The Anomalous Low Viscosity and Polarized-Oriented Multilayer Molecular Structure of MRET Activated Water

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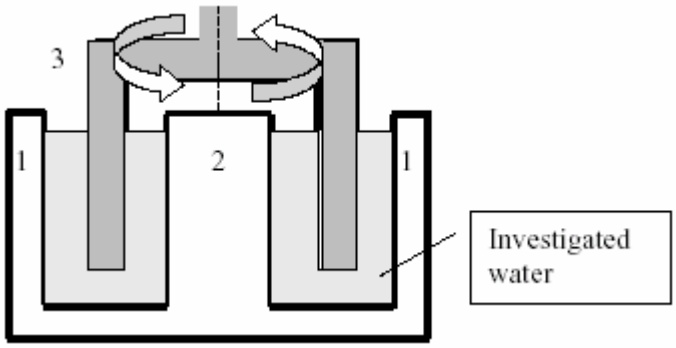
Abstract: The anomalous low viscosity of MRET activated water in the area of very low magnitudes of tangent pressure applied to the water was discovered during the experiments conducted at Moscow State University, Russia. It confirms the high level of long-range dynamic structuring of water molecules 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 introduction of MRET water to biological systems can contribute to the enhancement of the cellular transduction mechanism and the proper function of cells in biological systems. The significant positive effect of MRET Activated Water regarding the tumor resistance on animals was observed in the experiments conducted on 500 mice at Kiev Institute of Experimental Pathology, Oncology and Radiobiology, Ukrainian Academy of Science.

Objectives: MRET Activated Water is produced with the help of patented in the USA Molecular Resonance Effect Technology (MRET). MRET water activator is the stationary source of subtle, low-frequency, resonant electromagnetic field with composite structure. The origin of the low-frequency composite electromagnetic field is the intensive electrical activity inside the nano-rings formed by linear molecular groups of MRET polymer compound (volumetric fractal geometry matrix) when polymeric body is exposed to the external electromagnetic fields of specific frequency and wavelength [Vysotskii, Smirnov 2005]. The objective of this article is to demonstrate the anomalous behavior of viscosity of MRET water subject to applied tangent pressure in the area of very low magnitudes in order to provide some evidence regarding polarized-oriented multilayer structuring of MRET activated water and the possible effect of MRET water on the proper function of cells in biological systems.

The fundamental biophysical theories revealed the scientific paradigm regarding polarized-oriented multilayer structuring of cell water in biological systems [Ling 2003, 2001, Drost-Hansen 1971, 1991]. The suggested model of polarized-oriented multilayer structuring of cell water due to the interaction of water dipoles with pervasive matrix of fully-extended proteins [Ling 2003] constitutes the basis for the cellular transduction mechanism. Based on this scientific approach the similarity of molecular formations of cell water and MRET activated water can contribute to their compatibility, easy bio-availability and assimilation of MRET activated water, as well as to the enhancement of cellular functions in biological systems. A number of researches confirmed 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. Significant positive effect of MRET activated water regarding the tumor resistance on animals was observed in the experiments conducted on 500 mice. This investigation was conducted at Kiev Institute of Experimental Pathology, Oncology and Radiobiology, Ukrainian Academy of Science [Vysotskii 2006].

Metods: The anomalous low viscosity of MRET activated water in the area of very low magnitudes of tangent pressure applied to the water was discovered during the experiments conducted at Moscow State University, Russia with the help of Haake equipment Reometer RS 150L in compliance with the standard methodology for this instrumentation [Vysotskii 2006]. Reometer contains the measurement system of coaxial cylinders and the liquid (water in the described test) between them presented on Pic 1. The cylinders move inside each other very slowly in order to create the tangent pressure along water surfaces.



Pic 1: *The measurement system of coaxial cylinders of Reometer.*

This system allows for the measurement of the angles of deviation of rotor and the period of time during which these deviations take place. These measurements and the measurements of applied momentums of tangent pressure allow calculating the reometric characteristics of liquids, and particularly dynamic viscosity of water subject to applied tangent pressure.

It is well known fact in physics that in the area of movement with very low velocity (consequently, the corresponding tangent pressure along the liquid surfaces is also very low) the viscosity of liquids becomes very high due to the existence of the effect of *adhesion* (molecular coupling during the process of movement of surfaces along each other). In the area of movement with relatively high velocity (the corresponding tangent pressure along liquid surfaces is relatively high) the effect of *adhesion* is insignificant and does not affect the viscosity parameter of liquid.

