

The Mechanism of Interaction of Natural Physical Factors and the Whole Organism Forms the Basis of the General Theory of Physiotherapy

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Review

The optimal combination of drug therapy and physical factors increases the effectiveness of treatment and medical rehabilitation of patients. It is regrettable that the search for methods to improve the individual dosing of the energies used with an approximation to the cellular level of dynamism (constant correction of the parameters of the physical factors used during the entire period of treatment) and complex (in the presence of several diseases) treatment are clearly insufficient today. Perhaps such a search is difficult due to the current lack of a general theory of physiotherapy and the imperfection of the classification of physical factors. In this regard, there was a need to develop principles and methods for a comprehensive study of the effect of physical methods in clinical settings, and the requirements for testing new devices for physiotherapy sharply increased. The author of this direction was an outstanding scientist Vladimir Sergeevich Unlatches. In his opinion, the creation of a general theory of physiotherapy is one of the promising tasks of scientific physiotherapy.

It is known that since the end of the XIX century, the principles of nervousness and the reflex theory are the theoretical basis of domestic physiotherapy. Subsequently, the influence of humoral and endocrine changes was added to the reflex theory of the mechanism of the therapeutic action of the external environment (natural and preformed physical factors), but still with the leading principle of nervousness. It should be noted that there have always been doubts about the exhaustive explanation by the reflex theory of all the causes and effects of the interaction of external physical factors with the human body.

On this basis, "persistent" problems remained unresolved:

- i. general and specific in the action of physical factors.
- ii. the selectivity of their actions.
- iii. The ratio of nervous and humoral, local, and general, functional and morphological with a single and course of application of physiotherapeutic effects.
- iv. the impossibility of determining the "dose-effect":
- v. the nature of the primary reactions of the body to the effects of the external environment.
- vi. the direction of the processes that predetermine the result of the interaction of external physical factors and the whole organism.
- vii. realization of all potential opportunities to obtain the most desired positive clinical effect in physiotherapy.

Thanks to the huge successes of quantum mechanics (optics), chemistry, biology, supramolecular chemistry, fiber-optic physics, it became necessary to revise the mechanism of action of the physical factor and the response of the whole organism to diagnose, prevent, treat, and rehabilitate patients. Quantum therapy originated before our era, when man began to consciously apply "natural factors" for medicinal purposes with a controlling "verbal accompaniment and explanation." With the subsequent development of scientific, technical, and humanitarian disciplines (mathematics, mechanics, physics, chemistry, biology, etc.), the philosophy of using natural factors for therapeutic purposes changed. In parallel, the culture of external influence on the integral organism of any forces and means was changing and improving, i.e., the use of "natural factors" for therapeutic purposes acquired a systemic character with the subsequent emergence of a new scientific discipline in medicine "physiotherapy". Its fundamentality is that the entire Universe, the Cosmos and the World around us consists of elementary particles (quanta), devoid

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Relevance and Novelty of the Study

An urgent task of modern medicine is the early diagnosis of diseases, monitoring the course of the identified disease. If

we consider a person as a particle of Nature and accept that all biological processes in his body proceed according to the

“Program”, in the strictest subordination from elementary particles to complex structures, which suggests the idea of the identity of the laws of the World and the Universe around us. Then it should be accepted that all human life, all the smallest bioprocesses in the body obey the Higher Law of the Universe - the principle of “direct and feedback”.

Man is a complex nonlinear system consisting of a huge number of different functional unique structures.

In this regard, it is necessary to create a system of rapid recovery of the stability of the organs and systems of the whole organism, thanks to an individual approach in combination of the parameters of natural and preformed physical factors with medications. In this regard, the study topic chosen by the author is relevant from the point of view of early, safe non-invasive diagnosis from the surface of the skin of diseases of internal organs and systems. It is aimed at improving individual complex physiotherapy through the developed mini nano microscope (nano sensor).

Scientific Novelty

In the presented work, based on experimental research, important concepts of “the mechanism of interaction of the environment (natural and preformed physical factors) and the whole organism are formulated for the first time:

- i. The existence of a single imperceptible, intangible, and invisible “super-perfect energy-information field” that fills the entire space between elementary particles, atoms, molecules, cells, organs of the whole organism, the surrounding world and outer space with all contents.
- ii. Man is a part of the “energy-information system” of the Universe and their interconnection is carried out through the perspiration system of the whole organism.
- iii. “Energy-informational diagnostics” in an integral organism is carried out through quantum tunneling.

Scientific Significance

The scientific significance of the work consists in expanding and deepening the knowledge of the basis of the “Universe”, the controlling and stabilizing system of comfortable coexistence of the entire contents of the surrounding World and the Cosmos. In this regard, it determines the leading place of man in the biosphere - the noosphere, as the most complex and intelligent being of Nature.

Introduction

It should be noted that practical, theoretical and experimental medicine in any state of the world does not correspond to the level of development of physics, chemistry, supramolecular chemistry, quantum physics, optics. It should be understood that the fundamental study of the organs and systems of the whole organism as an integral part of the Universe and the Cosmos at

the supramolecular level is the progress of medicine, expressed in the duration of a comfortable life.

Presumably, there is no need to convince scientists of all disciplines that man is the “most organized particle” of nature and in position has the same rights as all visible and invisible objects of the Universe and the Cosmos. But man has a very modest knowledge of the mystery of the Universe. Scientific medicine is developing slowly. This is a fact if you compare the position in it with what is happening in quantum chemistry. However, it should be borne in mind that a person is a complexly organized nonlinear system and the main condition for the comfortable existence of the organism is the preservation of the “constancy of energy asymmetry” of the internal environment - the modern concept of homeostasis. There is a biological system, it is the cardiovascular system that functions so flawlessly that it prevents all violations at the supramolecular level.

When self-regulation becomes insufficient to maintain normal

In this regard, it is necessary to conduct a functional study of the physicochemical characteristics of all organs and systems of the whole human body in the norm and pathology from one month of life to 80 years (create a data bank) This makes it possible to compensate from the outside the energy of certain body systems with “jeweler’s” accuracy and thus restore homeostasis. Both within the whole organism and between it and the biosphere, the exchange of energy is carried out through the intermediary of the “perspiration system”. That is, the aspiration system functions everywhere: inside the cell, in the intercellular space, in the inter-organ space and between the whole organism and the biosphere.

It must be remembered that information does not exist independently, nor can any physical category exist independently. In this regard, science should recognize the existence of a single energy that is present everywhere; recognize as inseparable “time, matter, space with information.” The original code of information changes synchronously with changes in “time, matter and space” because it reflects their content. Given that each cell, organ, system has its own unique physical and chemical characteristics, confirming its own information, in the manifestation of the difference between the information data of the pathological process with the “Data Bank” there is a diagnostic process.

Self-regulation of the whole organism is carried out by the cardiovascular system

The theory of the structure and function of the brain includes an infinite number of different data on how the structures of the brain and the whole organism can interact with each other when a thought realization program comes from the heart. The dominant function of the brain is to control the infinitely diverse physicochemical properties of movement at the quantum level. This is a super-perfect executive power over the vital activity of the whole organism.

This is an independent science that goes beyond the framework of classical concepts, carries out the consistent implementation of programs. Computational neurobiology of the brain is not identical with mathematical analysis and computer modeling but is the mystery of biocomputer modeling at the quantum level, which provides super-perfect execution of programs in preserving the intracellular homeostasis of the whole organism and biosphere. Artificial intelligence studies the programmed work of computers to obtain “intelligent” behavior; here it is appropriate to prohibit ensuring the relationship between structures in the brain program.

Explanation of the ban on external action on brain structures:

- i. The biological mechanism is very poorly understood the work of the functional structures of the brain at the quantum level.
- ii. There is no scheme of interaction between structures of the brain and between all existing structures a whole organism at the quantum level.
- iii. Morphological and functional changes have not been studied structures of the brain and the whole organism on the quantum level when exposed to brain structures from the outside.

Based on the foregoing, there is no certainty in the correctness of the creation and improvement of robotics. Currently, it is permissible to use robotics when performing simple functions and tasks.

