

ШКОЛА ЛІКАРЯ

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THE QUANTUM ROLE OF THE WATER IN THE HUMAN BODYG. V. Nevoit^{1*}, S. I. Danylchenko², M. M. Potyazhenko³, O. P. Mintser⁴, G. Jarusevicius⁵, A. Vainoras^{6*}¹Laboratory for Automatization of Cardiovascular Investigations, Cardiology Institute, Lithuanian University of Health Sciences, Kaunas, Lithuania²Public organization «Innovative Medical Platform», Ivano-Frankivsk, Ukraine Department of Physical Therapy, Occupational Therapy, Kherson State University, Ivano-Frankivsk region, Ukraine³Department of Internal Medicine and Emergency Medicine, Poltava State Medical University, Poltava, Ukraine⁴Department of Fundamental Disciplines and Informatics, Shupyk National Healthcare University of Ukraine, Kyiv, Ukraine⁵Laboratory for Automatization of Cardiovascular Investigations, Cardiology Institute, Lithuanian University of Health Sciences, Kaunas, Lithuania⁶Laboratory for Automatization of Cardiovascular Investigations, Cardiology Institute, Lithuanian University of Health Sciences, Kaunas, LithuaniaORCID: 0000-0002-1055-7844, e-mail: ganna.nevoit@lsmu.ltORCID: 0000-0001-5312-0231, e-mail: svetlanaadanilch@gmail.comORCID: 0000-0001-9398-1378, e-mail: m.potiazhenko@pdmu.edu.uaORCID: 0000-0002-7224-4886, e-mail: omintser@gmail.comORCID: 0000-0001-9205-1902, e-mail: gediminas.jarusevicius@lsmu.ltORCID: 0000-0002-5732-8520, e-mail: alfonsas.vainoras@lsmu.lt*Correspondence: ganna.nevoit@lsmu.lt; gediminas.jarusevicius@lsmu.lt

Abstract. This is a review of the third lecture in the “Bioelectronic Medicine or Look at Medicine Differently” series. New perspectives on the role of water in cells are presented. Modern biophysical approaches explain water’s ability to conduct biological electromagnetic fields/currents, thereby playing a key role in the transfer of energy and information in vivo.

The study of the fundamental mechanisms of biological life remains a pressing issue in modern science. Understanding what makes the body, its tissues, cells, and molecules alive, and what goes wrong within them, leading to disease and death, is key to understanding the essence of the human body’s fundamental processes. Consequently, this understanding underlies the pathogenesis of diseases and their treatment. However, fundamental questions, without which further scientific progress in this area would be impossible, have long remained unanswered.

Water has unique biological and chemical properties and is recognized as the “cradle” and foundation of biological life processes. However, modern knowledge can provide an even deeper understanding of why this is so. Therefore, this scientific review is devoted to presenting the mechanisms of the quantum role of water molecules as a key participant in ensuring the phenomenon of biological life in living biological cells in vivo. The scientific goal of the review is to present a modern concept of scientific views on the functions and role of water in the processes of electromagnetic current/signal transmission in vivo from the perspective of modern biophysical knowledge and the Magnetochemical Theory of Metabolism and Life.

In vitro, a biological molecule is removed from the body’s biological electromagnetic field, which provides it with energy and coordinates its metabolic activity. In vitro, the biomolecule maintains its own electromagnetic generation for some time, but its connection with other biological molecules/cells/tissues is lost. This radically alters its quantum electromagnetic properties, leading to a change and extinction of its metabolic processes. The molecule gradually dies. When the electromagnetic field generation of its components is insufficient to maintain its structural integrity, its structural disintegration begins.

Conclusions: 1) Fundamental knowledge in quantum physics regarding the quantum role of water in the phenome-



non of biological life must be integrated into biological sciences and medicine. 2) This knowledge significantly deepens and changes scientific understanding of the etiopathogenesis of internal organ diseases/chronic non-communicable diseases. 3) Modern scientists must recognize that the phenomenology of life has an electromagnetic basis, and the key to the role of water lies in the fact that water is not only a solvent but also a unique conductor of electromagnetic signaling in the state of liquid, energy-intensive crystals.

Keywords: medicine, bioelectronic medicine, quantum medicine, biological oxidation, magnetochemical theory of metabolism and life, biological membranes, new paradigm, biophysics, water.

Introduction. The study of the fundamental mechanisms of biological life remains a pressing issue in modern science. Understanding what makes the body, its tissues, cells, and molecules alive, and what goes wrong within them, leading to disease and death, is key to understanding the essence of the human body's fundamental processes. Consequently, this understanding underlies the pathogenesis of diseases and their treatment. However, fundamental questions, without which further scientific progress in this area would be impossible, have long remained unanswered. For example, these include such fundamental questions as: "What makes molecules alive in the human body and dead in vitro?" "By what mechanisms does protein folding occur?" "Stem cells and other cells share the same set of chromosomes. How do they know their differentiation pathway?" "By what mechanisms in the human body coordinate so many metabolic reactions?" "How are the 30 trillion cells of the human body connected into a single functioning organism?", and so on. It is important to note that it is impossible to answer these questions from the perspective of the electrochemical paradigm of metabolism and molecular models of processes. This is so for a number of reasons. On the one hand, any movement of signaling molecules within and between cells takes time and cannot ensure instantaneous process coordination. On the other hand, the question immediately arises: how do signaling molecules know the trajectory and final destination of their movement? Today, the electrochemical paradigm has been replaced by the magnetochemical theory of metabolism and life [1-12].

Modern science has established, substantiated, and accepted the following facts: 1) there are quantum levels of the structure of matter, formed by electromagnetic fields; 2) electromagnetic processes at quantum levels play a key role in the metabolism of molecules and determine their participation in chemical reactions; 3) along with chemical communication, there is electromagnetic communication between molecules in vivo; 4) electromagnetic energy in a coherent state in the form of standing waves/solitons carries information in vivo, and so on. This became possible thanks to the progress in quantum physics, which predetermined a different, more profound understanding of the essence of the energy supply of biological cells in vivo and opened up the possibility of comprehending and describing energy processes in molecules at their subatomic/quantum levels [13-18]. The integration of this knowledge into biology and medicine was more complex. The year 1939 is the historical beginning of this. In this year, the fundamental work "Bioelectronics" [19] by Albert Szent-Györgyi (1893-1986, Hungary-USA, Nobel

laureate in 1937 for a series of works on biological oxidation) was published. In this monograph, Szent-Györgyi laid the foundation for the study of the role of electromagnetic processes in molecular biology and was the first to propose calling this branch of knowledge bioelectronics [19]. In this monograph, A. Szent-Györgyi also identified the problem that, from a molecular biology perspective, "...the mechanism for converting energy, chemical energy, into mechanical, electrical, or osmotic work has not been explained. These transformations are closely linked to the very basis of life" [19].