Results: The Viscosity Test allowing for creation of tangent pressure along water surfaces and, consequently, allowing for the measurement of additional component of dynamic viscosity due to the effect of *adhesion* was conducted at 20˚C with the water samples treated with MRET Water Activator during 30 minutes and 1 hour respectively; they were compared to non-activated water. The results are presented on Fig 1.

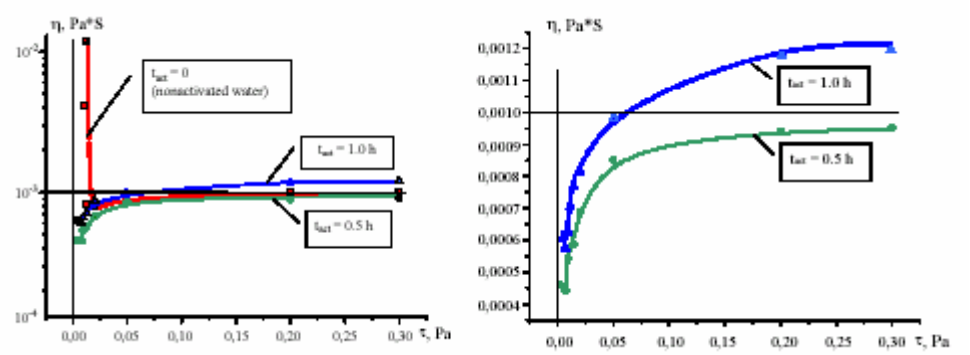


Fig 1: *Viscosity of non-activated water and two fractions of activated water at 20˚C in the area of very low tangent pressure.*

In the area of relatively significant tangent pressure **τ>0.2Pa** there was insignificant difference in the values of viscosity of water samples depending on the time of activation and all measurements were close to the standard dynamic viscosity value of the water **η=0.001Pa•s=1cP** at about 20˚C (Wikipedia, the free encyclopedia, http://en.wikipedia.org/wiki/Viscosity#Viscosity_of_water).

In the area of very low tangent pressure magnitudes close to zero (the tangent pressure **τ** in the range of **0.004 – 0.005Pa**) the value of viscosity of regular non-activated water in compliance with the phenomenon of *adhesion* sharply increased 150 – 250 times, for instance, to **η=0.22Pa•s** at **τ=0.004Pa**. In the same area of very low tangent pressure MRET activated water showed the anomalous effect of the decrease of viscosity about 2 times with a slight difference for both times of activation (slightly higher decrease of viscosity for 30 minutes activated water compared to 1 hour activated water). For instance, the value of viscosity of 30 minutes activated water dropped to **η=0.0004Pa•s** at **τ=0.0045Pa**. As a result of such anomalies the level of difference in the values of viscosity for non-activated and MRET activated water in the range of low tangent pressure magnitudes of **0.004 – 0.005Pa** was registered at the level of **300 – 500 times** for 30 minutes activated water and at the level of **200 – 250 times** for 60 minutes activated water.

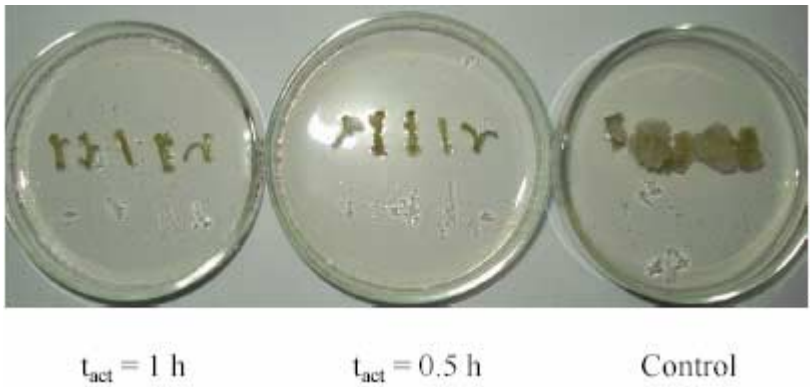
This result confirms the hypothesis regarding the alteration of the molecular formations in MRET activated water. Particularly, the anomalous low viscosity of MRET activated water in the area of very low tangent pressure confirms the polarized-oriented multilayer molecular structuring of MRET water: the high level of long-range molecular coupling (hydrogen bonding) inside the “layer” and very low level of molecular coupling between the “layers.”

