

Bioresonance means of individual therapy: biological
and therapeutic mechanisms of action

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SUMMARY

Considered and analyzed mechanisms biological and therapeutic action of bioresonance means of individual therapy. The results of experimental studies and clinical application of information copies obtained with the help of electromagnetic waves carrying biologically significant or therapeutic information are presented. Possible mechanisms of the formation of bioresonance means of individual therapy using the patient's own electromagnetic oscillations are stated.

Key words: bioresonance therapy, bioresonance agents individual therapy, water structure, electromagnetic interactions, solitons.

RESUME

Mechanisms of biological and therapeutic action of bioresonance means of individual therapy are reviewed and analyzed. Results of experimental researches and clinical use of informational copies obtained with electromagnetic oscillations bearing biologically significant or therapeutic information are presented. Probable mechanisms of creation of bioresonance means for individual therapy with use of patient's electromagnetic oscillations are presented.

Keywords: bioresonance therapy, bioresonance means of individual therapy, structure of water, electromagnetic interactions, solitons.

INTRODUCTION

As a result of many years of research, such a direction in the development of healthcare has been formed and defined as a personalized approach to a healthy and a sick person. The principle of therapy, which takes into account the individuality of a person, his psychosomatic characteristics with his characteristic reactions to changes in the external and internal environment, including the effects of therapeutic factors, has been used as a fundamental principle in homeopathy since its inception.

At present, there is a situation that can be described as a "pharmacological boom", since the number of manufactured pharmaceuticals is in the tens of thousands, and the number of new drugs is constantly increasing. At the same time, there are practically no medicines,

which would not cause side, negative effects, and the list of contraindications for taking this or that medication is at least comparable to the list of indications, and sometimes even exceeds it. The existence of such a paradoxical situation leads to the fact that even those diseases that have standard therapy regimens and clinical guidelines are not always successfully cured. One of the directions for resolving this situation is maximum individualization, the use of natural or artificial physical factors with such parameters that would provide the maximum therapeutic effect, and the treatment itself would be symptomatic, and pathogenetic, and etiotropic.

Physiotherapeutic methods include bioresonance therapy (BRT), at which is treated with its own electric and electromagnetic fields and human radiation [1]. In the arsenal of modern methods of physiotherapy, in all likelihood, there is no more individually oriented therapy than treatment with the use of BRT. The use of an electromagnetic physiotherapeutic factor presupposes the use of hardware for treatment and the presence of the patient at all prescribed BRT procedures, in contrast to the self-administration of drugs by him during pharmacotherapy. Pharmacological agents act more selectively than physiotherapeutic methods, however, this significantly increases the likelihood of side effects, which primarily include allergies. When performing BRT, the individual characteristics of a particular patient's organism are taken into account, which is the fundamental difference between this therapeutic method. In addition to conducting therapy sessions, it is possible to use oral administration of bioresonance agents in liquid or solid form, representing an information copy of the patient's own electromagnetic oscillations, carrying therapeutic information. Thus, depending on the treatment regimen, the patient can independently take individual therapeutic bioresonance agents both in the intervals between BRT sessions and instead of them in accordance with the prescriptions of the attending physician.

Physicochemical characteristics and biological and the therapeutic effect of bioresonance individual therapyThe current concepts consider information transfer as the creation of analogs (copies) containing information about the original substance, on secondary liquid or solid carriers. The idea of F. Kramer about the electromagnetic nature of the transfer of informational medicinal properties of drugs to other carriers was based on the phenomenon of electropuncture testing of drugs discovered by R. Voll and M. Glaser-Turk [2].