Investigation of Physical Properties “Time is the Universe” (VM)

You must assume that Time-Creation is the smallest quantum particle in the three-dimensional dimension. It's the only number of dimensions. The existence of an infinite number of bends of any matter are not dimensions, but are created and built on the basis of three-dimensional measurement, but with individual speed and scale. If we cannot measure or calculate one of the three dimensions because of its very small magnitude, it is theoretically impossible to deny its existence. The smallest elementary indivisible particle (VM) is endowed with an individual program for creating matter, form, and space as a whole. With the formation of infinitely different clusters of elementary particles, their parameters change, i.e., each elementary particle has a program that changes infinitely, depending on the number, shape of the clusters formed (therefore, the content of matter will be infinitely different in determining characteristics in the whole of the Universe). Thus, in each elementary particle of the Universe, a complete program of all cyclic processes of infinitely different speed and scale is laid, ensuring the eternity of the Universe. “Time-universes”, matter, space” is an inseparable unity, i.e., they are monolithic, there is no distance between them, this is the mystery of Nature. “In the exact sciences, the direction of time is seen as a property of physical systems, not as a property of time. In natural science, the direction of time always exists and is associated with the fundamental

difference between causes and effects.

It is necessary to consider the second possibility by the methods of exact sciences. From this position, time becomes a phenomenon of nature, and not just a fourth dimension that complements three-dimensional space. Then the time intervals measured in hours should have some more physical properties. Unlike the passive geometric property of time, its physical properties must necessarily be active. Indeed, if they are real and are not the results of a subjective perception of the world, then they must be detected in the action on material systems.

Hence, time as a certain physical environment can affect matter, the course of processes and connect a wide variety of phenomena, between which, it would seem, there is nothing in common. This view of time is perfectly legitimate. But only the rigorous experiments of the physics laboratory can prove it.” [N.A. Kozyrev] In this regard, we can safely assume that the “Time of the Universe” (VM) is a special programmed energy for the possibility of transition to a specific matter-space always only in a three-dimensional dimension, but with an infinitely different number of bends.

The program “Time of the Universe” contains a clear sequence of actions of the stabilizing force located in it (EHRN) in all operations of transition to matter-space at the quantum level.

in three parts: matter, form, space

According to the main postulates of Nikolai Kozyrev's “time”, “time” affects any processes and is their necessary component. Everything in nature happens either with the allocation or with the absorption of time. Time is the source of energy. Kozyrev's calculations showed that the activity of stars is due not only to internal nuclear reactions, since in this case they would shine for 4-5 billion years – and their life lasts much longer. So, the stars receive additional energy from the surrounding space.

In this regard, it is difficult to agree with the opinion of Landau and Lipschitz that a quantum particle can be in one of two types of states pure or mixed. It should be assumed that a quantum particle can only be in a mixed state, because in its path of motion to change the state of all contact quantum particles and all systems consisting of them. In the surrounding world, there are no free corridors for the movement of pure quantum particles, i.e., there are no free spaces. On this basis, we put forward our concept that the source of energy of the Universe is the eternal, infinite motion of the smallest elementary particles (VM) at infinitely different speeds and Scale (Figure 1).

The surrounding world and the Cosmos with all visible and invisible contents constitute “an invisible, imperceptible, intangible super-perfect stabilizing force – the source of the cyclical process of the Universe.” In this cyclical process, “man” is the most organized unit of Nature and the Cosmos, but so far has very modest cognitive capabilities of the mystery of the cyclical process of the Universe.

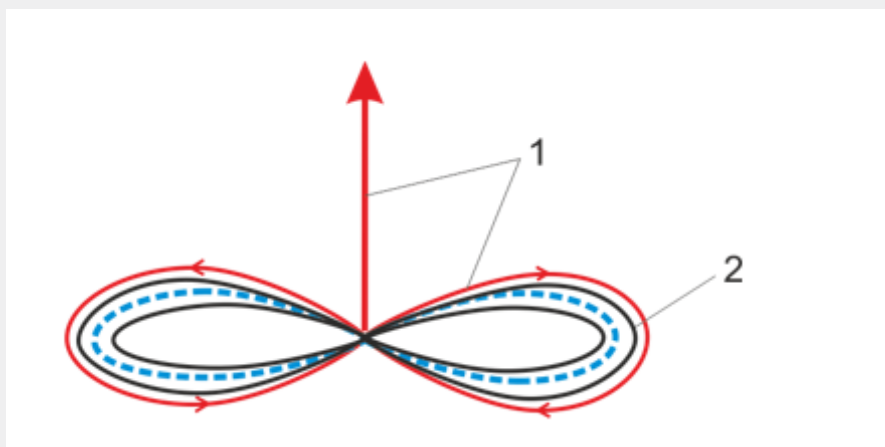


Figure 1: Schematic representation of the smallest Elementary indivisible particle (SMNCH) - Time of the Universe (VM)

i. A single super-perfect stabilizing force of the Universe (EHRN).

ii. Matter-Space (MFP)

(MFP - matter, form, space - a single whole, the shape depends on the number of bends of matter).

It should be assumed that all the smallest elementary indivisible particles (SMNCH) are endowed with unequal programmed physical characteristics (the guarantor of the eternity of motion), providing them with freedom, obedience, and humility in their infinite movement with infinitely different speed and scale. Kozyrev's next postulate is that time is an active substance that maintains the balance of our World, does not spread like light, but appears everywhere at once. Based on our own experimental research, we believe that Kozyrev's time is the "Time of the Universe" as the smallest elementary indivisible particle (SMNCH). An infinite number of them make up the universe, and each elementary particle (SMNCH) contains a programmed invisible intangible super-perfect stabilizing force that helps maintain the balance of our World. We also believe that based on quantum physics, the Universe has a control system identical to the functional properties of the cardiovascular system of the whole organism and for this reason elementary particles (VM) appear everywhere at once, like erythrocytes. The cardiovascular system in all cells of the whole organism, we believe that (VM) perform functions for the Universe identically to erythrocytes and scientists of quantum physics and chemistry will soon find a control system for the Universe.

It should be assumed that "Time-Universe" is a complete program of the entire Universe with its contents. This is a single whole, where all the information about the Universe in the past, present and future at the same time is laid, i.e., from one quantum particle "Time-Universe" it is possible to create the entire Universe. Matter and space depend on the program already embedded in the elementary particle (VM), and the form depends on the number of measurements of matter.

They cannot exist separately because they are created according to an individual information program.

Form and space repeat matter in all its dimensions at the supramolecular level, there is no distance between matter, form and space, they cannot exist separately. Already the energy of the smallest cluster of three quantum particles "Time-Universe" can pass into matter-space. This happens according to the mystery of nature, not yet available to human knowledge. The size, number and location of clusters relative to each other depends on the emergence of new variants of matter.

There is no distance between matter and space because space repeats the shape of matter at the supramolecular level. Thus, "Space" preserves and holds the form of matter programmed in the "Time-Universe" particle. The surface of matter is space, without matter it does not exist "Space" is the concentration of a specific energy. Therefore, we are in an ultra-compact World. The smallest point visible to the naked eye is in a state of many bends, because it consists of an infinite number of quantum particles ("Time-Universe") in an individual unique arrangement of their combinations.

According to certain laws of Nature, in the process of the Universe, clusters of elementary indivisible particles are formed with an instantaneous change in their physical characteristics. During the formation of infinitely different clusters of elementary particles, all the parameters of the "Time-Universe" undergo endless changes in speed and scale, i.e. "Time-Universe" - an elementary indivisible particle is endowed with a program for the instantaneous transformation of its physical characteristics according to the category of the cluster included in it. Space creates a compact, comfortable state of the contents of the entire Universe, since in it elementary particles and the most gigantic clusters of stars are in the same space; where everything is in tight and inseparable contact.

This should be understood and represented as follows: the inner space of the animal and plant world, the entire biosphere, planets, stars, visible and invisible formations of the entire Universe is one whole space, and each elementary particle is palpable in this space with infinitely different scale and speed. Space should be represented as the outer surface of matter. These mysteries of nature are embedded in the elementary particle (VM). When creating a particular matter of the Universe, a differentiated formation of clusters of elementary particles (VM) occurs according to a program of nature inaccessible to knowledge. These mysteries are not recognized by mankind, each elementary particle (VM) is unique in its three-dimensional change and with individual characteristics – the guarantor of the eternity of motion.

