

## Preface

This book presents the results of complex experimental and theoretical studies of the characteristics of water activated by external action. The studied samples of activated water were obtained with the help of Molecular Resonance Effect Technology (MRET). We discuss the results of detailed studies of mechanical, electrodynamic, optical, and other characteristics of activated water itself and various physical phenomena associated with its application. About half of the book is devoted to the comprehensive studies of the specific features of the influence of activated water on various biological objects (plants, microorganisms, animals). These investigations were carried out from year 2004 to 2008 at several scientific institutes and universities of Ukraine, Russia, and USA, with participation from the authors of the book.

Despite the wide spectrum of the performed studies related to various branches of science, the final object of these studies was, eventually, activated water. Both in the process of these studies and in the analysis of the obtained experimental results, the authors did not attach non-distinctive or even mystic sense to the notion of activated water, and considered it always as an ordinary object of studies which has undergone the strictly controlled action of definite physical fields with definite time intervals. These time intervals (the duration of activation) were chosen from preliminary studies, and determined from the range of the most essential action.

First of all, we indicate that our investigations have no connections with extrasensorics, astrology, and other marginal fields. In connection with the existing ambiguity of the interpretation of the notion of activated water, we would like to note that the studied activated water was pure (in particular, distilled) water which had been subjected to a sufficiently long-term treatment by very weak nonionizing electromagnetic fields with definite frequency-related, spatial, and polarization-related properties. These fields were created by several identical unified generators constructed on the basis of the MRET technology. Additionally, we also refer to the use of definite strictly-controlled temperature for the storage of activated water prior to its investigation or prior to its application on biological objects.

The detailed investigations showed that, upon such electromagnetic treatment, significant quasistable changes occur in the spatial structure of water. These changes can be preserved for a very long time interval and, in turn, can lead to changes in the physical properties of activated water and to a significant modification of its biophysical and biochemical actions on living organisms. These changes can be considered as evidence of manifestation of the long-term “memory” of activated water.

The present publication is a natural and logical sequel to our preceding book (Vysotskii, Smirnov and Kornilova, 2005), where we considered some theoretical aspects of the influence of nonionizing and ionizing fields on water.

Below, we give briefly the organization of the book for the readers’ convenience.

The first chapter includes the analysis of the well-known characteristics of ordinary water. In addition, we consider a number of established and new models of water structure. Here, we touch the problem of the memory of water and study some specific models of such memory. Particular attention is paid to the clathrate model of water memory, for which we performed specific calculations of the time intervals with different types of relaxation and at various temperatures (Vysotskii and Kornilova, 2004). The results of these calculations agree sufficiently well in a wide range of variation in temperature, with the data of the experiments obtained by the authors and analyzed in the subsequent chapters in detail.

The second chapter is devoted to the analysis of the main concepts of the process of water activation with the help of US patented MRET water activation technology, which is based on the effect of specific subtle, low frequency, nonionizing electromagnetic field generated by MRET activator. Written by the patent holder Dr. Igor Smirnov, this chapter describes the mechanisms of formation of volumetric fractal matrix in a polymeric compound produced in compliance with MRET technology. Dr. Smirnov also presents the brief results of scientific investigations supporting his theoretical concepts regarding the character of anomalous electromagnetic processes running in the volume of fractal matrix of MRET polymer compound following its excitation by defined external electromagnetic fields of special structure. He also analyzes the reasons for the existence of quasi-stable structural defects in the volume of water and the formation of long-range water molecular structures following the process of its activation. Then, based on the scientific investigation of the anomalous viscosity of MRET water, the author shows the compatibility of long-range polarized oriented

multilayer structuring of MRET Activated Water with the analog structuring of cell water in biological systems presented in numerous theoretical studies of famous scientist such as Dr. Ling (2003) and Dr. Drost-Hansen (1991). All biological and physical studies described in this manuscript were conducted on activated water produced with the help of MRET water activator.

The third chapter of the book is related to the description of the procedure of complex studies of the physical characteristics of activated water and the analysis of the results of these studies. In the performed experiments, we show that the activation of water causes very essential changes in the electromagnetic, mechanical (including viscosity-related), and spectral properties of water. Several important experiments were conducted with participation of Prof. N. D. Gavrilova and Dr. E. Malyshkina, from Lomonosov Moscow State University, and Dr. L. N. Nikitin from Russia Academy of Science. We studied the dependence of the manifestation and the existence of these specific features of the properties of activated water on the water-activation duration, temperature, and the duration of storage after the activation. We note that some of these changes in the properties of water are so paradoxical in nature and great in magnitude that they can be undoubtedly referred to as anomalous. The dependence of changes in the properties of water on time after the completion of the activation of water is also uncommon and has no analogs in the literature. We discovered that at a low temperature, the anomalous properties of water can be preserved for many days. Some of the parameters of activated water (in particular, the hydrogen index pH) are characterized by spontaneous oscillations with a great amplitude and with the period of oscillations ranging from several hours to several days.

The fourth chapter presents the study of the influence of various types of activated water on higher plants. These investigations were conducted under the supervision of Dr. N. A. Matveeva from the Institute of Cell Biology and Gene Engineering of the National Academy of Science of Ukraine (NASU). In this chapter, we study the conditions under which activated water renders stimulating action on the growth of higher plants and, in particular, vegetable crops. We investigated the influence of the activation of water on the growth of sterile plants and callus tissue. It is shown that activated water produced in a certain mode of activation can very strongly (by hundreds of times) inhibit nonspecific growth of callus tissue. This unusual result allows one to forecast the possibility of the effective utilization of such water for the therapy of a number of diseases (in particular, psoriasis).

