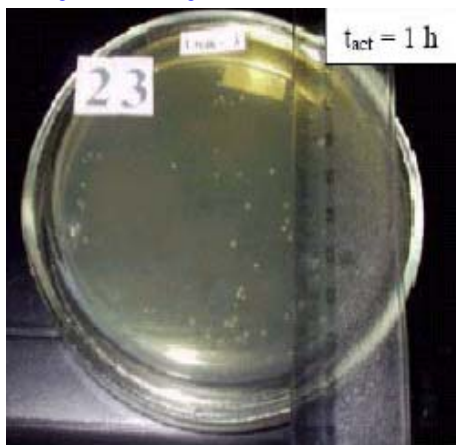
Two samples of water based nutrient medium were treated by MRET device for 30 minutes and 60 minutes respectfully. After that both non-activated (control) and activated medium samples were kept for 24 hours in sterile environment at 5°C temperature. Then E.coli bacteria were inoculated on the surface of non-activated samples and of two fractions of activated samples at 20°C temperature. The growth of E.coli bacteria began on the 17th hour of experiment. The pictures show test results on the 23rd hour of experiment. There is significant inhibition of growth of E.coli in activated samples. MRET treatment has strong sterilization effect. The view of Petri dishes with grown colonies and statistical parameters of the colonies in 23 hours after beginning of experiments is presented on Fig 2: a) non-activated nutrient medium (control); b) nutrient medium activated for 0.5 hour; c) nutrient medium activated for 1.0 hour.



a) Control  
The growth of culture Escherichia coli colonies is very great. Number of cells is  $NC = 1.7 \times 10^8$  cells/ml.  
Average diameter of grown colonies is  $d = 1.1$  mm.



b)  $t_{act} = 0.5$  hour.  
Number of cells is  $N_{0.5} = 6.4 \times 10^6$  cells/ml.  
Average diameter of growth colonies is  $d = 1.8$  mm.



c)  $t_{act} = 1.0$  hour. Number of cells is  $N_{1.0} = 5.2 \times 10^5$  cells/ml. with grown colonies Average diameter of grown colonies is  $d = 1.5$  mm.

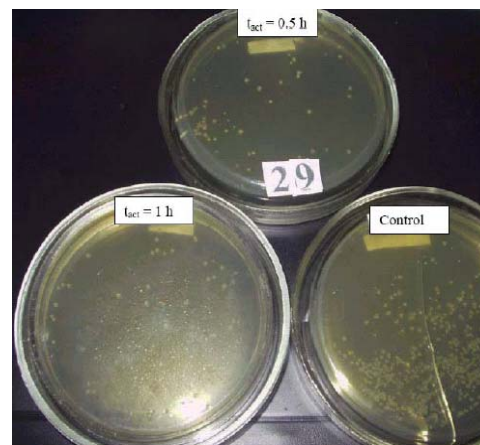
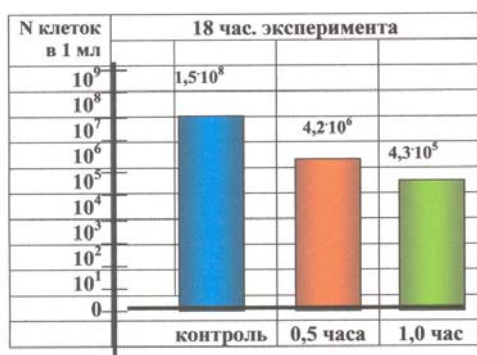


Fig 3:  
The view of selected Petri dishes of E.coli K-12 in 29 hours after the beginning of experiment.

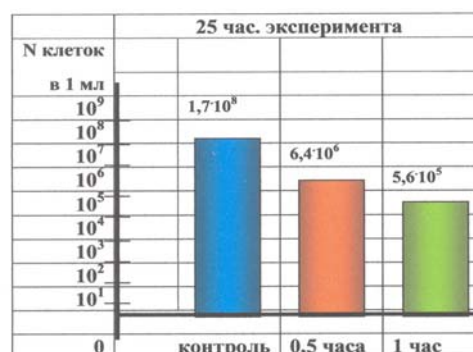
Fig 2: Petri dishes after 23 hours of experiment.

### Results:





After 18 hours of experiment



After 25 hours of experiment

Blue colour - control sample; Red colour - 30 minutes of activation; Green colour - 60 minutes of activation.

