

The Effect of MRET (Molecular Resonance Effect Technology) Activated Water on Enhanced Tumor Resistance in Oncology

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ABSTRACT

This article relates to a fundamental nature on how MRET (molecular resonance effect technology) Activated Water and its modified molecular structure, physical, and electrodynamic characteristics, may enhance specific molecular mechanisms in living cells. The research regarding the physical parameters of water confirmed that MRET treatment of distilled water leads to a substantial modification of the 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 that are produced with the help of MRET activation process. This paper is concerned with the potential of MRET Activated Water as a possible agent for the prevention and treatment of cancer.

INTRODUCTION

Molecular Resonance Effect Technology (MRET) Activated Water is produced by a Water Activator patented in the USA (MRET, US Patent # 6022479). The MRET Water Activator is the stationary source of subtle, low-frequency, resonant electromagnetic field of the composite structure. The origin of the low-frequency composite electromagnetic field is the intensive electrical activity inside the nano-circles, which is formed by linear molecular groups of MRET polymer compound (volumetric fractal geometry matrix) when a polymeric body is exposed to the external electromagnetic fields of specific frequency and wavelength.¹

The goal of this investigation was to study (in mice) the effect of MRET activated water as a potential agent for the prevention and treatment of two kinds of cancer (laboratory models of Ehrlich's ascites tumor and Sarcoma ascites form). The research was conducted under supervision of Professor V Vysotskii (Kiev State University, Ukraine), S Olishevsky, Ph.D., Y Yanish, Ph.D. (Kiev Institute of Experimental Pathology, Oncology, and Radiobiology, Ukrainian Academy of Science), and A Kornilova, Ph.D. (Moscow State University, Russia).

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) confirmed the high level of long-range dynamic structuring of water molecules in polarized-oriented multilayer formations that are present in activated water produced with the help of the MRET activation process.² The fundamental biophysical theories revealed the scientific paradigm regarding the polarized-oriented multilayer structuring of cell water in biological systems. The interaction of water dipoles with a pervasive matrix of fully-extended proteins constitutes the basis for the cellular transduction mechanism.³ 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.

METHODS

The following experimental approaches and techniques were used in this research in order to find out how different fractions of MRET Activated water affect the tumor resistance of an organism:

- Study of possible anti-tumor efficacy of preventive administration of different fractions of activated water; mice received activated water during 2 weeks before tumor cell transplantation and for 3 weeks after transplantation (preventive treatment regime).
- Study of possible anti-tumor efficacy of therapeutic administration of different fractions of activated water; mice received activated water for 3 weeks after tumor cell transplantation (therapeutic treatment regime).
- Investigation of functional cytotoxic activity of lymphocytes containing natural killer cells (NK-cells) isolated from spleens of mice (without tumors) which received activated water; for this purpose lymphocytes were further incubated with tumor target cells.

Five different fractions of MRET activated water were prepared to elucidate the effectiveness of the anti-tumor effects of MRET activated water depending upon the time of its activation. Four water fractions were obtained after water activation for 15, 30, 45, and 60 minutes respectively. Furthermore, before the beginning of the investigation a large volume of water was activated for 30 minutes and stored at 4°C during 45 days. This fraction of activated water was called "old activated water".

Inbred adult male BALB/c mice, 11 weeks old, with 23 – 24 g corporal weight were used in the study. These white mice are very susceptible to various oncological diseases. In total, 11 groups of mice were used for the preventive and therapeutic study, and each group consisted of 20 mice. Of the 11 groups, 5 were used in the preventive arm of the study and another five were used in the therapeutic arm of the study, these ten groups of mice all received MRET Activated Water. The remaining group served as a control, and mice from this group received non-activated distilled water.

The ascitic Ehrlich carcinoma tumor cells were transplanted to all groups of mice for the first experiment. The first stage of the investigation was finished on the 8th day after tumor cell inoculation, when 10 mice from each group were sacrificed and ascitic fluids containing tumor cells were obtained from peritoneal cavities. The comparison of ascitic fluid volumes and the number of viable tumor cells from "preventive treatment", "therapeutic treatment", and "control" groups of mice allowed for the study of the effects of application of different fractions of activated water on growth and size of tumors in tumor-bearing mice. In the second stage of the experiment the lifespan of tumor-bearing mice was studied.

In order to understand the possible mechanism behind the anti-tumor effects of MRET activated water an investigation into the modification of the cytotoxic activity of lymphocytes by MRET Activated Water was conducted on another 11 groups of tumor-free mice (each containing 5 mice) that had been treated with different fractions of activated water. The lymphocytes contain natural killer cells (NK-cells), which have the natural function of spontaneous cytotoxicity (without prior immunization), a function that is very important for proper immune system reactions. Due to this ability NK-cells are considered to play a critical role in immune surveillance and cancer therapy. NK-cells that infiltrate tumors may protect against tumor spread. They also produce cytokines that can contribute to the elimination of infection. Therefore substances that are capable of enhancing the functional activity of NK-cells are of great interest.