The fifth chapter is devoted to the study of the influence of activated water on pure microbiological cultures and on their natural associations, including

a very large number of different cultures with multifunctional connections of the symbiosis type. The investigations were carried out under aerobic and anaerobic conditions. It is demonstrated that the use of water activated in certain modes increases sharply the reductase activity of microorganisms and very significantly changes the specific features of the influence of various types of antibiotics on microorganisms (enhancing such an influence or weakening it). It is also shown that, under definite conditions, activated water possesses very strong bactericidal properties and can inhibit the development of pathogenic microbiological cultures by tens and hundreds of times. These detailed investigations were conducted under the supervision of Dr. A. B. Tashyrev from Zabolotny Institute of Microbiology and Virology of NASU (Kiev). Such properties allow one to forecast the possibility of the use of a definite mode of the activation of water for its sterilization.

In the sixth chapter, we consider comprehensively the specific features of the influence of water activated in different modes on the prophylaxis and treatment of some types of oncologic diseases. In the experimental studies performed on mice, we have shown that the intake of water activated for a definite time decelerates sharply the development of tumors of two types (*Ehrlich carcinoma* and *Sarcoma 37*) in inoculated mice, and increases very significantly the lifetime of sick animals. We have found that, by the efficiency of antitumoral action, the intake of optimally activated water corresponds approximately to the methods of chemotherapy or radiation antitumoral therapy, but, contrary to them, renders no negative side action on the other organs and systems of animals. In particular, we prove that the intake of activated water increases significantly the immunity of animals, antitumoral activity of lymphocytes with natural killing properties, and the index of cytotoxic activity. Here, we have also studied the dependence of the antitumoral action of activated water on both the time and the mode of its intake (prior to the appearance of a tumor, i.e. in the mode of antitumoral prophylaxis or thereafter, which corresponds to the mode of therapy). It is demonstrated that the factor concerning the duration of the intake of water and the mode of the intake are very important circumstances which affect the treatment. These fundamental investigations were conducted under supervision and participation of Dr. Yu. V. Yanish and Dr. S. Olishesky from Kavetsky Institute of Experimental Pathology, Oncology, and Radiology of NASU (Kiev).

In the seventh chapter, the effect of activated water on staphylococcal infection *in vivo* in animal model (on the cells of immune system) and *in vitro* on the culture of *Staphylococcus aureus* was investigated. The investigation

was conducted in two steps. The experiments *in vivo* were conducted on mice infected with *Staphylococcus* culture after preventive consumption of MRET Activated Water (including the effect of activated water on the development of the local acute inflammation, on the death rate of animals in the case of intra-peritoneal staphylococcal infection, on staphylococcal infected mice, on the cellularity and the weight of lymphoid organs, and on functional activity of cells of the phagocytic system). In the *in vitro* experiments, the growth of identical staphylococcal culture was studied on meat-peptone agar treated with MRET activator. These investigations were conducted under the supervision of Prof. L. S. Kholodna from Biological Department of Kiev National Shevchenko University.

The eighth chapter is related to the analysis of some possible biophysical mechanisms of the influence of activated water on biological objects. In this chapter, we consider possible phenomena and processes, with the help of which the consumption of activated water of certain types stimulates the immunity, enhances the antitumoral activity of lymphocytes, inhibits the growth of tumors, increases the lifetime of sick animals, inhibits the growth of callus tissue, and ensures the bactericidal properties concerning the development of pathogenic cultures. All the above-mentioned consideration is carried out on the cell level of the organization of organism and is closely related to the results of the physical and biological experiments presented in this book.

In the ninth chapter, we present the total generalizing analysis of all the obtained experimental and theoretical results, some conclusions, and a number of proposals for the possible utilization of activated water in solving the applied problems of medicine, biology, biotechnology, and agriculture.

The preface, Chapters 1, 3, 4, 5, 6, 8, 9 and part of Chapter 7 were written by Prof. V. I. Vysotskii and Dr. A. A. Kornilova on the basis of their own theoretical studies and experiments carried out with their participation at the laboratories of several leading scientific institutes and universities of Ukraine and Russia. Chapter 7 was written under the supervision of Prof. L. S. Kholodna.

In the writing of the book, we used experimental results obtained over the duration of four years from the studies carried out jointly with Prof. V. I. Vysotskii and Dr. A. A. Kornilova at the Kiev National Shevchenko University (Ukraine), Lomonosov Moscow State University (Russia), Zabolotny Institute of Microbiology and Virology of the National Academy of Sciences of Ukraine (NASU), Institute of Cell Biology and Gene Engineering of NASU, Kavetsky Institute of Experimental

Pathology, Oncology, and Radiology of NASU, and Institute of Elementoorganic Compounds of Russian Academy of Science (RAN). The authors express their deep gratitude to Dr. N. A. Matveeva, Dr. A. B. Tashyrev, A. A. Tashyreva, Dr. Yu. V. Yanish, Dr. S. Olishevsky, Prof. L. S. Kholodna who performed the experiments on the study of the influence of activated water on plants, microbiological cultures, oncologic cells, animals with inoculated oncologic tumor, and on staphylococcal infection. We also sincerely thank our colleagues Prof. N. D. Gavrilova and Dr. E. Malyshkina from the Physical Department of Lomonosov Moscow State University (Russia), and Dr. L. N. Nikitin from the Institute of Elementoorganic Compounds of Russian Academy of Science who measured the viscosity, dielectric properties, and IR- and UV-spectra of activated water.

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Chapter 2 was written by Dr. I. V. Smirnov. It is substantiated by his US patented technology “Method and Device for Producing Activated Liquids and Methods of Use Thereof” (Patent number 6002479) and by numerous scientific investigations conducted in certified research institutions and universities worldwide for several years.

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