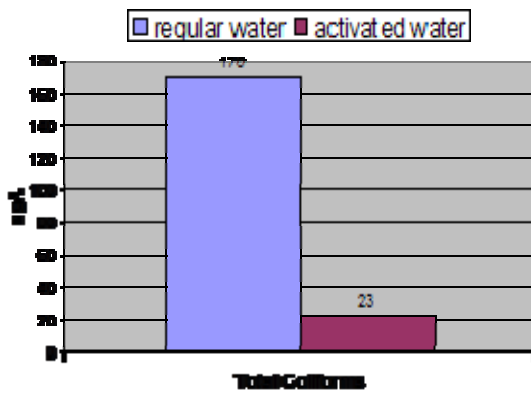
The inhibition of E.coli growth is more effective when activation time is increased. This experiment shows that MRET activation process has very strong germicidal effect on pathogenic E.coli microorganisms. It was observed for the first time that at low initial concentration of cells of investigated culture Escherichia coli in nutrient medium MRET activation during 0.5 hour and 1.0 hour has inhibited the culture growth  $N_c/N_{0.5} = 27$  and  $N_c/N_{1.0} = 303$  times. In other words, in activated medium at an optimum regime of MRET activation the growth of culture Escherichia coli K-12 are significantly inhibited in aerobic environment.

### References:

- Vysotskii, V.I. (2006) "The Biophysical Model and Experimental Observation of Strong Inhibition Activity of Water Activated with the Help of MRET Process" Program and Abstract Book, International Congress on Medical Physics and Biomedical Engineering, August 27 - September 1 of 2006, Seoul, Korea

### Germicidal activity of MRET water

Testing conducted at C.A.I. Environmental Laboratory, Carlsbad, USA revealed the significant reduction of the amount of total coliforms following the process of MRET activation. In the rainwater activated for 30 minutes the amount of total coliforms decreased by 86% after the process of water activation. This test confirms the germicidal effect of the process of water activation.

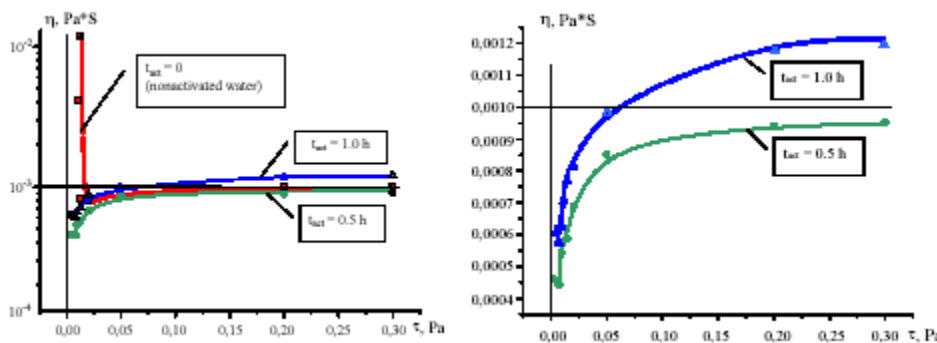


**References:**

- Smirnov, I.V. (2002) "Activated Water" Explore, Vol.11, No.2: 49-53, USA

**Physical properties of MRET activated water related to its biological benefits**

Viscosity of MRET activated water subject to very small tangent pressure decreases 300-500 times. The research conducted at Moscow State University, Russia on distilled water subject to tangent pressure showed that after MRET treatment the viscosity of water decreased up to 300-500 times compare to regular water in the area of very small magnitudes of tangent pressure. The anomalous viscosity of MRET water subject to very low tangent pressure confirms the high level of long-range dynamic polarized-oriented multilayer structuring of water produced with the help of MRET activation process: the high level of long-range molecular coupling (hydrogen bonding) inside the "layer" and very low level of molecular coupling between the "layers."



*Fig 1: Viscosity of non-activated water and two fractions of activated water at 20° C in the area of very low tangent pressure.*

It is well known that cellular processes in biological systems are driven by the low energy of bio-chemical reactions inside and between the cells and cellular structures. Consequently, such processes create low tangent pressures along water surfaces and the membranes between the cells. Thus, the very low tangent pressures existing in biological systems contribute to the manifestation of anomalously low viscosity of MRET water which results in improved intracellular/extracellular water exchange and can contribute to the enhancement of the cellular transduction mechanism and the proper function of cells in biological systems.