Water has unique biological and chemical properties and is recognized as the "cradle" and foundation of biological life processes. However, modern knowledge can provide an even deeper understanding of why this is so. Therefore, this scientific review is devoted to presenting the mechanisms of the quantum role of water molecules as a key participant in ensuring the phenomenon of biological life in living biological cells in vivo. The scientific goal of the review is to present a modern concept of scientific views on the functions and role of water in the processes of electromagnetic current/signal transmission in vivo from the perspective of modern biophysical knowledge and the Magnetochemical Theory of Metabolism and Life [12].

Materials and methods. This scientific material is a fragment of a research paper from the Department of Internal Medicine and Emergency Medicine of Poltava State Medical University (23 Shevchenko St., 36011, Poltava, Ukraine) on "Development of algorithms and technologies for implementing a healthy lifestyle in patients with non-communicable diseases based on the study of functional status" (state registration number 0121U108237: UDC 613 616-056-06: 616.1/9-03; the execution period is from 2021 to 2025). Now these studies are continuing within the framework of the research topic of Poltava State Medical University "Clinical and pathogenetic features of cardiovascular diseases in conditions of comorbidity, taking into account gender and age aspects and ways of correcting their disorders" (state registration number 0124U003397) and of the Department of Fundamental Disciplines and Informatics, Shupyk National Healthcare University of Ukraine (Kyiv, Ukraine) "Substantiating the conceptual and informational principles of knowledge transfer theory. Creating a Universe of Biomedical Knowledge" (state registration number 0123U103474) and partner universities: Lithuanian University of Health Sciences (9, A. Mickėvičius St., LT-44307, Kaunas, Lithuania), and Kherson State University (14, Shevchenko St, Ivano-Frankivsk, 76000, Ivano-Frankivsk region, Ukraine). It is the result of a sys-

tematic analysis of literature data.

Biophysical models and scientific data theorized by physicists and published in the specialized literature were analyzed. General scientific methods (dismemberment and integration of elements of the studied system, imaginary experiment, logical and historical research, analysis, induction, deduction, and synthesis of knowledge) and theoretical methods (method of constructing theory, logical methods, and rules of normative nature) were used in this theoretical study. Scientific work is carried out in conjunc-


tion with the following scientific institutions:

The practical application of the obtained results in medical science is carried out through a series of lectures within the educational-scientific initiative "Bioelectronic Medicine or Look at Medicine Differently"[12].

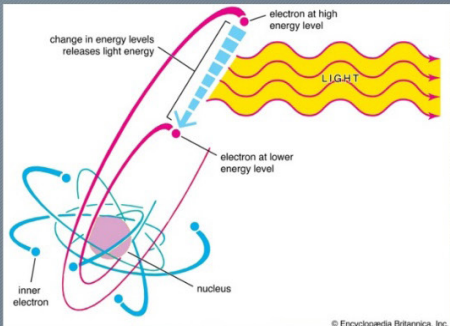
Results. *Water and electromagnetic processes at the quantum level in vivo*

Electromagnetic processes at the quantum level are the basis of the phenomenon of biological life [1,5-12] (Figure 1).

THE ANSWERS ARE ALREADY



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THE PHENOMENON OF BIOLOGICAL LIFE IS COMPLETELY DETERMINED BY MAGNETOELECTROCHEMICAL PROCESSES AT THE MOLECULAR LEVEL.

ABSENT ENERGY PROCESSES -
ABSENT LIFE

LET'S CONSIDER HOW IT HAPPENS IN SIMPLIFIED MODELS...

Figure 1. The phenomenon of biological life is caused by electromagnetic processes that occur at the quantum level in vivo.

The phenomenon of biological life in a biological cell/organism arises from the generation and circulation of electromagnetic energy in the biopolymer molecules of its membrane structures. This electromagnetic energy has physical parameters specific to the biological cell/organism and is capable of transmitting energy and information both internally and externally. This enables the non-chemical, simultaneous coordination of all biochemical reactions within the biological cell/tissue/organ/organism in vivo. The cessation of electromagnetic energy generation by cell membranes signifies the onset of biological death for the cell/tissue/organ/organism. It is important to note that the movement of electromagnetic current at all levels of the hierarchical structure of a biological organism creates corresponding biological electromagnetic fields: the electromagnetic field of the cell, tissues, organs, and the organism. Therefore, every molecule in vivo is constantly within a corresponding biological electromagnetic field and constantly receives electromagnetic energy and information support. Due to the constant influx of photons/excitons/electrons from other cell structures (from cell membrane structures, deoxyribonucleic acid mole-

cules through the cellular matrix system), the cell receives energy to maintain its structural integrity and biochemical activity. Because this energy is coherent and carries information about biological metabolic processes, each biomolecule coordinates its metabolic participation and behavior in vivo and becomes, so to speak, "intelligent" [1,6,7,11,20]. Understanding this helps explain the phenomenon of death/cessation of metabolic activity in biological molecules in vitro (Figure 2).

In vitro, a biological molecule is removed from the body's biological electromagnetic field, which provides it with energy and coordinates its metabolic activity. In vitro, the biomolecule maintains its own electromagnetic generation for some time, but its connection with other biological molecules/cells/tissues is lost. This radically alters its quantum electromagnetic properties, leading to a change and extinction of its metabolic processes. The molecule gradually dies. When the electromagnetic field generation of its components is insufficient to maintain its structural integrity, its structural disintegration begins [1,6,7,11,20].