The purpose of this investigation was to evaluate optimal regimes of MRET water activation and the regime of application of activated water in order to maximize the stimulation of the cytotoxic activity of NK-cells. In the first stage of the research mice of experimental groups received activated water during different periods of time. Mice of "preventive treatment" groups received different fractions of MRET Activated Water for 21 days, and mice from "therapeutic treatment" groups received MRET Activated Water for 14 days. After treatment with MRET Activated Water, mononuclear lymphocyte fractions containing NK-cells were isolated from the spleens of mice in the experimental groups. In the second stage, the cytotoxic activity of NK-cells incubated with tumor target cells obtained from peritoneal cavities of mice transplanted with ascitic Ehrlich carcinoma was studied. The incubation was conducted for 18 hours at 37°C in a humidified atmosphere with 5% CO₂, and then the micro plates were gently centrifuged for 5 minutes.

RESULTS

The experimental results showed that consumption of all types of MRET activated water lead to a significant inhibition of tumor growth in mice with transplanted tumors. The best results were observed in the groups of mice treated with MRET water activated for 30 minutes (optimal regime of activation). The substantial anti-tumor efficacy was confirmed by the very high level of reduction of the total number of viable tumor cells, which is comprised of two processes: diminishing volume of ascitic fluid in peritoneal cavity of tumor-bearing mice (50% for animals in "preventive treatment" group) and a decrease of the number of viable tumor cells per unit of tumor tissue (52% in the same group). The resulting decrease of the total number of viable tumor cells was 76%. The viable tumor cells were determined by the Trypan Blue Exclusion Test: the uncolored cells were considered as viable.

The test results show the dual mechanism of MRET Activated Water's effect on tumors: the prevention and reduction of the volume of the tumor together with the inhibition of viable tumor cells. An approximate level of efficacy was observed in other groups (water activated for 15 and 45 minutes) within the "preventive treatment" regime of application of MRET Activated Water. The application of MRET Activated Water in the "therapeutic treatment" regime was less effective. The reduction of the total number of viable tumor cells by 55% was observed for the optimal 30 minutes MRET Activated Water. It

is important to note that the long-term preservation of MRET Activated Water for 45 days decreased its anti-tumor efficacy; however its effects were still significant in comparison with other fractions and non-activated water. Thus, this investigation confirms that MRET Activated Water is an effective anti-tumor agent. The results of the experimental measurements of the average total number of viable tumor cells of ascitic Ehrlich carcinoma are presented on Fig. 1.

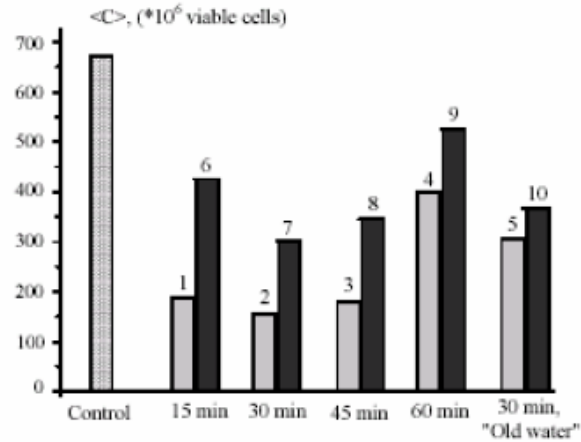


Fig. 1 The effect of preventive (1–5) and therapeutic (6–10) application of MRET Activated Water on the average total number of viable cells $\langle C \rangle$ in an ascitic tumor, obtained from mice inoculated intraperitoneal with tumor cells of Ehrlich carcinoma.

The survival of the investigated animals was monitored daily in order to study the effect of different MRET Activated Water fractions on dynamic and survival indices of tumor-bearing mice. The data of the dependence of changes of lifespan of tumor-bearing mice for both application regimes and all types of activated water are presented in Fig. 2. The results confirmed that the consumption of MRET Activated Water substantially increased the survival of tumor-bearing animals. The increase of lifespan was observed in all groups of mice except those in the “therapeutic treatment” group on water activated for 60 minutes. Water activated for 30 minutes (optimal regime of activation) produced the most significant effect on survival of mice with transplanted tumors. The lifespan of mice that received optimal MRET Activated Water in the “preventive treatment” regime increased by 61%. Significant increase in lifespan (approximately 45%) were also observed when mice were treated with MRET Activated Water (activation time 15 minutes, and 45 minutes) in the “preventive treatment” regime. The increase of life span by 43% was observed in the “therapeutic treatment” regime group administered the optimal 30 minutes MRET Activated Water.

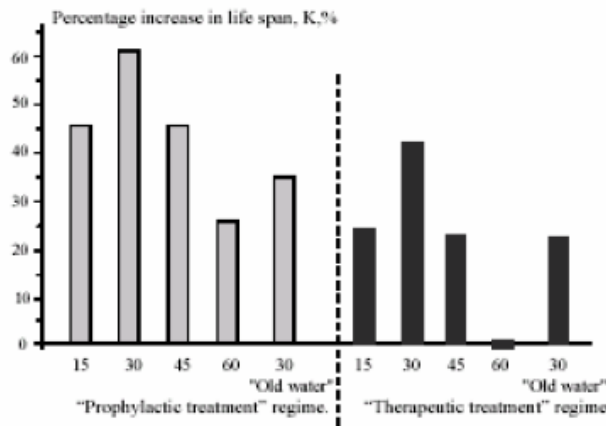


Fig. 2 The change of the percentage increase of lifespan of tumor-bearing mice with ascitic Ehrlich carcinoma that received different types of MRET Activated Water in “preventive treatment” and “therapeutic treatment” regimes. The digits under the charts correspond with the duration of water activation in minutes.