*"It means that water has a "super liquidity" characteristics and possesses very low resistance when it penetrates through small porous and capillaries in the body. Based on this fact it is possible to conclude that MRET water may significantly improve the cellular membranes function as well as the function of blood circulatory system in the body." [Smirnov 2006].*

**References:**

- Smirnov, I.V. and Peerayot, T. (2006) "The Physiological Effect of MRET Activated Water" Explore, Vol.15, No.1: 38-44, USA
- Vysotskii, V.I. (2006) "Investigation of Physical Properties of MRET Activated Water and its Successful Application for Prophylaxis and Treatment of Oncology" Program and Abstract Book, International Congress on Medical Physics and Biomedical Engineering, August 27 - September 1 of 2006, Seoul, Korea

**Modification of electro-dynamic characteristic of MRET water subject to low frequency applied EMF**

The research conducted at Moscow State University, Russia on distilled water that revealed the significant reduction of values of electrical conductivity (by 77 - 90%) and dielectric permittivity (by 80 - 90%) in the range of very low frequencies of applied EMF confirms the relatively high, long-range dynamic structuring of water molecules in activated water produced with the help of MRET activation process. The long-term storage of activated water (up to 5 hours at 20°C) did not significantly affect its modified electrodynamic characteristics, thus confirming the ability of MRET activated water to keep its anomalous properties for rather long period of time ("long-term water memory" phenomenon). The significant level of reduction of dielectric permittivity and electrical conductivity kept by MRET water activated for 30 minutes after it was heated to 72°C confirms its stability to thermal effects.

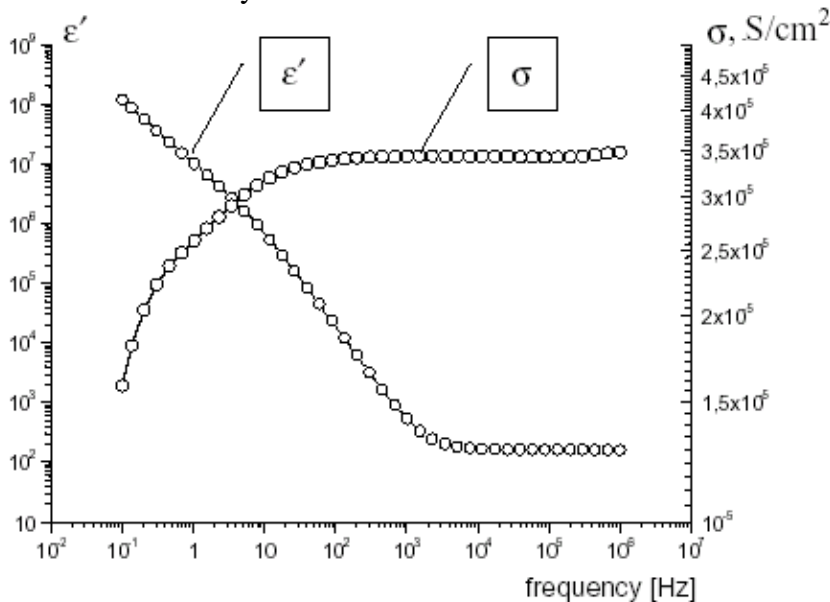
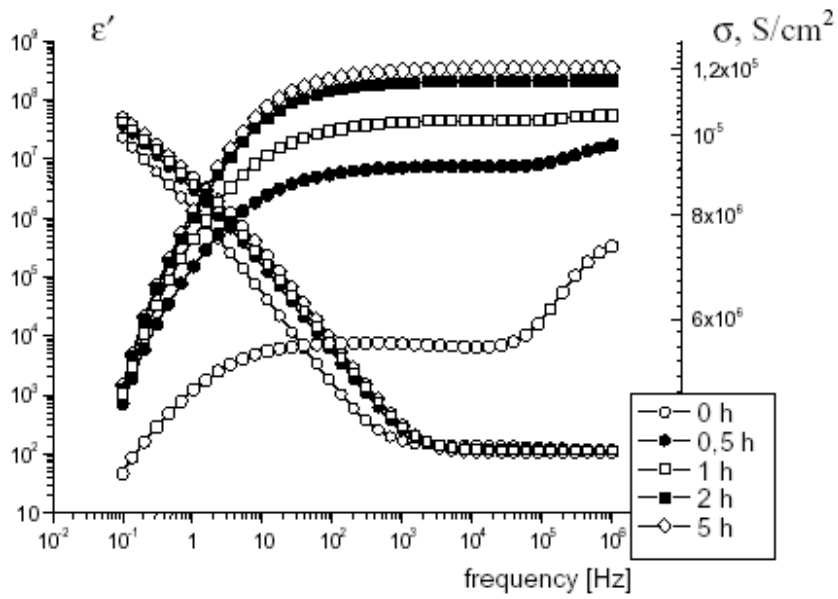
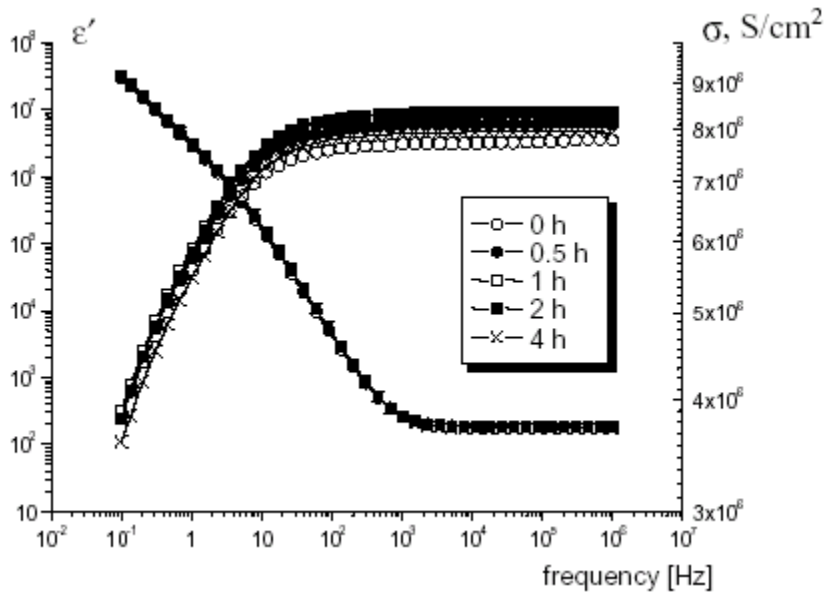