It should be noted that in all systems of the Universe, from elementary particles to giant galaxies, there is only one kind of movement “forward” and two turns “right” and “left”, so numbers are always positive, negative numbers do not exist. Perhaps scientists have adopted negative numbers conditionally, for the convenience of the development of different disciplines of science.

It should be noted that the number “0” also does not exist at the human level of knowledge, because we are not the creators of the World. We don't know the beginning. Any movement is cyclical, infinite. The maximum approximation to the beginning of the cycle is accompanied by an explosion-like release of energy, since the maximum approximation of the end of the cycle to its beginning is the largest “energy difference”.

And some of this huge energy again gives rise to the next cycle of motion, and most of the energy replenishes the energy of the Universe and continues indefinitely. This concept proposed by us, confirmed by the study of the three-particle process of b-decay in the 20-30 years of the twentieth century, i.e., in addition to the electron (positron) registered in the experiment, an electron antineutrino or neutrino flies out during b-decay. Neutrino (antineutrino) has zero charge, participates only in weak interaction and, as a result, is characterized by a very weak interaction with matter. This is the “quantum touch.” All cycles are unique in speed and scale. This is also one of the elements of the eternity of the surrounding World. The universe does not expand or contract, but performs its cyclic processes, each cycle has a beginning and an end. Scientists see only a cyclical process. Man is a complexly organized energy-information-exchange system and the condition for his existence is the preservation of the constancy of the internal environment or homeostasis. From the point of view of quantum physics, it follows that homeostasis is a comfortable feeling of a single whole organism at the supramolecular level.

In the literal sense, “constancy” is stagnation, it contradicts the laws of physics and gravity. From the point of view of quantum physics, “space” is the preservation of a constant comfortably unique difference in the internal stabilizing force of the whole organism and the surrounding world as a single super-perfect

stabilizing field (ESSEP) of the Universe. This is the general homeostasis of Nature and the Cosmos, the guarantor of the eternity of the Universe. For scientists of classical physics, it is called “energy”, and from the point of view of quantum physics it is called “ESSEP” - a single super-perfect stabilizing energy-information field that contributes to the creation of matter, is constantly in a stable tension (tone) for the harmonious coexistence of the entire contents of the biosphere and the Cosmos, consisting of elementary particles, i.e., maintaining the homeostasis of the Universe. Elementary particles (VM) with a set frequency and energy information for their further actions are suddenly freed from the completed energy-information field” to create a new form of matter.

The relationship between the surrounding world and the whole organism is carried out through the perspiration system from the entire surface of the body of the whole organism, i.e., the exchange of information between the surrounding world and the whole organism at the supramolecular level is carried out freely. Consequently, according to the teachings of the great Russian scientist V.I. Vernadsky, a person is in the biosphere, i.e. direct contact between the aspiration system of the whole organism and the special system of the Universe, therefore (VM) appears immediately everywhere. In this regard, any elementary particle of an integral organism relates to all elementary particles of the Cosmos, i.e., there is an interchange of information. It is known that we communicate with the Universe using the vibration of words, emotions, and thoughts when we make choices and perform certain actions. Events are the language of the universe, so it is very important to perceive and understand the response signs that it sends us.

Vibrations resembling it are called “strings” of energy, and we call them “Time-creations” (VM). This energy is constantly passing through us and moving around us. We ourselves, as radio stations, constantly transmit energy signals about the environment to the surrounding space. Whether we know it or not, but each of us participates in the continuous energy exchange of the Universe. The individual energy field of a person is like a “passport” for the outside world.

Matter, a form of matter made of fermions or containing fermions along with bosons, has a rest mass, unlike some types of fields, such as electromagnetic. Matter is a form of matter of a certain composition, consisting of molecules, atoms, ions. It should be assumed that the form of matter of a specific, certain composition is laid down in the program of an elementary particle (VM), because any substance consists of a different number of clusters of elementary particles, their schematic arrangement within the clusters and relative to the surrounding world is an infinite number of options, i.e. the concreteness of matter depends on it. “A molecule is the smallest particle of a particular substance, preserving its chemical properties.”

This also depends on the clusters of elementary particles (VM)

of their schematic arrangement and quantity, this determines the specificity of matter. For this reason, it is not possible to chemically separate an atom.

An atom or a group of atoms can be charged electrically – this is already an ion. Ions determine the properties of matter, its possibilities of various transformations and phenomena, without disturbing the homeostasis of the surrounding world. This is due to the existing infinite number of variants of the program embedded in the elementary particle (VM). The particles that make up this substance, depending on the electromagnetic forces of interaction, are in constant motion.

It is believed that the division of particle motion into kinetic

and potential artificial. In nature and throughout the universe, primordially, the energy of rest does not exist. If we can fix the motion of elementary particles with technology, then there is no state of rest, but there is an oscillatory motion of low speed and scale. From the size, number, and location of clusters in relation to each other (an infinite number of options) depends on the emergence of new variants of the physical characteristics of energy and, consequently, infinitely many different variants of the types of matter-space. “Time-universes” (VM) with a set frequency and energy information for their further actions are suddenly freed from the completed energy-information field” to create new matter (Figure 2).

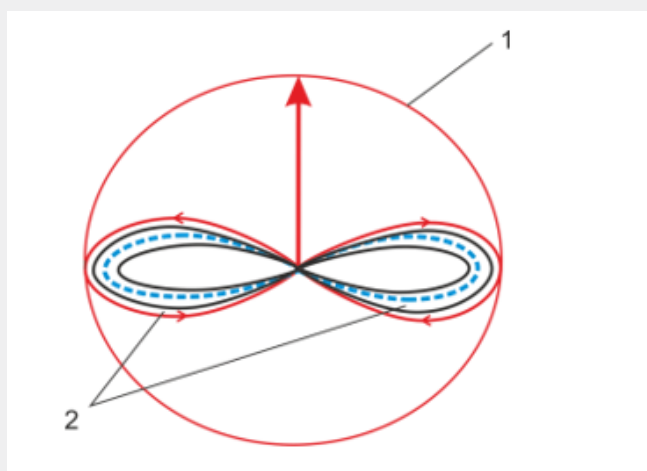


Figure 2: Schematic representation of the “Universe”.

- i. “The Universe”.
- ii. SMNCH – “Time-Universes” (VM).

According to A.L. Chichi sky, “a prerequisite for the life of a living organism is the exchange of the “electrical” component of the metabolic process, and that the total energy content in the cellular structures of the organism has a certain value [1].” Biopotential for each person is strictly individual both in the norm and in pathology. In this regard, any nosology in everyone causes a deviation of his biopotential, in accordance with the stage of development of the disease, i.e., the formation of intermediate states of the body with certain disorders of its supramolecular structures. This, in turn, determines the clinical picture at the time of examination of the patient and is the leading condition for choosing the correct treatment tactics for any specialist doctor, so that the regression of the disease is accompanied by the restoration of the destroyed supramolecular structures, excluding new gross violations at any level of the whole organism.

This concept is not the main principle for drug therapy, due to the lack of highly informative research methods: frequency, dose, mechanism of action of pharmacological drugs at the

supramolecular level.

Clinical physiotherapy is closely related to other fields of medicine, physics, and biology. Thus, the disclosure of the etiology and pathogenesis of many diseases allows not only the use of the necessary physical factor, but also the development of a rational technique, its application, combination with other physical factors [2-5].

Based on the successes achieved in physics and the development of highly sensitive equipment, it became possible to determine the mechanism of action of low-energy physical factors at the cellular and sublethal level of the body [6-8]. It has been established that when any electromagnetic wave passes through the light guide, evanescent waves are always formed around the light guide perpendicular to the outer surface of the light guide and at a distance from it, the evanescent waves attenuate. These previously unknown properties of light were recently discovered by scientists from Japan, the USA, Ukraine, and Korea [9] (Figures

3-7). In this regard, we conducted several experimental studies (registration of photons of a standing evanescent wave on the surface of the skin after exposure to it with A PVIP of light 480-3400 nm).