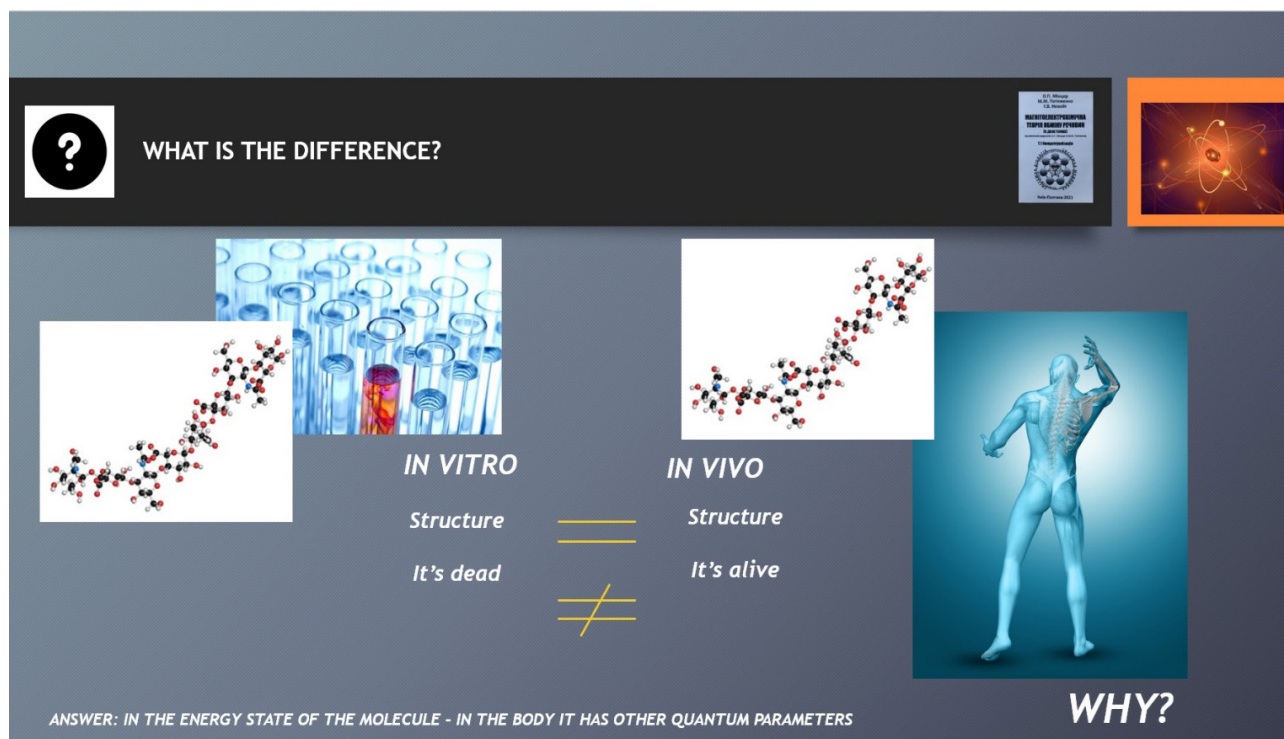


Figure 2. The mechanism of the difference in the quantum state of biological molecules in vitro and in vivo.

Thus, biological molecules/biopolymers are alive only as long as coherent electromagnetic energy, generated by their own oscillations during the transformation of the chemical energy of adenosine triphosphate (ATP), moves through them. ATP molecules are a universal chemical energy carrier, which, when combined with biopolymer molecules, split off the phosphate group and transfer the released incoherent energy of this chemical bond to the biopolymer as a basic source of initial energy for its vital activity [1,20,21] (Figure 3).

In vitro, biopolymer molecules cease to produce new ATP molecules, and electromagnetic communication with other biological molecules is lost. Therefore, the possibility of external energy and information exchange with other cell components/cells is interrupted. In contrast, in vivo, coherent electromagnetic energy is constantly transferred from one biological molecule to another. This leads to the creation of a common biological electromagnetic field and the functional electromagnetic unification of biological molecules and cells into the entire organism [1,11].

What is the role of water in these processes?

The unique physical properties of water allow it to structure and take the form of so-called liquid crystals under the constant influence of specific biological coherent electromagnetic fluxes. In this state, water molecules change their fluidity, form complex hierarchical chains [1,22], and acquire the ability to conduct coherent electromagnetic current between molecules in vivo without loss [1,22]. As a result, water molecules in vivo become an important part of the body's electromagnetic conductivity system and enable the phenomenon of biological life.

Energy-intensive liquid crystal structures of water as a component of the electromagnet of the conductive system in vivo

In vivo, not all water behaves as a liquid solvent. In biological cells and the intercellular matrix, water transforms into a unique aggregate state of an energy-intensive liquid crystal. This radically changes its biophysical properties. Importantly, it acquires the ability to transmit a coherent electromagnetic signal/solitons without loss. The work of a number of scientists contributed to the understanding of this scientific fact [21, 23-29].

An important step in understanding this was the emergence of modular crystallography. This was necessary for describing biological crystals, which are characterized by nonlinearity, aperiodicity, heterogeneity (mixed crystals), and fractality. The modular approach to crystallography makes it possible to describe all forms of solids, including the structures of bound crystalline water—the backbone matrix for biocrystals in living biological systems [1]. The crystal modulus is a key scientific concept for this field. Crystalline modules are repeating elements that shape the form of complex biological molecules and determine their morphology, stoichiometry, symmetry, and long-range order. The development of a theoretical approach to crystalline modules has allowed us to address the principles of molecular self-organization in biological systems in vivo and to describe the structure formation of water molecules within them [1].

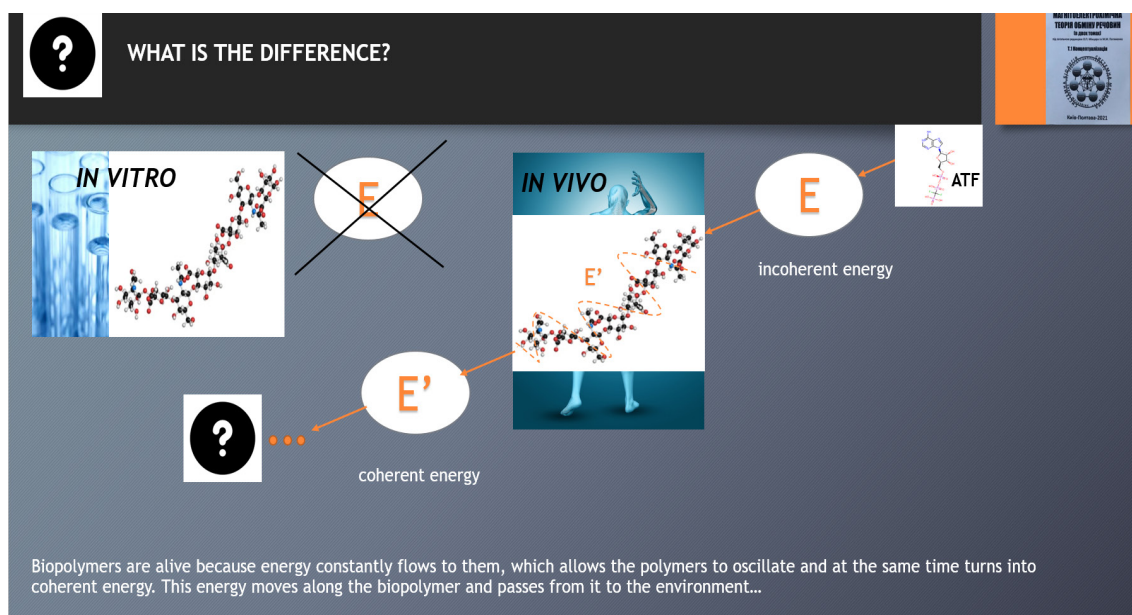


Figure 3. The mechanism of difference in the quantum state of biological molecules in vitro and in vivo (continued).