Fig 1: Electrodynamic characteristics of non-activated distilled water at temperature 20°C.





**Fig 2:** 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 3:** 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.

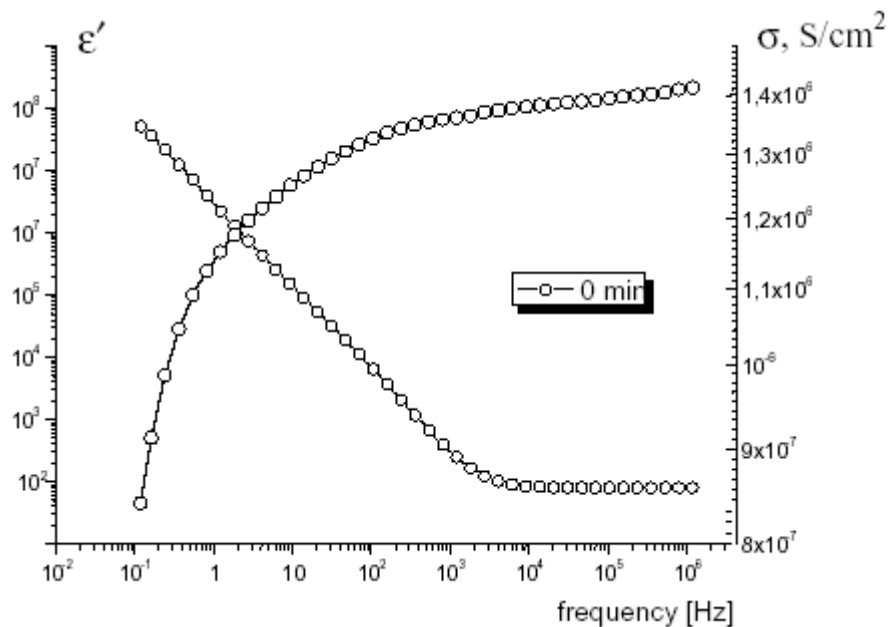


Fig 4: Electrodynamic characteristics of MRET water (30 minutes of activation) at temperature 72°C.