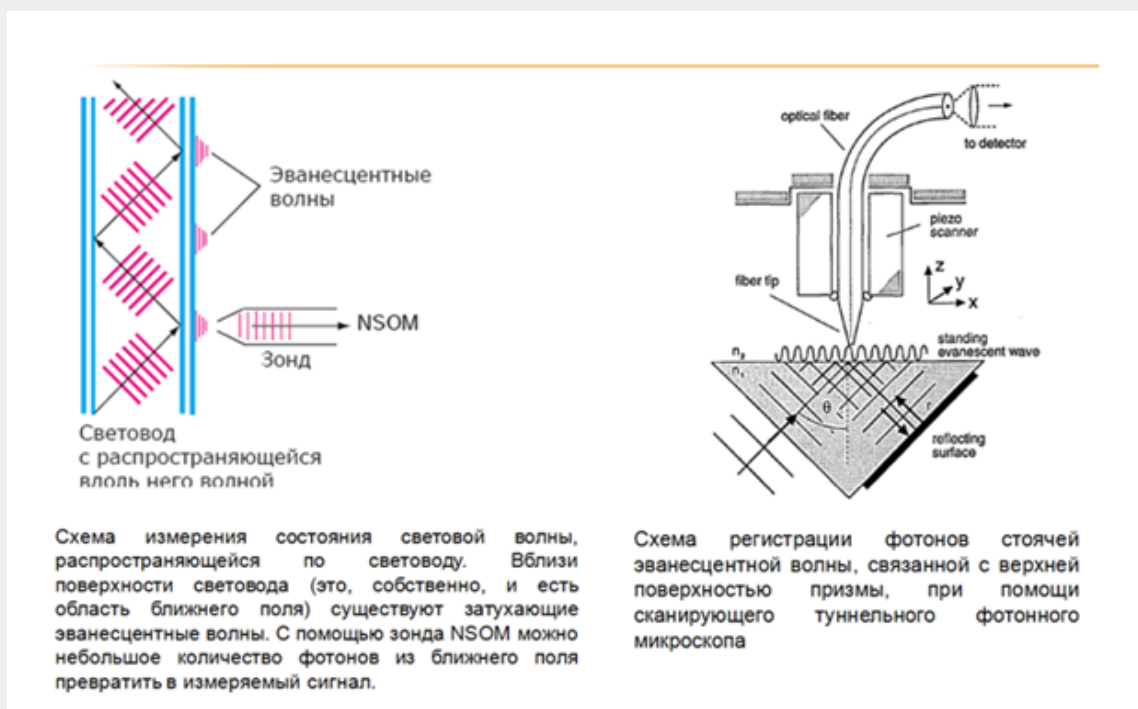


Figure 3: Evanescent waves.

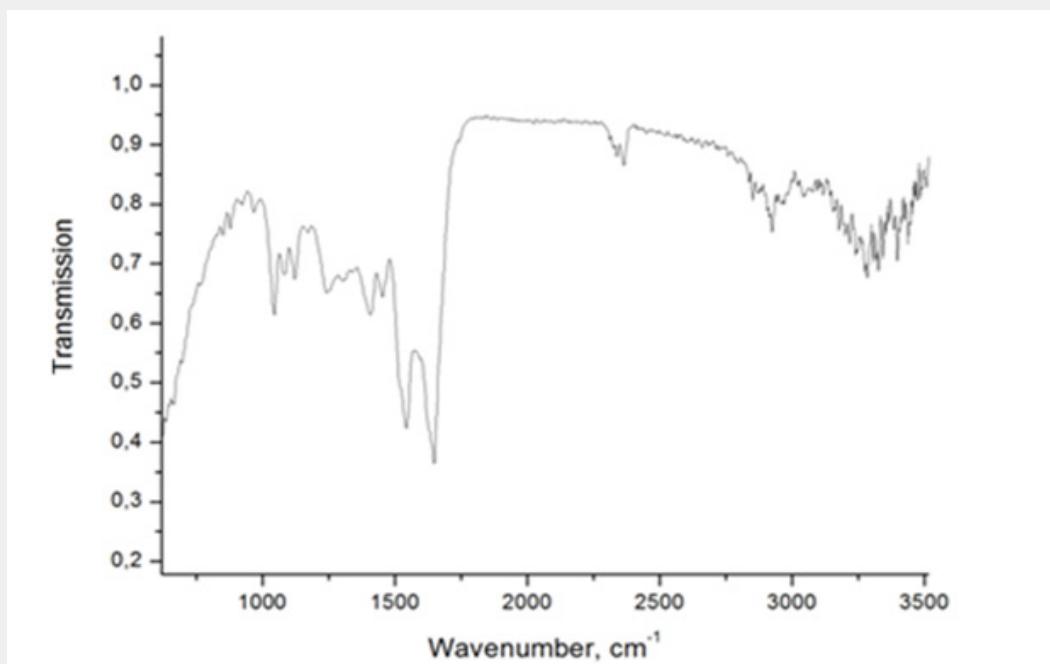


Figure 4: IR spectrum of the skin after exposure to the hand with yellow light through a fiber-optic cable for ten minutes.

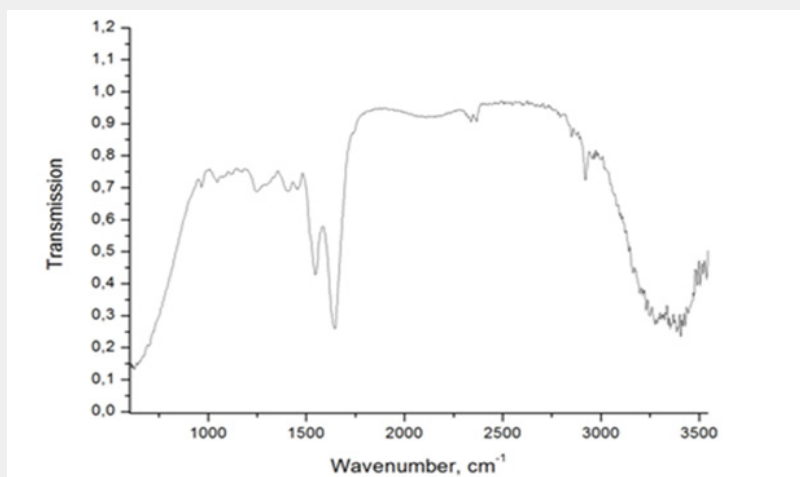


Figure 5: IR spectrum of the skin after immersion of the hand in water irradiated with yellow light through a fiber-optic cable for ten minutes.

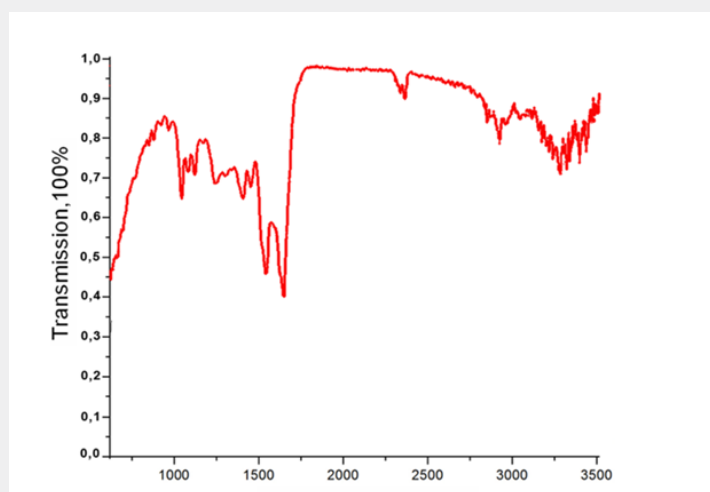


Figure 6: IR spectrum of the skin after exposure to the hand with polarized light of the device "Bioptron" for 10 minutes.

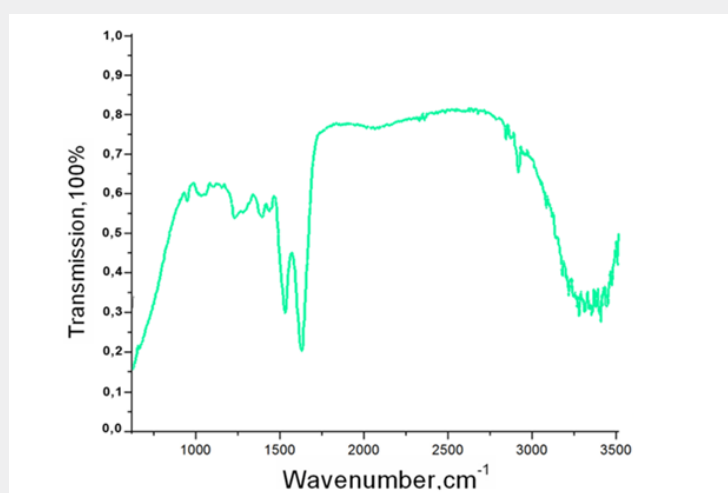


Figure 7: IR spectrum of the skin after immersion of the hand in water irradiated with the light "Bioptron" for 10 minutes.