Water crystallization in living biological systems occurs in accordance with the principle of the emergence of energy-intensive bonds in crystals. One of the structural features of biological cells in vivo is that, from a mathematical perspective, they represent what is called a three-dimensional non-Euclidean space. This means that they are a complex three-dimensional shape, S3-spherical and/or H3-hyperbolic, in which the sum of the triangle's angles does not equal 180° , the difference $\delta = (\alpha + \beta + \gamma) - 360^\circ$ changes as the triangles' dimensions increase, and the distances between the triangle's vertices are measured along the curves connecting these vertices (in S3-convex curves, in H3-concave curves). Therefore, for a crystal growing in one of these spaces (for example, in S3 space), according to the principle of complete connectivity, the distances between atoms (bond lengths) will increase with distance from the growth initiation point, while the bonds themselves in non-Euclidean space will appear curvilinear (bent) and longer. This means that during crystal growth from molecules, rigid and flexible chemical bonds arise, leading to the formation of elastic deformations. Such bonds, in order to generate and maintain elastic deformations during crystal growth/existence, require a constant expenditure of energy to ensure and maintain the resulting elastic stresses ($\Delta E > 0$). Therefore, the consequence of such crystallization will be the formation of energy intensity in such crystalline structures. That is, if the crystalline modulus coincides with the classical crystalline center, the alternation of bonds between atoms in the growing crystal occurs without bending, according to the laws of linear ordering. This does not require additional energy expenditure; instead, it is released as a result of structural ordering during crystal growth ($\Delta E > 0$). This, for example, occurs during the crystallization of ice from water in natural environments and is accompanied by the release of energy. If the crystal modulus does not match the classical one, then bond bends must occur during crystallization, and this pro-

cess requires additional external energy to form and maintain such deformations. Without energy, a crystal cannot form and exist. This type of crystal formation is characteristic of molecules in vivo, including water molecules. The ability of water molecules to self-organize as energy-intensive fractal crystals is a key property that determines the energy supply at the molecular level and the realization of the phenomenon of life in living biological systems, including humans. The laws of classical crystallography are categorically unsuitable for explaining the principles of self-organization of water molecules in living biological systems, as water in the cytoplasm of a living cell is not a continuous fluid and has a high concentration of dissolved substances that "bind" the molecules. Also, water in vivo is in fundamentally different conditions, which radically change many of its properties (for example, a decrease in the electrical conductivity of protoplasm (cytoplasm) is experimentally observed compared to a physiological solution, and so on): the temperature of the cytoplasm for most living organisms is above 0°C ; water with polymers in living systems forms coacervates, that is, it is in such a single state with them that it loses its dissolving ability, and so on [1].

To date, the processes of water self-organization in the cytoplasm of living biological systems have already been described using more complex algorithms developed for nonlinear modular crystallography of water, which take into account the immediate aqueous environment (pair potentials) and collective processes for the entire aqueous medium. The key element of water self-organization into fractal crystals is a structure known in water crystallography as the "30/11 helix," which forms the basis of the hydration shell structure of biopolymers in living biological systems. According to a computer model (Figure 4), the 30/11 helix is a tube with an internal diameter of approximately 3.2 nm along an oxygen framework lined with protons both inside and outside. The repeating unit of

the helix consists of two water molecules, and when thirty repeating units are added, it grows by eleven full turns, which corresponds to the length/period along its axis, $A_{30} = 44.12 \text{ \AA}$, with a hydrogen bond length of 2.75 \AA . Since protons have magnetic moments, this structure is paramagnetic and is capable of interacting with external magnetic

fields, including the Earth's magnetic field. The 12 helices can intersect to form clusters of 27 water molecules, using the so-called T-node; in this case, each central molecule of this cluster belongs to each of the helices, and a lattice with edges is formed [1] (Figure 4).

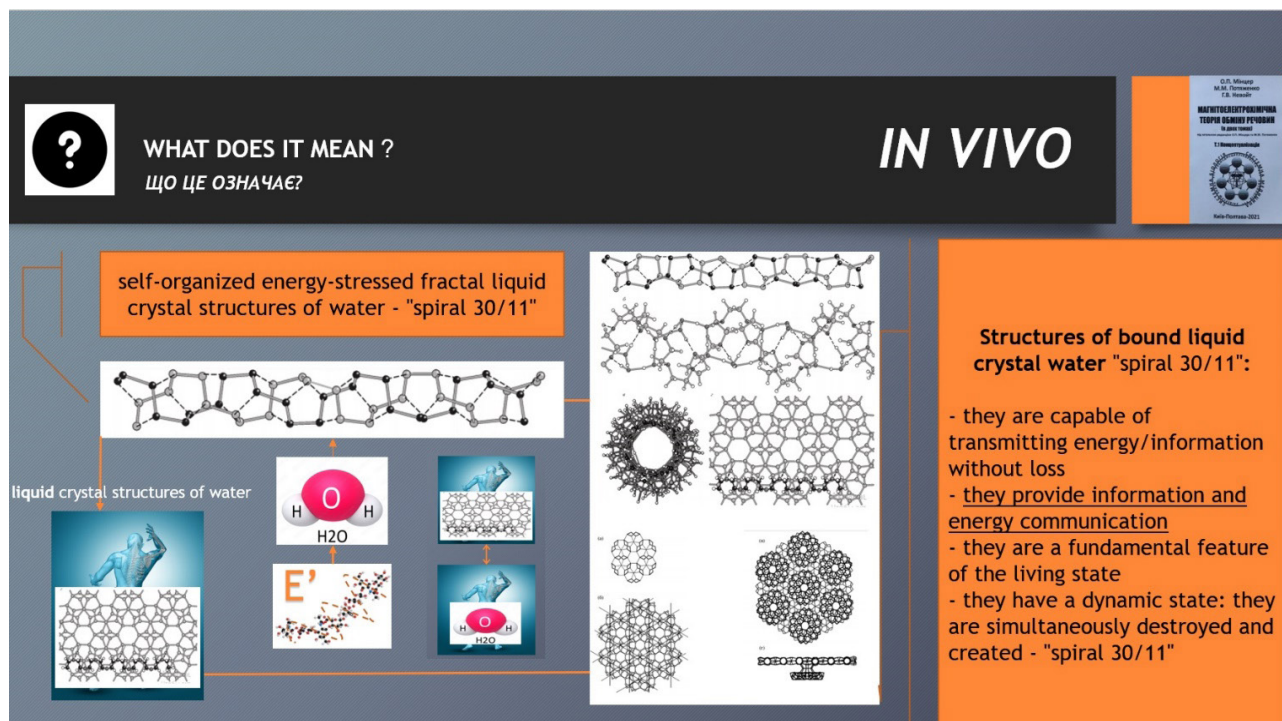


Figure 4. Energy-intensive liquid crystal structures of water as a component of the electromagnet of the conductive system in vivo.