It is well known that cellular processes in biological systems are driven by the low energy of bio-chemical reactions inside and between the cells and cellular structures. Consequently, such processes create subtle low frequency electromagnetic field and low tangent pressures along water surfaces and the membranes between the cells. The anomalously low viscosity, dielectric permittivity and electrical conductivity of MRET water in the range of very low frequencies that exists in biological systems can contribute to the enhancement of the cellular transduction mechanism and result in improved intracellular/extracellular water exchange and the proper function of cells in biological systems.

**References:**

- Smirnov, I.V. and Peerayot, T. (2006) "The Physiological Effect of MRET Activated Water" Explore, Vol.15, No.1: 38-44, USA
- Vysotskii, V.I. (2006) "Investigation of Physical Properties of MRET Activated Water and its Successful Application for Prophylaxis and Treatment of Oncology" Program and Abstract Book, International Congress on Medical Physics and Biomedical Engineering, August 27 - September 1 of 2006, Seoul, Korea

**MRET activation balances the pH index reducing acidity or alkalinity of water**

*"The pH of the water will determine the relative health giving value of the water. Water that is ideal and has a pH potential of 7 to 7.5 showed optimum effects on maximizing the natural healing potential. Water that is alkaline is today's elixir of life. A youthful healthy body is alkaline. A diseased body is acidic."* [Dr. Sundardas D. Annamalay, N.D., Ph.D., M.D. (2002) "Science of Healing Waters" Times Books International, Singapore]. The research conducted at Moscow State University, Russia revealed the oscillating and fluctuating character of pH values in distilled water depending on time, spontaneous fluctuations of geomagnetic field and environmental conditions, and other types of

intracorrelation between physical and biological parameters of water. It confirmed that in MRET water activated for 30 minutes the pH index showed the tendency to balance closer to pH=7. This experiment revealed the tendency of the process of MRET activation for 30 minutes to reduce the acidity of distilled water compared to non-activated distilled water.

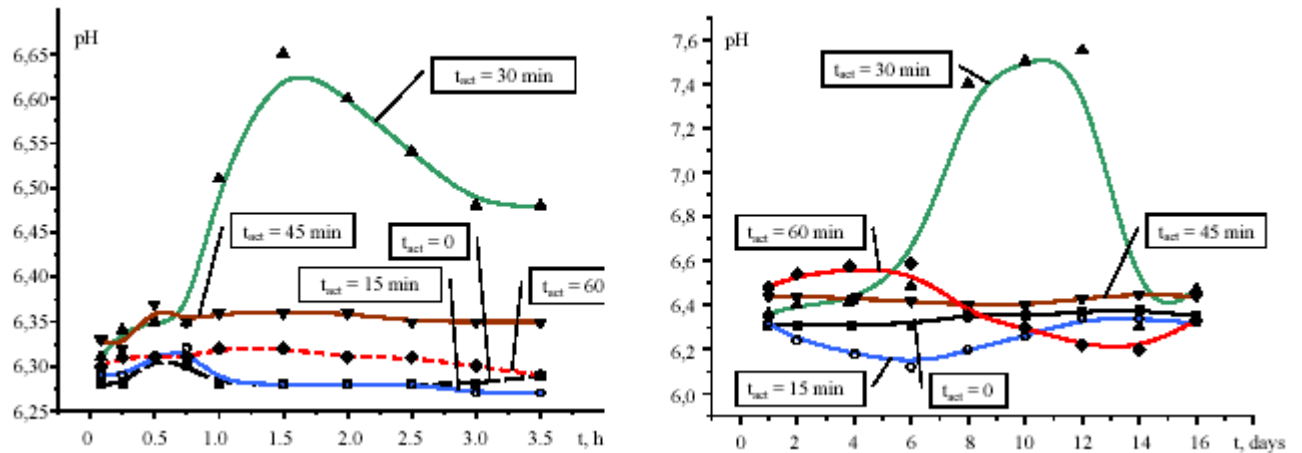


Fig 1: Hydrogen exponent pH of different fractions of activated water as a function of the time of its storage at temperature 20°C during first hours and 16 days after activation.