The phenomenon of transfer of properties of medicinal products can be analyzed on the basis of descriptions of filed patent applications and received patents for technical devices and methods of obtaining information copies [3, 4]. Two groups can be distinguished based on the electromagnetic nature of the transfer. The first group combines methods and devices for transferring information properties by

placing the original and secondary media in a closed electrical circuit. The second, more representative group consists of methods and devices that use constant, variable magnetic and electromagnetic fields to transfer information properties. Apparently, the first device for transferring information and recording copies of preparations was contained in the description of the invention to the patent application D. Aschoff and W. Falk with priority 1978. The basis of the invention is a circuit with a resonant frequency of 1 kHz, formed by an inductor with a parallel connected capacitance [5]. Unlike other devices, a characteristic feature of such devices is the absence of any power sources, and the transfer of the information characteristics of the initial means to the carrier in these methods was carried out without changing the phase state of the carrier during the copying process.

The successful implementation of the transfer on the example of homeopathic preparations initiated the development and research of technology for obtaining information copies of medicinal allopathic drugs on other carriers in order to investigate the physicochemical properties of copies and conduct testing on biological models.

As it was established in experiments with a double blind method, the physicochemical characteristics of information copies of homeopathic preparations were statistically significantly different from the control samples [6-8]. In the measurements, seven homeopathic preparations (nosodes) were used, from which copies were obtained by transferring them onto glass ampoules with sterile 0.9% sodium chloride solution using the Transfer-P apparatus manufactured by the IMEDIS Center (Russia). As control samples, we used similar ampoules with saline, on which information was not recorded from the original media. The comparison was carried out using absorption spectra in the near IR range at wavelengths of 400-800 nm with an interval of 0.5 nm. Due to the fact that the studied drugs of both groups are identical in their chemical structure (0, 9% NaCl solution), there are practically no general differences in the median spectra. However, the revealed spectral differences of the information copies relative to the control preparations are characterized by an increase in absorption in the 702-743 nm band and a decrease in the 779.5-790.5 nm band. The performed statistical analysis revealed significant differences in individual sections of the spectra of information copies and control samples, which have a discrete nature and are concentrated in the range of 750-800 nm. So, for all copies, significant differences were, in particular, at wavelengths of 754.5; 785 and 788 nm. The results obtained can be considered as reliable confirmation of the existence of the information copying effect. However, the revealed spectral differences of the information copies relative to the control preparations are characterized by an increase in absorption in the 702-743 nm band and a decrease in the 779.5-790.5 nm band. The performed statistical analysis revealed significant differences in individual sections of the spectra of information copies and control samples, which have a discrete nature and are concentrated in the range of 750-800 nm. So, for all copies, significant differences were, in particular, at wavelengths of 754.5; 785 and 788 nm. The results obtained can be considered as reliable confirmation of the existence of the information copying effect. However, the revealed spectral differences of the information copies relative to the control preparations are characterized by an increase in absorption in the 702-743 nm band and a decrease in the 779.5-790.5 nm band. The performed statistical analysis revealed significant differences in individual sections of the spectra of information copies and control samples, which have a discrete nature and are concentrated in the range of 750-800 nm. So, for all copies, significant differences were, in particular, at wavelengths of 754.5; 785 and 788 nm. The results obtained can be considered as reliable confirmation of the existence of the information copying effect. The performed statistical analysis revealed significant differences in individual sections of the spectra of information copies and control samples, which have a discrete nature and are concentrated in the range of 750-800 nm. So, for all copies, significant differences were, in particular, at wavelengths of 754.5; 785 and 788 nm. The results obtained can be considered as reliable confirmation of the existence of the information copying effect.

Comparative studies of the effect of homeopathic potassium cyanide and its informational copy on the catalytic activity of the uricase enzyme showed a statistically significant difference in their biological action [9]. It was found that potassium cyanide in the homeopathic potency D8 stimulated the activity of the enzyme, while its informational copy did not cause either stimulation or inhibition of the enzymatic activity of uricase. Received

the results are evidence of different mechanisms of the biological, and, therefore, the therapeutic effect of the homeopathic preparations proper and their information copies, which should be taken into account when using them in the treatment process.