Energy-intensive fractal water structures are the primary form of water organization in living biological systems, including the human body. Importantly, in vivo protein crystallization occurs with the formation of a linked water lattice with edges composed of 30/11 helices. This creates a specific quantum electromagnetic conductive system at the microscopic level of the structural organization of biological cells [1, 22].

In living biological systems, energy-intensive fractal crystalline filamentary structures of water, supported by energy supplied by biopolymers, form large, continually growing hierarchical structures that unite multiple water molecules, existing in a dynamic balance between opposing processes of destruction (due to the action of chemically active substances in the cytoplasm) and the growth of branched structures, which again determines the presence of both structured and unstructured water.

The physico-biological significance of fractal, energy-intensive crystalline water structures in living biological systems lies in the possibility of non-chemical, long-range resonant interactions between biopolymers through the shared hierarchical structure of organized water in a living organism. Ordered, energy-intensive crystalline water structures facilitate the movement of solitons through the aqueous medium without energy absorption, enabling long-range energy communication between distant bio-

polymers. The movement of solitons through structured crystalline water, on the one hand, maintains the state of energy-intensive connectivity within the crystalline water structures. On the other hand, this alters the quantum-mechanical properties of the atoms of distant biopolymers, which it reaches, thereby stimulating their chemical activity, controlling the course and synchronization of biochemical processes, and so on. In essence, water molecules participate in the transmission of energy-information/control energy flow [1, 22] (Figure 5).

Energy-intensive liquid-crystalline structures of water in vivo and the phenomena of life and health of the human body

Thus, based on the above, we can conclude that the liquid-crystalline state of water molecules is an important condition that ensures the transmission of electromagnetic signals in vivo. Disruption of this state of water molecules in vivo will be associated with a reduced ability to transmit biological electromagnetic signals between cells. This will lead to a pathological disruption of electromagnetic communication between cells. This will result in disruptions in cellular metabolism and the development of pathological disorders.

What factors can influence the formation of energy-intensive liquid-crystalline structures of water in vivo? It has been established that the processes of formation and

destruction of energy-intensive liquid-crystalline structures of water constantly occur in vivo. In a healthy body, these processes are balanced and exist in dynamic equilibrium [1] (Figure 6).

rium [1] (Figure 6).

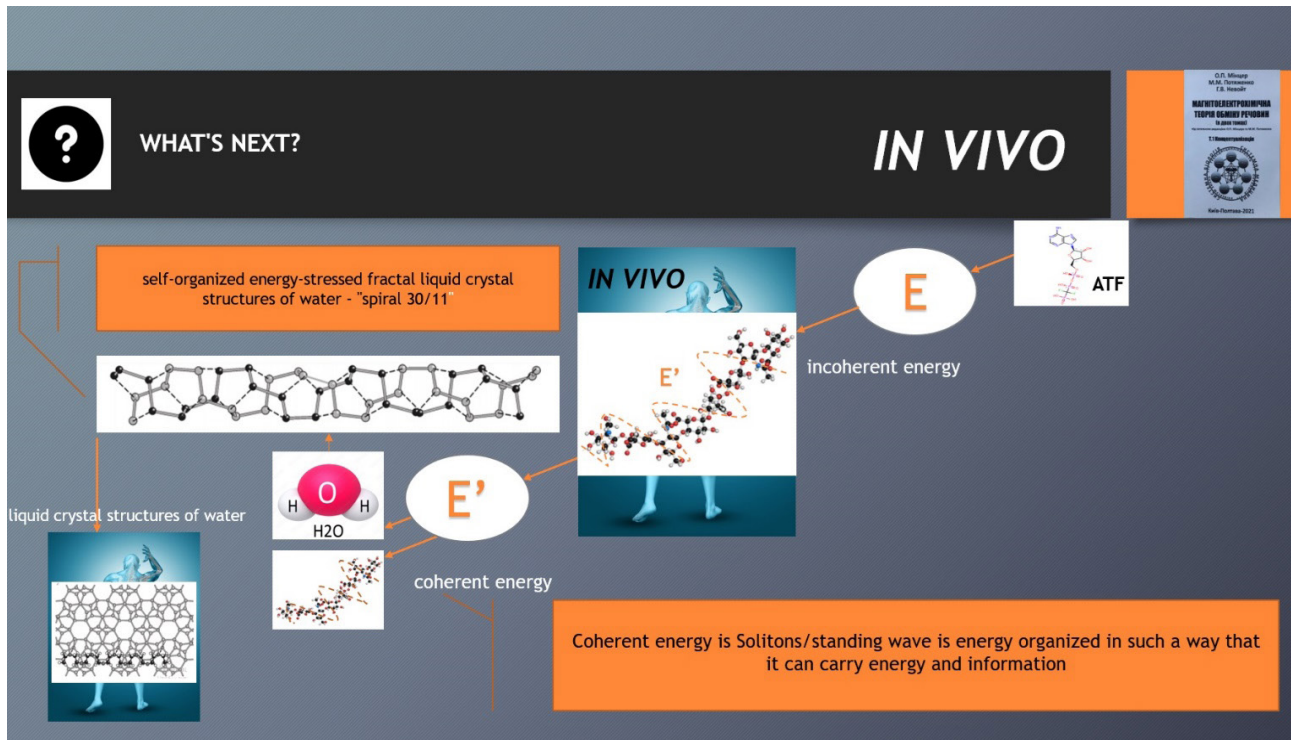


Figure 5. Energy-intensive liquid crystal structures of water as a component of the electromagnetic conductive system in vivo (continued).