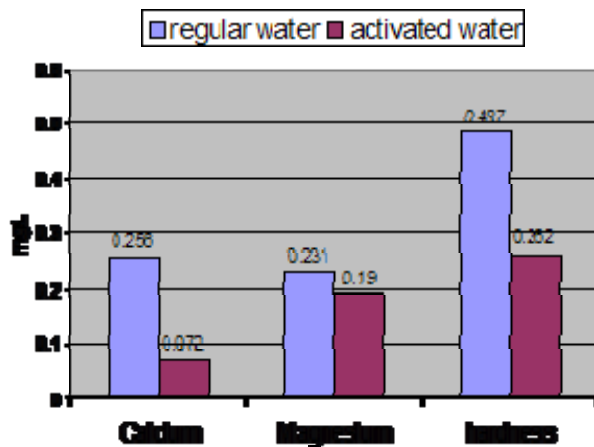
### References:

- Vysotskii, V.I. (2006) "Investigation of Physical Properties of MRET Activated Water and its Successful Application for Prophylaxis and Treatment of Oncology" Program and Abstract Book, International Congress on Medical Physics and Biomedical Engineering, August 27 - September 1 of 2006, Seoul, Korea

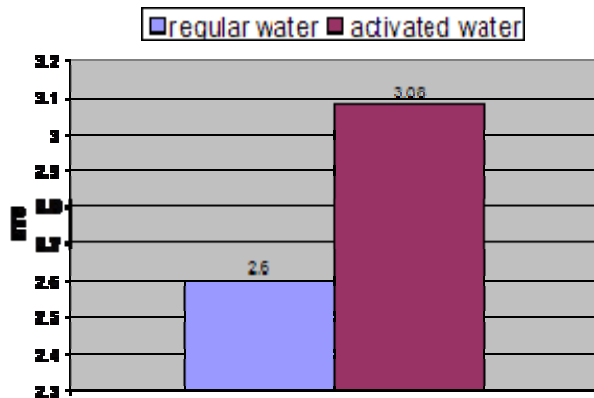
### Reduction of free radicals in MRET activated water (and water is softer and pleasant to drink!)

Free radicals (ions) can affect the cellular function in negative way. Consequently, the reduction of the level of free radicals in the body leads to the enhancement of the body homeostasis and metabolism. Testing conducted at C.A.I. Environmental Laboratory, Carlsbad, USA revealed the significant reduction of free radicals following the process of MRET activation.

In the water activated for 30 minutes the amount of ions of calcium decreased by 72% and the amount of ions of magnesium decreased by 18%. As a result, the hardness of water (combined amount of ions of calcium & magnesium) decreased by 45%. These results confirm that free radicals (ions) make bonding with long-range polarized molecular structures in MRET water and have less effect on the process of proper cellular function. The decrease of the hardness in MRET activated water contributes to its soft and smooth taste!



The process of activation increased the turbidity of water. The increase of turbidity illustrates that free radicals bonding with long-range polarized molecular structures of MRET activated water form sediments.



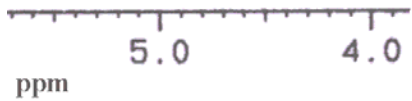
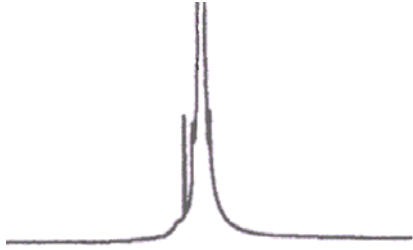
**References:**

- Smirnov, I.V. (2002) "Activated Water" Explore, Vol.11, No.2: 49-53, USA

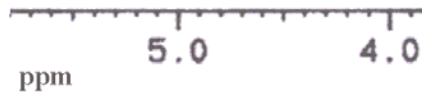
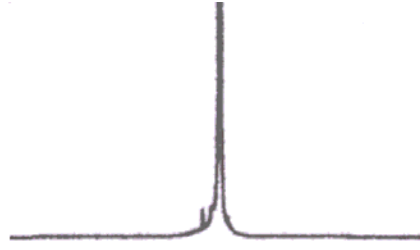
**Nuclear Magnetic Resonance test confirmed modification in water molecular structuring after MRET activation**

The test was conducted at Numega Resonance Laboratory, San Diego, USA on three samples of MRET activated water compared with a sample of non-activated water from the same source. Experimental data revealed a consistent 2.5 times increase in the width of "proton peak" in the line of NMR absorption for the samples of MRET activated water compare to the sample of regular non-activated water. The increase of the width of "proton pick" characterizes the increase of proton dispersion and confirms the modification in molecular structuring of MRET water.