It was established that the evanescent infrared spectra of the skin after exposure to it with water activated by light through a fiber-optic cable from the Bioptron apparatus demonstrate an increase in the absorption area in the spectral ranges of 3,200-3,500 cm^{-1} and in the range up to 800 cm^{-1} , that is, there is an increase in hydration [10-13]. In this regard, there is a reason to use phototherapy with the Bioptron apparatus through a fiber-optic cable both with direct exposure and indirectly through water for various diseases of the musculoskeletal system, skin and other organs and systems.

From these experiments, it can be concluded that the photoexcitation of water by the Bioptron source really leads to a change in the structure of water. This became possible due to the absorption of the radiation of the source in the water, stimulating an increase in the size of the nanoclusters of water bound by a hydrogen bond, which became possible due to the identification of unusual properties of light by the above-mentioned scientists (the appearance of evanescent waves) and the creation of a "scanning tunneling microscope". (Stefan Mendak and his colleagues from Germany have created a working tool capable of recreating two-dimensional images of three-dimensional nanoscale objects using light of the visible frequency and the near-infrared spectrum. The device is based on "super lenses" consisting of thin strips of silver that have the shape of a tube with a central hole of about 2 mm. From the inner surface of the tube, evanescent waves pass through its layers outward perpendicular to the circle and with this movement there is a primary increase in the image, i.e. "scanning tunneling microscope") [9]. In the

works [11-14] it was established that the cardiovascular, nervous and lymphatic systems can be light guides and around them also form evanescent (decaying) waves perpendicular to the outer surface of blood vessels, copiers, nerve roots when exposed to them on any part of the skin surface by electromagnetic waves. Consequently, evanescent IR spectroscopy of impaired total reflection when touching the IR fiber is unique, not traumatic, not traumatic requiring special skin preparation there is a "Spectro biopsy of blood", which reflects the entire information picture of the body at the supramoleculasyarn (atomic) level (Figures 8-13). Our concept of the occurrence of the tunnel effect of a whole organism under the influence of low-energy electromagnetic waves is supported by the work of domestic and foreign scientists. They revealed the causes of the occurrence of evanescent waves: d. phys.-mat. Prof. Dr. Zhizhin German Nikolaevich, D. Phys.-Math. Professor Vinogradov Evgeny Andreevich, V.N. Galynsky, A.I. Furs, L.M. Barkovsky and others They believe that when photons and elementary excitations of the medium interact, polaritons are formed. The interaction of electromagnetic waves with the excitations of the medium (phonons) leading to their connection becomes especially strong when their frequencies and wave vectors coincide (resonance). In this region, bound waves are formed, i.e. polaritons at the interface of the two media and decrease exponentially with the distance from the interface (near field). The phonon is a quasiparticle introduced by the Russian scientist Igor Tamm and is a quantum of oscillatory motion of the crystal atoms. Scientists have discovered pseudoparticles traveling on the surface of light-sensitive materials.

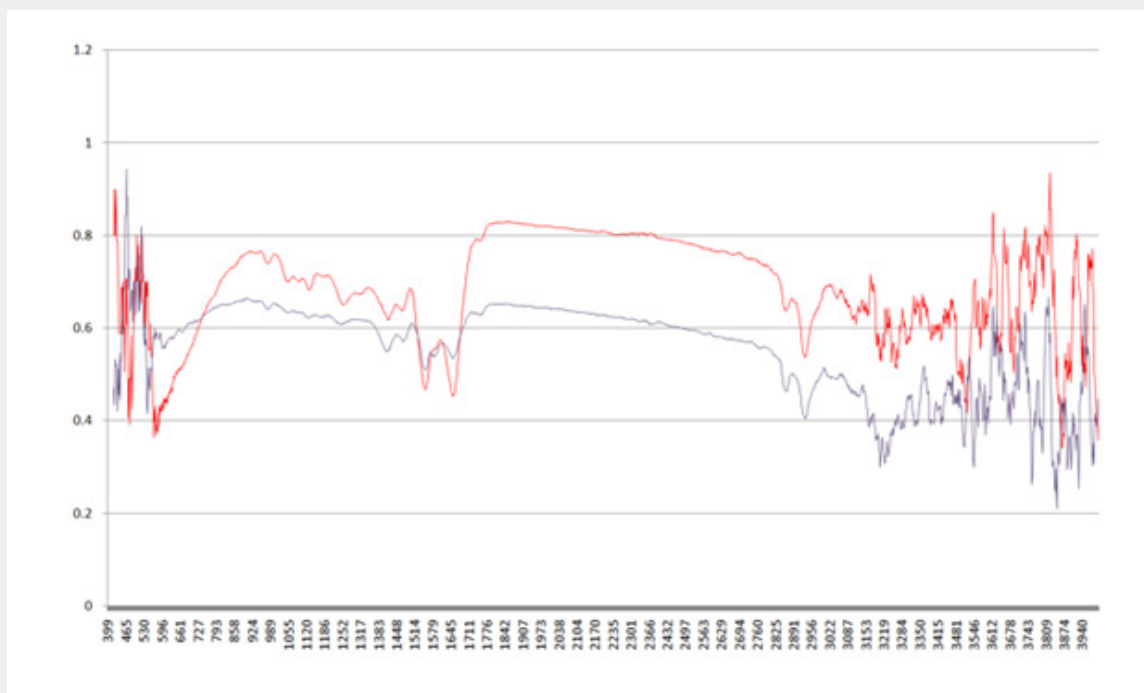


Figure 8: Spectroscopy of blood from the surface of an unirradiated hand.



Figure 9: Spectrobiopsy of blood from the surface of the hand irradiated with yellow light for 10 minutes.

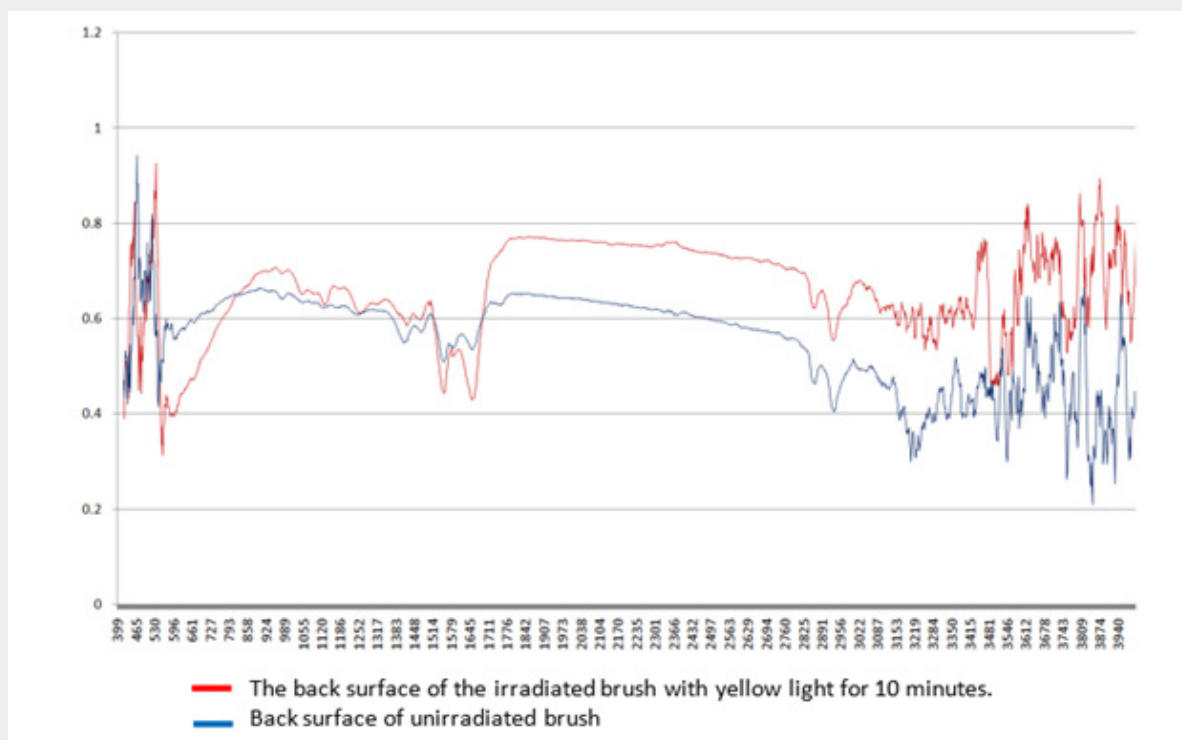


Figure 10: Spectrobiopsy of blood from the surface of the hand.