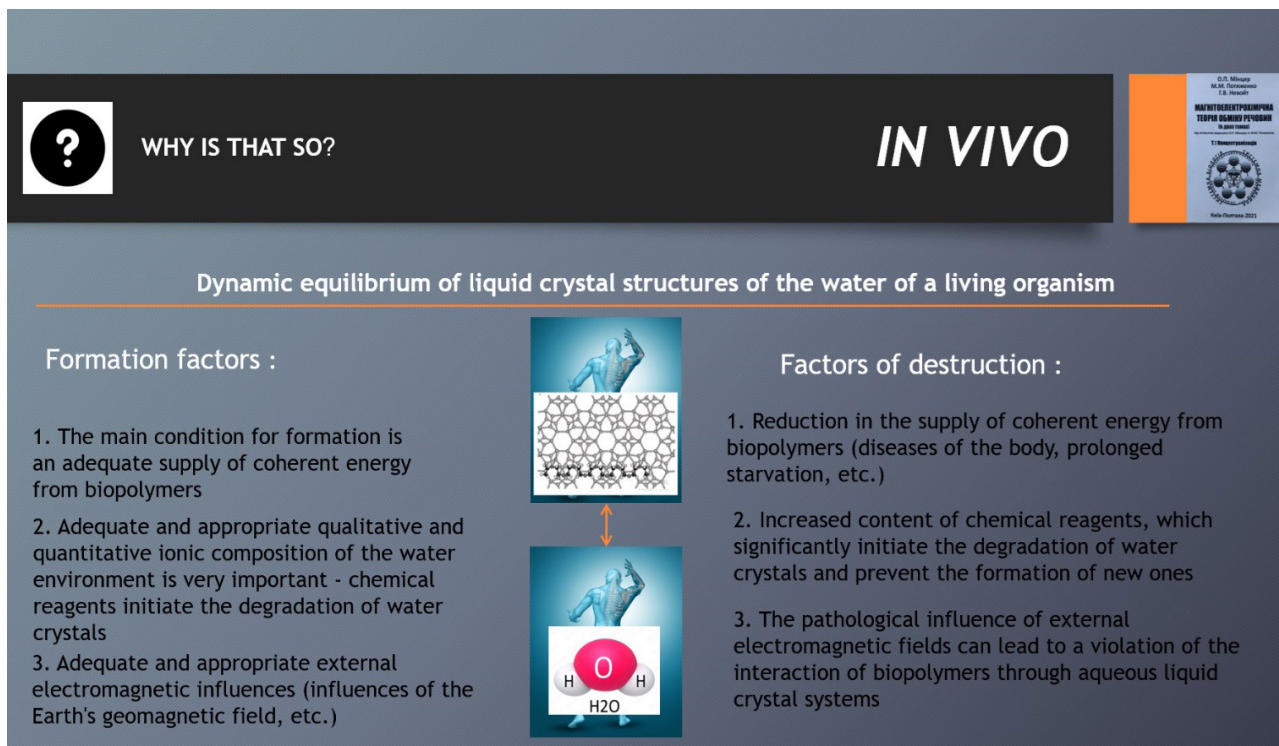


Figure 6. Factors that influence energy-intensive liquid crystal structures of water in vivo.

However, a number of physiological and pathological conditions of the human body lead to excessive destruction of the energy-intensive liquid-crystalline structures of water in vivo and impair the conduction of electromagnetic signals within and between biological cells. These conditions are associated with a reduction/disruption in the generation of electromagnetic currents by biological membranes, electrolyte imbalance, and an increase in the con-

centration of foreign substances in the intercellular fluid/blood. Similar conditions arise as a result of the external negative influence of foreign/anthropogenic electromagnetic fields [1].

When biological death occurs, all energy-intensive liquid-crystalline structures of water in vivo are destroyed, and the water becomes liquid [1] (Figures 7 and 8).

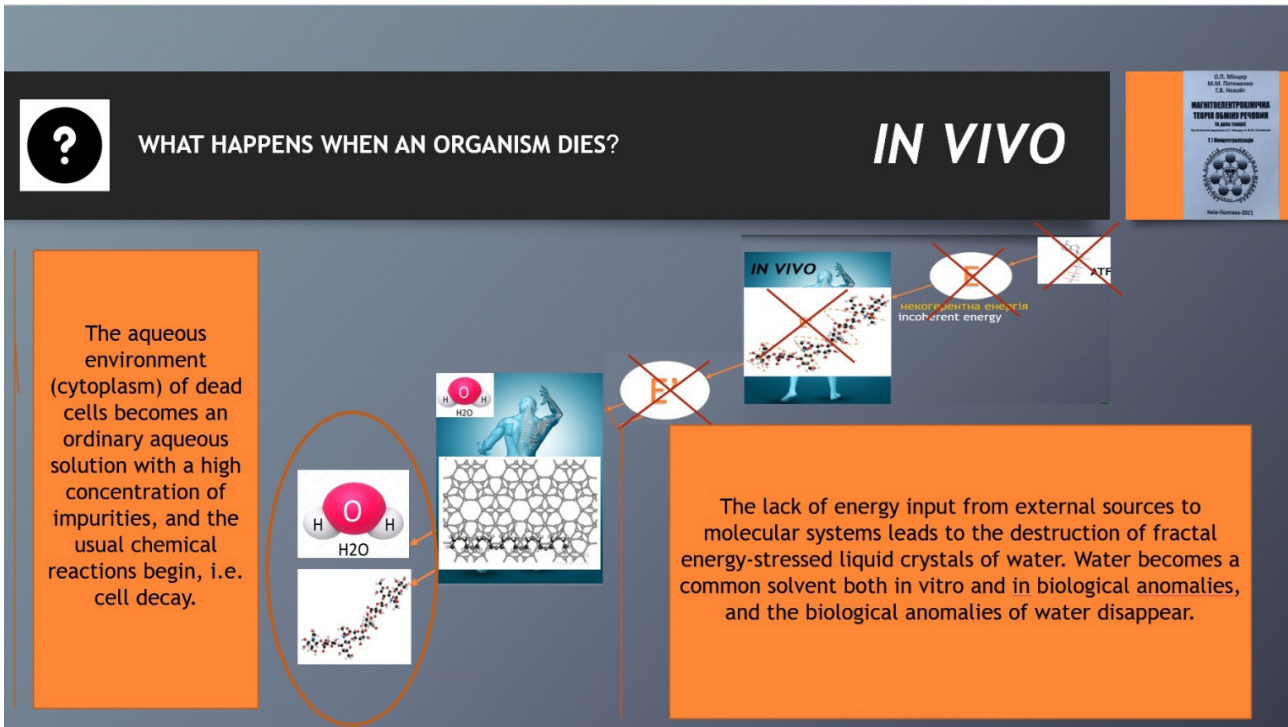


Figure 7. Destruction of energy-intensive liquid-crystalline structures of water in vivo after the death of a biological organism.