Discussion: It is well known that cellular processes in biological systems are driven by the low energy of bio-chemical reactions inside and outside the cellular structures. Consequently, such processes create very low tangent pressure along water surfaces and the cellular membranes. Taking into consideration that intracellular/extracellular fluids and blood stream in veins and arteries of the body are subject to very low tangent pressure, the results of Viscosity Test can explain the beneficial effect of MRET activated water for biological systems. Thus, the very low tangent pressure existing in biological

systems contribute to the manifestation of anomalously low viscosity of MRET water which results in improved of intracellular/extracellular water exchange and blood circulation, and the following enhancement of hydration, detoxification and metabolism of the body.

The enhancement of the human body hydration was confirmed by Bioelectric Impedance Test conducted on eight human subjects at Global Quantech, Inc., USA with the help of FDA approved Bioelectric Impedance instrumentation, model Imp SFB7 and the following application of multi-frequency bioelectric impedance analysis. The experiment showed 3 times increase of the rate of intracellular/extracellular water exchange: the water exchange took 20 minutes after the ingestion of MRET activated water by human subjects compare to the 60 minutes in case of the ingestion of non-activated water by the same human subjects.

Taking into consideration the ability of MRET water to enhance morphology of human 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 (Pic 2) already confirmed by previous researches, the investigation regarding the effects of different fractions of MRET water on tumor cells and on the cells of immune system *in vivo* was conducted at Kiev Institute of Experimental Pathology, Oncology and Radiobiology, Ukraine [Vysotskii 2006].



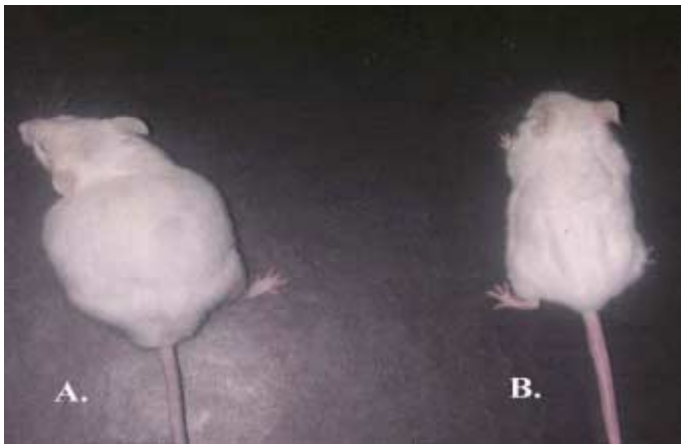
Pic 2: *The effect of MRET water (30 minutes and 60 minutes of activation) on the growth and development of kaluss tissue (mutated cells of botanical origin).*

The goal of this investigation was to study *in vivo* 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 tumor and Sarcoma ascites form). Significant positive effect of MRET activated water regarding the tumor resistance in 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 results were better in “preventive” regime compare to “therapeutic treatment” regime. Additionally, this investigation confirmed that the long-term storage of activated water at low temperature (around 0˚C) for 45 days decreased its anti-tumor efficacy but left it on the significantly high level compare to

other fractions of MRET activated water. The discussion and detailed description of the mechanism of "long-term memory effect" of MRET activated water was earlier presented and published [Vysotskii, Smirnov 2005]. The test results show the dual mechanism of MRET water effect on tumors: the prevention and inhibition of tumor growth together with the reduction of quantity of viable tumor cells. The significant anti-tumor effect of MRET activated distilled water in mice was close to the action of chemotherapy agents and allowed to avoid the side effects that typically accompany chemotherapy treatment.

The comparative picture of tumor-bearing mice on Non-activated water and on MRET activated water (optimal activation time 30 minutes) is presented (Pic 3).



Pic 3: *The appearance of mice from "control" (A) and "preventive regime" groups (optimal activation time 30 minutes) (B) on the 18th day after ascitic Ehrlich carcinoma cell inoculation.*

In the process of investigation of cytotoxic activity of NK-cells the significant increase of lymphocyte cytotoxicity levels was observed when donor mice were treated with MRET water activated for 30 minutes. This result showed that the extension of the application of MRET water from 14 days to 21 days significantly increased the value of cytotoxicity index. It is possible to admit that the extension of time of application of MRET water will lead to higher levels of enhancement in NK-cells activity. Thus, the application of MRET activated water can be quite promising approach for non-drug stimulation of NK-cells immunization vaccines.

Conclusions: **T**he level of difference in the values of viscosity for non-activated and MRET activated water in the range of very low tangent pressure magnitudes of 0.004 – 0.005Pa was registered at the level of 300 – 500 times for 30 minutes activated water and at the level of 200 – 250 times for 60 minutes activated water. 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.

It is well known that cellular processes in biological systems are driven by the low energy of bio-chemical reactions inside and outside cellular structures. Consequently, such processes create low tangent pressures along water surfaces and cellular membranes.

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.

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