MRET Activated Water



Non-activated Water



**References:**

- Smirnov, I.V. (2002) "Activated Water" Explore, Vol.11, No.2: 49-53, USA

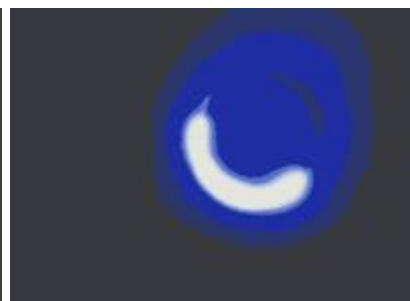
**Tests illustrating structural changes in water after MRET activation**

**High Voltage Photography**

This test was conducted at Global Quantech, Inc., San Diego, USA. The High-Voltage photographs showed the enhanced Corona Discharge Effect (luminous fringes that appear around electrically conductive samples of water) in MRET water. The physical process of cold emission of electrons produces the Corona Discharge phenomenon. The emission of electrons in MRET activated water is more intensive compare to non-activated water. It means that the energy level of water molecules is higher. Due to the fact that no foreign substances were introduced to the water during the activation process, the enhanced Corona Discharge Effect could occur only as a result of structural changes in MRET activated water.



MRET Activated Water



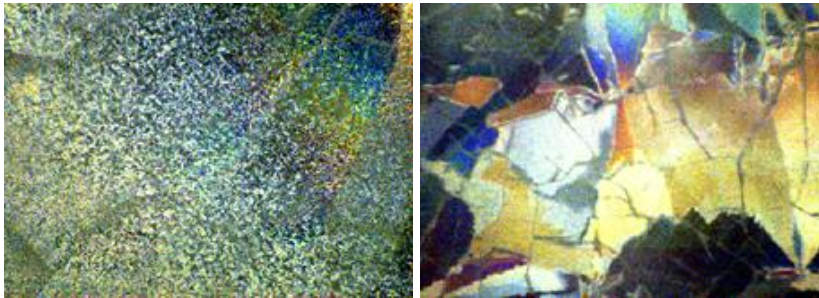
Non-activated Water

**References:**

- Smirnov, I.V. (2002) "Activated Water" Explore, Vol.11, No.2: 49-53, USA

## Dispersion Staining Microscopy

The test was conducted at Meixa Tech Laboratories, San Diego, USA. This test uses light to study the crystals formed in frozen MRET activated and regular non-activated water. The crystalline structure of the frozen regular tap water compare to activated tap water showed extensive fracturing and chaotic crystalline formation. This is likely due to the impurities and poor organized molecular structure in tap water, which interfere with crystallization process. MRET activated water samples showed well organized crystalline formations with a strong tendency of crystal axis to be oriented in one direction. This is likely a result of long-range polarized-oriented molecular structuring of activated water. In this experiment MRET water generated crystals that appear typical hexagonal crystalline structure of ice. This fact also illustrates that MRET activated water has fewer impurities than control tap water samples.



MRET Activated Water

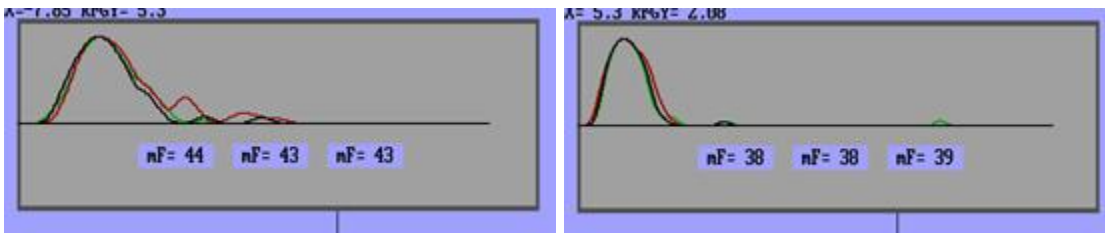
Non-activated Water

## References:

- Smirnov, I.V. (2002) "Activated Water" Explore, Vol.11, No.2: 49-53, USA

## Laser Spectroscopy

This test was conducted at Moscow State University, Russia. The Laser Spectroscopy method is based on the measurement of the density of light diffraction in the liquid media. When the laser beam penetrates the liquid media the density of light diffraction can be changed depending on the size and configuration of water molecular clusters. Laser Spectroscopy showed modification in water molecular structuring and molecular activity of water after MTRET activation.



MRET Activated Water

Non-activated Water