The similar investigation conducted on mice with transplanted ascitic sarcoma revealed similar tendencies in the efficacy of MRET Activated Water as an anti-tumor agent with the best results achieved with water activated for 30 minutes.

The effect of application of different fractions of MRET Activated Water on the cytotoxic activity of spleen mononuclear lymphocytes with NK-cells is shown in Fig 3. The increase in the cytotoxic index in both regimes (21 days and 14 days of application of MRET Activated Water for mice without tumors) by 26% and 10% respectively was observed only in the groups of mice receiving MRET Activated Water that had been activated for 30 minutes. The cytotoxic index also increased in the group of mice treated with "old" 30 minutes MRET Activated Water in the "preventive" regime (21 days of MRET Activated Water application). No significant changes in cytotoxic index were observed for the other water fractions.

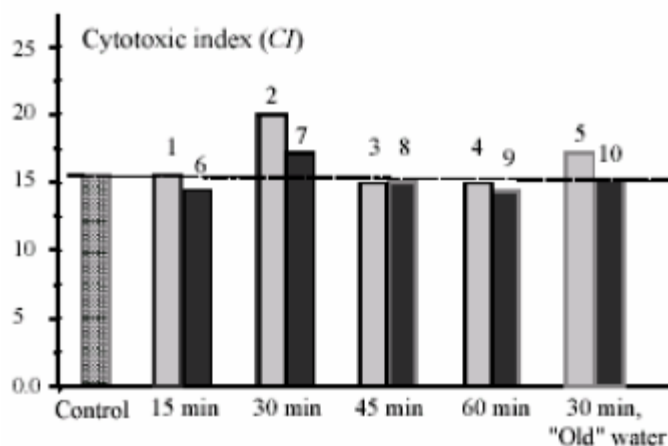


Fig. 3 The effect of MRET Activated Water on the cytotoxic activity of lymphocytes containing NK-cells. MRET Activated Water was given to mice without tumors in two regimes (for 21 and 14 days), called "preventive" (1–5) and "therapeutic" (6–10).

CONCLUDING REMARKS

The research conducted confirmed that the MRET activation process contributed to substantial modification of the basic physical-molecular properties of distilled water (substantial reduction of viscosity as a function of applied tangent pressure, as well as a substantial decrease of electrical conductivity and dielectric permittivity as functions of the frequencies of applied electromagnetic field).

The significant positive effect of MRET Activated Water on the tumor resistance of biological organisms was observed in the process of this investigation in all groups of mice receiving different fractions of water. The best results were observed in the groups of mice treated with MRET Activated Water which had been activated for 30 minutes (optimal regime of activation). Better results were obtained from the "preventive treatment" regime than with the "therapeutic treatment" regime. Additionally, this investigation confirmed that the long-term preservation of activated water at low temperature (around 0°C) for 45 days decreased its anti-tumor efficacy; however it still displayed significant anti-tumor properties. The test results show the dual mechanism by which MRET Activated Water exerts its effect upon 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 Water on mice was close to the action of chemotherapy agents, however unlike chemotherapy agents MRET Activated Water does not cause unpleasant adverse side effects.

In the process of investigation of the cytotoxic activity of NK-cells the significant increase of lymphocyte cytotoxicity levels was observed when donor mice were treated with MRET Activated Water that had been activated for 30 minutes. The results also showed that the extension of the administration of MRET Activated Water from 14 days to 21 days significantly increased the value of its cytotoxicity index. It is possible to admit that the extension of time of application of MRET Activated Water will lead to a greater enhancement in NK-cell activity. Thus, the application of MRET Activated Water may offer a promising approach for non-drug stimulation of NK-cells.

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ABOUT THE AUTHOR

Dr. Igor Smirnov graduated from St. Petersburg Naval Academy, Russia, obtaining M.S. in Mechanical Engineering in 1975. In 1986 he graduated from St. Petersburg State University obtaining his Ph.D. in Clinical Psychology. In the 1980's he was actively involved in advanced research regarding the influence of low frequency electromagnetic oscillations on human cellular structure conducted at St. Petersburg University. Based on this research program he developed Molecular Resonance Effect technology (MRET) which was patented in the USA in 2000. He was also involved in advanced research and study of the psychosomatic development of children swimming in infancy. This research program was conducted at St. Petersburg Children Hospital. The results of this scientific research program was published and disseminated through the office of World Health Organization in Munich, Germany [<http://www.dissertation.com/book.php?method=ISBN&book=1581122845>]. He is a President of Global Quantech, Inc., biotech research company.