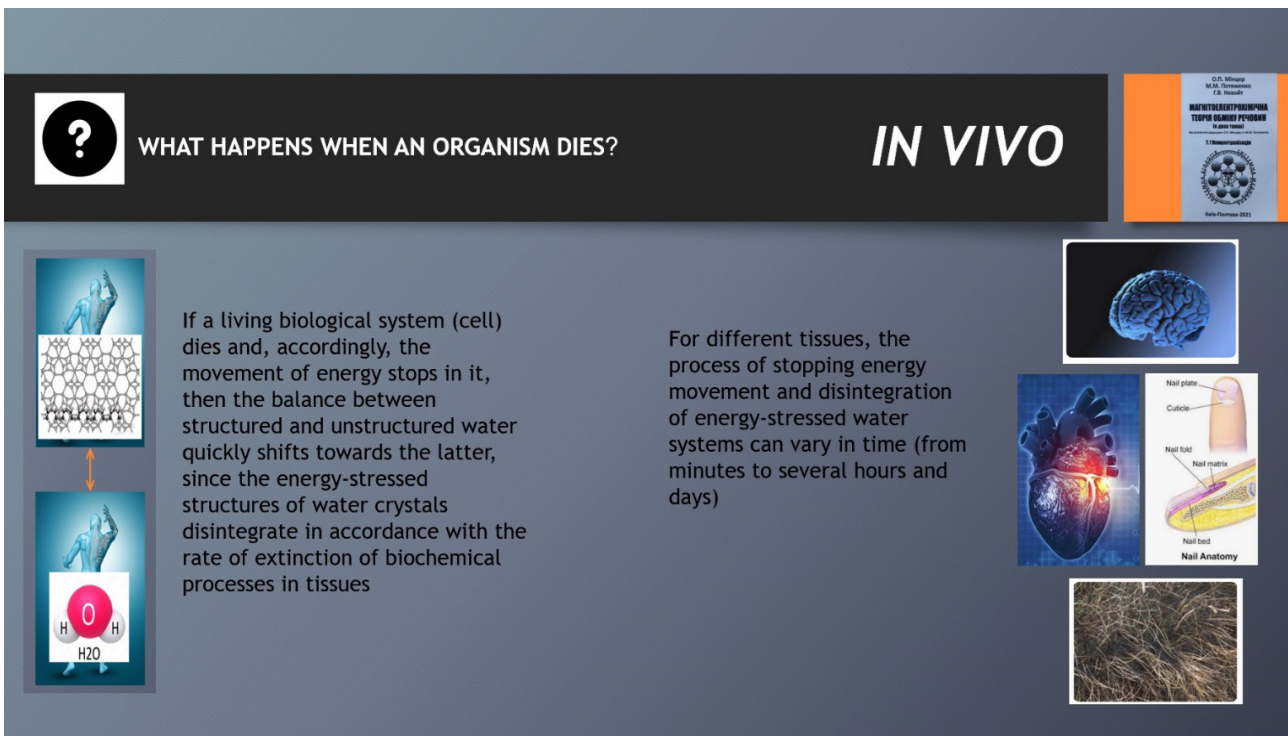
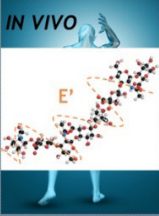


Figure 8. Destruction of energy-intensive liquid-crystalline structures of water in vivo after the death of a biological organism (continued).

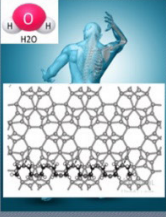
Thus, the quantum role of water is of fundamental importance for the realization of biological phenomena and health [1,22] (Figures 9-11).

THE QUANTUM ROLE OF WATER IS OF KEY IMPORTANCE FOR THE REALIZATION OF THE PHENOMENA OF LIFE AND HEALTH



IN VIVO


The soliton mechanism of energy transmission along a chain of biopolymers turns out to be the electromagnetic basis of the phenomenon of the life of living biological systems, and all biopolymers of a living organism, which have a specific structure and contain anharmonic atomic groups in their chains, transform chemical (perhaps of another kind) energy, which excites their oscillations, into coherent energy/solitons, which are further transported along the biopolymer chains, ensuring its chemical interactions, mechanical movement.



Water in living biological systems plays a key role in the process of transmitting and receiving coherent soliton energy by self-organizing into fractal energy-stressed paramagnetic crystal structures that form multi-level branched long-lasting fractal complexes connected to biopolymers, supported by coherent energy flows/solitons.

Figure 9. The quantum role of water for the phenomena of human life and health.

UNDERSTANDING THE QUANTUM ROLE OF WATER DEEPENS THE SCIENTIFIC VIEW ON THE FUNCTIONING OF THE HUMAN BODY AND THE PATHOGENESIS OF DISEASES OF INTERNAL ORGANS

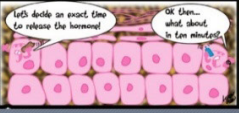


1 Aqueous liquid crystal structures have a leading role in the transfer of energy and information between cells and participate in their functional and structural union

2 Water is essential to sustaining life in a biological system, as it creates conditions for the non-chemical information-energy cooperation among biological molecules in the body.

3 The balance between liquid crystal and ordinary water depends on the chemical composition of the water environment. Since the composition of the aqueous medium varies with different diseases, it accordingly affects the state of the liquid crystal structures. And this is another component of etiopathogenesis


4 Pathological deviations in the state of aqueous liquid crystal structures can lead to local (organ- or tissue-level) or systemic disorders of intercellular signaling. And this is another component of etiopathogenesis.



What Does Water do for You?

Forms surface membranes	Assisted by the brain to coordinate the movements and interactions of molecules
Keeps internal membranes moist	Regulates body temperature by evaporation and conduction
Allows body's cells to grow, reproduce and survive	Has an anabolic effect on the brain and spinal cord
Provides body fluids, mostly in water	Connects fluid to components of blood and hormones/alginate
Water is the primary component of joints	Helps destroy cancer cells over time

Chemical composition of water



INTERCELLULAR SIGNALING

Intercellular signals can travel all throughout the body. This allows certain glands within the body to produce signals which then act on many different tissues across the body.

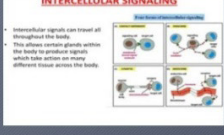





Figure 10. The quantum role of water for the phenomena of human life and health (continued).