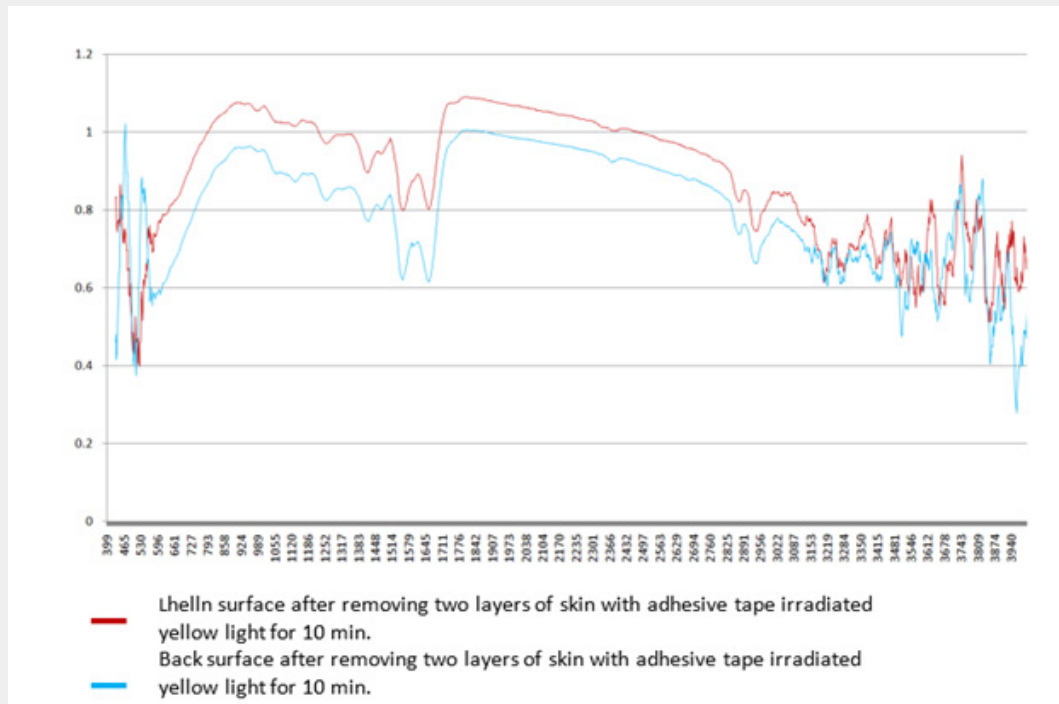


Figure 11: Spectrobiopsy of blood from the surface of the hand.

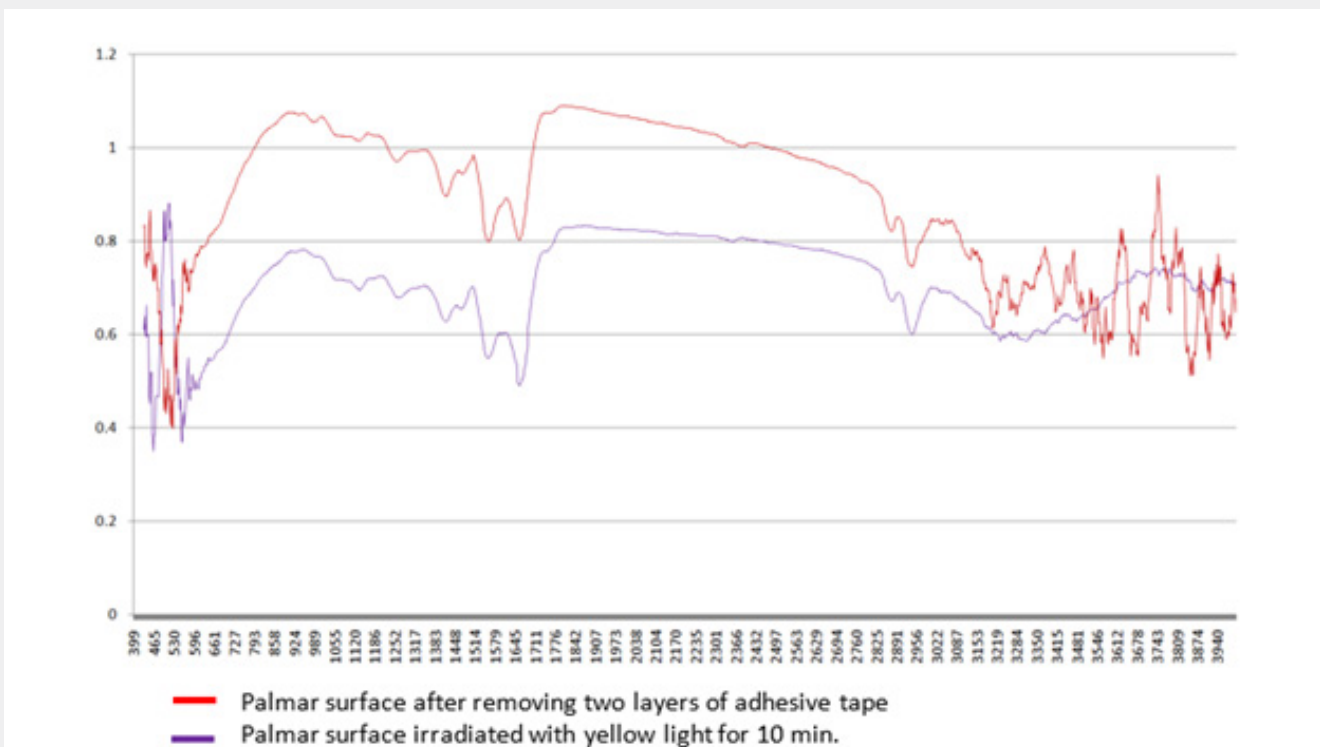


Figure 12: Spectrobiopsy of blood from the surface of the hand.

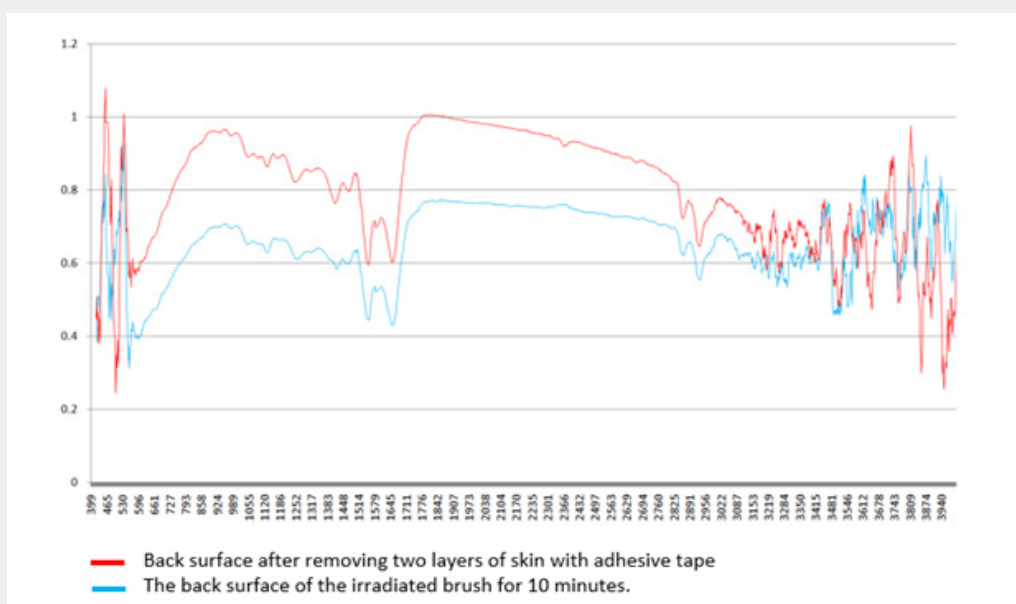


Figure 13: Spectrobiopsy of blood from the surface of the hand.

It is known that the English physicist B. Josephson in 1962, based on the Bardin-Cooper-Schrieffer theory of superconductivity, predicted stationary and non-stationary effects in the contact of a superconductor-dielectric. Two convolutional layers separated by a negligibly thin layer of insulator just a few atoms thick will behave like a single system. When a current is passed through the contact, the value of which does not exceed the critical value, there is no voltage drop at the contact (despite the presence of a dielectric layer). This effect is caused by the fact that conduction electrons pass through the dielectric without resistance due to the tunneling effect. Electrons can overcome the barrier even in the absence of a voltage applied to them (tunneling of the Cooper pair). The effect is called the Josephson effect [15]. If you apply a constant voltage on both sides of the transition, quantum mechanics predicts that Cooper pairs of electrons will begin to move through the barrier first in one direction, and then in the opposite direction, resulting in an alternating current, the frequency of which increases as the voltage increases. This effect is called the "non-stationary Nar Josephson effect" [15,16].

According to the laws of physics, when an integral organism is exposed to electromagnetic waves, evanescent waves are formed from the outside of all capillaries, vessels, nerve trunks and roots, this is a set of "scanning tunnel biomicroscopes", and the registration of the effects of PVIP of light on the body is carried out using a "scanning tunneling photon microscope", see Figure 1 (Fermi Pasta Ulam phenomenon: "reverse energy return"). Therefore, it should be assumed that the animal organism is a single superconducting system operating on the principle of the Josephson effect in superconductors. In this regard, there is reason to assert that we have identified new, previously unknown

mechanisms of influence of weak electromagnetic waves on the whole organism and ways of registering the responses of the organism. That is, the whole organism functions on the principle of a "scanning tunneling biomicroscope of the near field", as it corresponds to the description of the device of Stefan Mendek from Germany.

The cardiovascular, nervous and lymphatic systems can be light guides and around them also form evanescent (attenuating) waves perpendicular to the outer surface of vessels, capillaries, nerve roots when exposed to them on any part of the skin surface by electromagnetic waves, i.e. the whole organism enters the mode of operation of the "scanning tunneling microscope", so the evanescent IR spectroscopy of impaired total reflection when touching the IR fiber is unique, not traumatic, does not require special skin preparation - there is a "blood spectrobiopsy", which reflects the entire information picture of the body at the atomic level. (A new progression in medicine) [11-13]. Professor Samoylova K.A. in her research argues that the most important role in the stimulating effect of optical radiation on cells and tissues is given to two light-absorbing enzyme complexes with the properties of oxidants - nicotinic-adenine-dinucleotide-phosphate oxidase (NADP-oxidase) and nucleotide-containing biopteroflavopteide-NO synthase.

Under the action of visible and IR light, these enzymes localized in the cell membrane are activated and using the surrounding oxygen, produce its active forms (ROS) - superoxidanion, hydrogen peroxide, hydroxyl radical and nitric oxide (NO). It is these highly reactive molecules that conduct a light signal from the surface of the irradiated cell to its nucleus, affecting the

specialized intracellular mechanisms of the activation signal. It has already been established that the formation of nitric oxide - NO - in the systemic circulation is the most important mechanism of such effects of visible and IR light as the expansion of blood vessels and platelet disaggregation, without which phototherapy can hardly be highly effective [17].

Before considering specific examples of the manifestation of the biological activity of NO in humans and animals, it is necessary to point out once again the polyfunctionality of its action, which cannot be reduced only to "positive" or only to "negative" effects [18-20]. The biological response to NO is largely determined by the conditions of its generation – where, when and in what quantity this compound is produced [19,21]. It should be noted that to date, the following have not been sufficiently studied: localization, distribution of NO-sitase, non-enzymatic formation of nitric oxide, participation of NO in the regulation of the nervous system, in protective immunological reactions, participation of

NO in the activity of the central nervous system (CNS), the role of nitric oxide as a regulator of cellular processes in the formation of multiple organ failure.

Based on the foregoing, it should be argued that it is necessary to expand fundamental research on the basis of an academic research institute with the involvement of specialists in physics, chemistry, cytology, physiology, biology, optical physics to create a methodology with the subsequent development of a topic and program on the issue of slowing down the natural aging of a living organism. The above concepts with high statistical accuracy are confirmed by the example of the created new recovery technology: "Underwater horizontal traction of the spine with underwater phototherapy" to solve the actual medical and social problem of treating patients with degenerative-dystrophic lesions of the lumbosacral spine with hernial protrusions of the intervertebral discs, one of the most common neurological pathology in the world (Figure 14).



Figure 14: Installation of underwater horizontal traction of the spine with underwater phototherapy through fiber-optic cable.

At the present stage of development of restorative medicine for the treatment of this category of patients, a large arsenal of medical and non-drug methods (physiotherapy, traction and manual therapy, reflexology, physical therapy), as well as surgical (operative) treatment, is used. At the same time, it is not possible to achieve the desired therapeutic effect from the methods used, due to the ineffectiveness of their combined use [2-4,22]. And

our system: "the combined use of underwater horizontal traction of the spine with underwater phototherapy through fiber-optic cable" can contribute to the restoration of impaired functions in 96-98% of patients with degenerative-dystrophic lesions of the spine, due to the regression of herniated protrusion of the intervertebral discs by 30-50% and the anti-inflammatory antioxidant effect of underwater phototherapy, but to date such a

complex in this pathology is not used anywhere else in the world (Figure 15). At the same time, the repeated reversibility within 5-7 years is only 0.5%, and the pain goes away in all patients after the first procedure. This is due to the unique combination of underwater horizontal traction of the spine with underwater phototherapy (yellow light with infrared 480-3400 nm) through the mediation of your fiber-optic cable [10]. The reliability of the treatment results is justified by the conduct of modern highly sensitive informative methods for assessing the condition of the intervertebral discs (MRI and CT) and pathological morphological

processes using blood plasma spectroscopy, Spectro biopsy of blood from the skin surface for the first time in world medical practice [8,13]. It should be noted that the presented restorative technology surpasses all existing pharmaceuticals, non-drug methods of treatment and occupies a well-deserved dominant place in the primary prevention of degenerative-dystrophic lesions of the spine of adolescents, athletes, drivers of road, rail, and other types of transport with a duration of driving work of more than 60 minutes per day.



Figure15: Degenerative-dystrophic changes in the spine.

We believe that the high efficiency of anti-inflammatory immunomodulatory, antiviral and antitumor action of polarized light 480-3400 nm is confirmed by fundamental research of Russian and foreign scientists: Doctor of Biological Sciences, Professor Samoylova K.A. Institute of Cytology of the Russian Academy of Sciences, St. Petersburg, 2003; Doctor of Medical Sciences, Professor Gerasimova L.N. Burn Center of the Research Institute of Emergency Care named after N.V. Sklifosovsky, Moscow; Chief Pediatric Physiotherapist of Moscow, Doctor of Medical Sciences, Professor Khan M.A., Russian Scientific Center for Restorative Medicine and Balneology of the Ministry of Health of the Russian Federation, Moscow; Professor Lenz M., University of Oxford, UK; Professor Medinica L., Institute of Dermatovenereology Clinical Center, University of Belgra, Yugoslavia [10,14].

A feature of phototherapy carried out using PVIP light is a very fast, recorded within 30 minutes after the first irradiation, "disappearance" of pro-inflammatory cytokines from the circulating blood - tumor necrosis factor (TNF- α), interleukins - IL-6, IL-2, IL-12. So, with the initially increased content of TNF- α , it drops by 30 times, IL-8 - by 4-6 times, IL-2 - by 4-10 times and IL-12 - by 12 times (by the end of the course). At the same time, the content in the blood plasma of anti-inflammatory cytokines -

IL-10 and transforming growth factor - TGF- β 1 increases, as well as a rapid six-fold increase in the blood of the most important immunomodulator - interferon- γ (IFN- γ) Yu even with its initially normal level. The most important function of this cytokine is the activation of cellular immunity (the functional state of monocytes, macrophages, natural killers and cytotoxic T-lymphocytes), which primarily increases antiviral and antitumor stentness of the body [17].