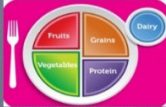
UNDERSTANDING THE QUANTUM ROLE OF WATER DEEPENS THE SCIENTIFIC VIEW ON THE PREVENTION OF NONCOMMUNICABLE DISEASES




1 In order to maintain health, it is necessary to use clean drinking water in sufficient quantity




Nutrition should be complete and balanced to ensure adequate digestion and assimilation of food. This should ensure a constant supply of ATP to biopolymers for the final metabolic stage - transformation into coherent energy



3 It is necessary to categorically exclude chemicalized food and drinks from the diet, as a source of chemically active substances that can promote the degradation of liquid water crystals



4 It is necessary to create living conditions in a safe electromagnetic environment. Remember the potential danger of electrical appliances, power grids, electric vehicles, mobile communications (telephones, Wi-Fi, etc.)




2 Nutrition should be complete and balanced to ensure adequate digestion and assimilation of food. This should ensure a constant supply of ATP to biopolymers for the final metabolic stage - transformation into coherent energy

Figure 11. The quantum role of water for the phenomena of human life and health (continued).


The quantum role of water in the phenomenology of life and health requires further study. It is possible that

these mechanisms are linked to good health and longevity in humans (Figure 12).



PERHAPS THIS IS THE SOLUTION TO THE PHENOMENON OF "CHILDREN OF THE WAR OF 1941-1945"?

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Хлопчики та дівчатка Яшлин на фронт у військовій частині, ставали синами та доньками полків. Вони були розвідниками і зв'язниками, сестрами милосердя і підрихтованими.

It is well known that children born during and after the war and who lived in hunger, cold, poverty, and hardship had better physical health in adulthood than generations of youth today. Most of these so-called "children of war" lived a long life... Perhaps, due to the limitations of chemical agents that entered with food and through physical activity, they had well-formed, stable water liquid crystal systems from childhood. Moreover, this enabled them to form healthy organs in their bodies...

Figure 12. The quantum role of water and the “phenomenon of children of the war of 1941-1945”.

At the present stage, questions of electromagnetic ecology and the influence of external electromagnetic fields on the human body are becoming increasingly relevant [30-32]. Understanding the quantum mechanisms of water’s participation in the phenomenology of human life

and health is a promising avenue for studying the mechanisms of electromagnetic safety in the environment (Figure 13).



THE SAFEST VEHICLE IN TERMS OF ELECTROMAGNETIC INFLUENCE ON THE WATER STRUCTURES OF THE BODY

LSMU, PDMU,
SNHUU
2023-2025



An important issue of assessing external electromagnetic safety for the human body. For example, it is clear that natural materials and living organisms cannot harm the human body, unlike electrical devices. Particular danger can be expected from mobile communication devices and electric vehicles.

Figure 13. The quantum role of water and electromagnetic safety of the environment.

Conclusions.

1. This layer of fundamental knowledge in quantum physics regarding the quantum role of water in the phenomenon of biological life must be integrated into the biological sciences and medicine.

2. This knowledge significantly deepens and changes scientific understanding of the etiopathogenesis of internal organ diseases/chronic non-communicable diseases.

3. Modern scientists must recognize that the phenomenology of life has an electromagnetic basis, and the key to the role of water lies in the fact that water is not only a solvent but also a unique conductor of electromagnetic signaling in the state of liquid, energy-charged crystals.

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КВАНТОВА РОЛЬ КЛІТИННИХ МЕМБРАН ЯК ОСНОВА ФЕНОМЕНУ БІОЛОГІЧНОГО ЖИТТЯ, ЗДОРОВ'Я ТА ХВОРОБ В ОРГАНІЗМІ ЛЮДИНИ

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Резюме. Цей огляд є третьою лекцією циклу «Біоелектронна медицина або подивись на медицину інакше». Представлено новітні погляди на роль води у біологічних клітинах. З позиції сучасних біофізичних уявлень пояснено здатність води проводити біологічні електромагнітні струми і тим самим забезпечувати ключову участь у передачі енергії та інформації *in vivo*.

Вивчення фундаментальних механізмів біологічного життя залишається актуальним питанням сучасної науки. Розуміння того, що робить організм, його тканини, клітини та молекули живими, і що в них відбувається неправильно, що призводить до хвороб та смерті, є ключем до розуміння сутності фундаментальних процесів людського організму. Отже, це розуміння лежить в основі патогенезу захворювань та їх лікування. Однак фундаментальні питання, без яких подальший науковий прогрес у цій галузі був би неможливим, довгий час залишалися без відповіді.

Вода має унікальні біологічні та хімічні властивості та визнана «колискою» та основою біологічних життєвих процесів. Однак сучасні знання можуть забезпечити ще глибше розуміння того, чому це так. Тому цей науковий огляд присвячений представленню механізмів квантової ролі молекул води як ключового учасника забезпечення феномену біологічного життя в живих біологічних клітинах *in vivo*. Наукова мета огляду полягає в тому, щоб представити сучасну концепцію наукових поглядів на функції та роль води в процесах передачі електромагнітного струму/сигналу *in vivo* з точки зору сучасних біофізичних знань та магнітоелектрохімічної теорії

метаболізму та життя.

In vitro біологічна молекула видаляється з біологічного електромагнітного поля організму, яке забезпечує її енергією та координує її метаболічну активність. In vitro біомолекула зберігає власну електромагнітну генерацію протягом деякого часу, але її зв'язок з іншими біологічними молекулами/клітинами/тканинами втрачається. Це радикально змінює її квантові електромагнітні властивості, що призводить до зміни та згасання її метаболічних процесів. Молекула поступово гине. Коли генерація електромагнітного поля її компонентами недостатня для підтримки її структурної цілісності, починається її структурний розпад.

Висновки: 1. Пласт фундаментальних знань з квантової фізики щодо квантової ролі води у феномені біологічного життя необхідно інтегрувати у біологічні науки та медицину;

2. Ці знання суттєво поглиблюють та змінюють наукове уявлення про етіопатогенез захворювань внутрішніх органів/хронічні неінфекційні захворювання;

3. Учені сучасності повинні усвідомити, що феноменологія життя має електромагнітну основу, а розгадка ролі води полягає в тому, що вода у стані рідких енергонапружених кристалів є не розчинником, а унікальним провідником електромагнітного сигналіngu.

Ключові слова: медицина, біоелектронна медицина, квантова медицина, біологічне окислення, магнітоелектрохімічна теорія метаболізму та життя, біологічні мембрани, нова парадигма, біофізика, вода.

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