The experiment with PVIP irradiation of blood in vitro gives grounds to associate all the described effects with the direct action of light on the blood. In all versions of the experiments, light does not just stimulate, but regulates the content of cytokines. Also, in vivo there is also direct contact with the cardiovascular system (blood) through perspiration. This is an instantaneous effect at the cellular, supramolecular (atomic) level [7-9]. In this regard, there is reason to assert that the system of underwater horizontal traction of the spine with underwater phototherapy, for the primary prevention of adolescents, athletes and improving the quality of life of patients with degenerative-dystrophic lesions of the spine, deserves rapid introduction into practice of the work of rehabilitation medicine centers, medical and physical education dispensaries, sanatorium-resort institutions, departments of

exercise therapy of medical and preventive institutions, boarding houses. Based on the foregoing, I present the tasks of clinical physiotherapy and the principles of modern classification of physical factors.

The Main tasks of Clinical Physiotherapy

- i. Clinical trials of new physiotherapeutic methods and techniques.
- ii. Clinical studies and reassessment of old physiotherapeutic methods and techniques.
- iii. Development of an effective and safe physiotherapeutic method.
- iv. Organization of information services and advisory assistance to various specialists.
- v. Training of students and doctors.

In practice, clinical physiotherapy deals with the following issues:

- i. the choice of a physiotherapeutic method for the treatment of a particular patient at the time of clinical assessment of the condition;
- ii. determination of the most suitable parameters of the physical factor and the mode of their application, combination with other physical factors;
- iii. choice of ways of exposure to the physical factor;
- iv. observation of the action of physiotherapeutic factors;
- v. prevention and elimination of adverse reactions.

Before prescribing treatment, the physiotherapist should give himself an answer to the following questions.

- i. What specific changes in the patient's condition does he want to achieve?
- ii. What physical factors can have the desired effect?
- iii. What physiotherapeutic technique is most suitable for this patient?
- iv. In what combination and sequence to apply the chosen physiotherapeutic method with other physical factors?

Ultimately, the effectiveness and safety of physiotherapy depends on the ability of the doctor to correctly assess all these factors, it is necessary to rely on in-depth knowledge of both clinical medicine and experimental physiotherapy. "Science that studies the physicochemical characteristics and mechanism of action of physical factors with the symptom-syndromic principle of their application in physiological parameters in the complex therapy of patients; the ability of the applied physical factors to

stabilize the disturbed biological process of organs and systems, there is clinical physiotherapy". To improve clinical physiotherapy, there is a need to create a modern classification of physical factors according to the following principles.

First Principle:

By energy source

Natural:

- i. Solar energy
- ii. Cosmic energy
- iii. Temperature (airspace, water: rivers, lakes, seas, mineral waters, therapeutic mud)
- iv. Human endo bioenergy
- v. Communication apparatus of the power system (energy centers)
- vi. Super stable acoustic-electromagnetic waves (solitons) in human DNA
- vii. The energy of the plant world
- viii. Exo bioenergy (leeches, bees, etc.)

Energy obtained by artificial means:

- i. Electric
- ii. Magnetic
- iii. Light
- iv. Thermal
- v. Hydropower
- vi. Mechanical
- vii. Radio wave
- viii. Energies obtained by air pressure and gases
- ix. Fermi-Pasta-Ulam generator (for creating solitone electrosonic fields)
- x. Resonance-laser spectroscopy of radio wave emitters of objects, including chromosomes, living cells and tissues
- xi. Biomolecular-opto radio electronic computer systems are analogues of the chromosomal biocomputer of the body
- xii. IR spectroscopy in the 4000-400 cm⁻¹ region on the Fourier Perkin-Elmer Spectrometer 2000
- xiii. Ramon spectroscopy of Raman light scattering
- xiv. Evanescent spectroscopy

The Second Principle

In the most important areas of use of therapeutic physical factors

For medicinal purposes:

- i. Natural factors
- ii. Preformed factors

Rehabilitation direction:

- i. Natural factors
- ii. Preformed factors

Physoprophylaxis:

- i. Primary prevention is mainly natural factors
- ii. Secondary prevention is mainly preformed factors

Physiodiagnostics:

- i. Electrodiagnosis
- ii. Electropuncture diagnostics

The Third Principle

According to the physicochemical basis of the action of physical factors:

- i. Heat formation
- ii. Ion shifts
- iii. Formation of free physical substances
- iv. Generation of free radicals
- v. Conformational changes

Fourth principle

By type and mode of action of energy

Direct electric currents:

- i. Continuous
- ii. Impulse

Alternating currents:

- i. Low frequency
- ii. Medium frequency

Electric field:

- i. Constant
- ii. Pulse
- iii. High and ultra high frequency

Magnetic field:

- i. Constant
- ii. Pulse
- iii. Low frequency
- iv. High frequency

Electromagnetic radiation of the radio frequency range:

- i. Ultra-high frequency (centimeter and decimeter range)
- ii. Extreme high frequency (EHF)

Electromagnetic radiation of the optical range :

- i. Infrared
- ii. Visible
- iii. Ultraviolet (DUF, SUF, KUF)
- iv. Monochromatic, coherent

Mechanical power:

Mechanical stresses (therapeutic masses, manual therapy, acupuncture)

Mechanical vibrations

- i. Vibration
- ii. Ultrasound

Airspace factors

- i. Atmospheric pressure
- ii. Periodically changing
- iii. Low
- iv. Increased
- v. Partion (reduced PO₂ and increased PO₂)
- vi. Increased PO₂ and PNe (oxygenoheliotherapy)
- vii. Increased RSO₂ (carbogen therapy)

Aeronae

Aerosols

The fifth principle

By the mechanism of action of physical factors

Sixth principle

By the ability to interact with the bioenergy of cells and tissues

Seventh principle

By the method of introduction into the body of pharmacological

agents. Clinical physiotherapy is closely related to other fields of medicine, physics, and biology. Thus, the disclosure of the etiology and pathogenesis of many diseases allows not only the use of the necessary physical factor, but also the development of a rational technique, its application, combination with other physical factors and pharmacological agents [3,12,14]. Based on the successes achieved in physics and the development of highly sensitive equipment, it became possible to determine the mechanism of action of low-energy physical factors at the cellular and subcellular levels of the body [1,9]. It has been established that when any electromagnetic wave passes through the light guide, evanescent waves are always formed around the light guide perpendicular to the outer surface of the light guide and at a distance from it, the evanescent waves attenuate. These previously unknown properties of light were recently discovered by scientists from Japan, the USA, Ukraine, and Korea [6]. In this regard, we conducted several experimental studies (registration of photons of a standing evanescent wave on the surface of the skin after exposure to it with A PVP of light 480-3400 nm).

Findings

1. New, previously unknown mechanisms of influence of weak electromagnetic waves on the whole organism and ways of their registration are revealed. That is, the whole organism consists of many "scanning tunneling biomicroscopes of the near field", and the registration of the results of exposure to VFR light on the body is carried out using a "scanning tunneling photon microscope".

2. All cells of a living organism are endowed with a unique program of individual speed of infinite movement of all processes of their activity in particular and in general (i.e. transition from one state to the next ...).

3. It has been established that the effect of the energy of any physical factor is dosed and regulated (physiodynamics) with the help of nanotechnology and its path is freely traced to each molecule of the whole organism (physiokinetics) without violations of supramolecular structures, without negative consequences. Such a high level of pharmacodynamics and pharmacokinetics does not have modern world pharmaceutical science.

4. It was revealed that the biopotential for each person is strictly individual both in the norm and in pathology. In this regard, any nosology in each individual causes a deviation of his biopotential in accordance with the stage of development of the disease, i.e. the formation of intermediate states of the body with certain disorders of its supramolecular structures.

5. The science that studies the energy and bioinformation systems of the body, the possibility of their correction at the subcellular level by physical factors to stabilize the

disturbed biological processes of organs and systems is clinical physiotherapy.

6. It has been established that any disease is unique for each person: etiopathogenesis, clinical picture, state of intermediate cyclic morphological supramolecular formations of organs and body systems.

Consequently, the application of "established medical standards for diseases" for all patients with the same diagnosis is unscientific and extremely dangerous.

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