Experimental studies on other biological models (animals and cell cultures), on the contrary, revealed a reliable effect of information copies. There is no doubt that the results of experiments of a group of laboratories led by J. Benveniste published in 1988 in the journal *Nature* on degranulation of basophils obtained from dilutions of antiserum from 10^{-2} up to 1×10^{-120} , became a certain catalyst and stimulated interest in the phenomenon of transferring the medicinal properties of various drugs and thus obtaining their information copies [10].

The first randomized controlled studies of the biological effect of information copies were carried out by two groups of scientists in Austria and Italy [11-14]. An indicative model of amphibian metamorphosis was used *Rana temporaria* (transformation of tadpoles into frogs) in the presence of thyroid hormone thyroxine, which inhibits it. Since the process of metamorphosis proceeds rather slowly (up to 16 weeks), it can be observed visually, which is especially evident, since the shape itself changes - the tadpole successively turns into a frog. At first, it was found that the presence of thyroxine in dilutions up to 10^{-30} in the water where the tadpoles are located, it inhibits the development of metamorphosis in tadpoles. Then, two induction coils (primary and secondary) were used, which were connected to each other through a low-frequency amplifier. Further, it was found that if the electrical signal from the thyroxine solution in the primary coil at a concentration of 10^{-8} M to transfer through an amplifier to a secondary coil with clean water, then such water accelerates the metamorphosis of amphibians. However, if a thyroxine solution is placed in the primary coil of the amplifier in dilutions of 10^{-11} M to 10^{-30} M, then such water, after being in the coil connected to the output of the amplifier, inhibits metamorphosis. When ordinary (control) water or high dilutions of thyroxine, prepared without shaking, were placed into the primary coil, there was no effect on metamorphosis. These results once again confirm the existence of various mechanisms of biological activity of information copies obtained from the main carriers in usual concentrations and high dilutions. Note that introduced by PC Endler et al. the term "non-molecular" mechanism of transfer of informational properties of biologically active drugs to other carriers, in our opinion, most accurately characterizes this process [14]. Subsequently, PC Endler et al. for the first time applied the apparatus BRT "BICOM" developed by H. Brüggemann in research,

In further experiments on donor neutrophils under conditions in vitro the effect of the transfer of the properties of phorbol ester (4-phorbol-12-beta-myristate-13-acetate) on the activity of antioxidant enzymes (superoxide dismutase and protein kinase C) in cells was studied [16]. A system of two was used

induction coils, in one of which neutrophils were placed, and in the other - a solution of phorbol ether at a concentration of 1.0 μM . The solenoids were interconnected by an amplifier operating in the low frequency range. Changes in the activity of neutrophil enzymes were detected when the amplifier was turned on, and were not recorded either when the amplifier was turned off or in the absence of a phorbol ether solution in the original solenoid. These results once again confirmed the possibility of non-molecular remote transfer of biologically significant information from one carrier to another.

Antibacterial effect of information copy metronidazole, noted in experiments on axenic cultures *Entamoeba histolytica* and *Trichomonas vaginalis*, manifested itself in significant inhibition of the growth of trophozoites compared with control [17]. The transfer of the properties of an aqueous solution of metronidazole with concentrations of 0.124–0.150 $\mu\text{g} / \text{ml}$ was carried out to bidistilled water for 15 minutes using the BRT apparatus. The decrease in the growth of parasites in the presence of the information copy was identical in direction with the positive control, which was metronidazole at similar concentrations.

In the clinical application of information copies, J. Schuller and M. Galle, apparently, were the first to use them in the treatment of rheumatic diseases [18]. Informational copies of individually selected nosodes (potencies from D6 to D400), transferred to a water-alcohol solution, were obtained using BRT. The results of the therapy of the main group of patients (21 people) and the placebo group (30 people) were assessed 2–4 weeks later by biochemical and hematological parameters of blood, as well as by the data of electropuncture diagnostics according to R. Voll. The results showed that therapy with information copies of nosodes significantly improved the ESR value and calcium level, as well as the results of electropuncture diagnostics in patients in the main group compared with the placebo group, while other indicators showed insignificant changes. In this way,

The effect of the non-steroidal anti-inflammatory drug ibuprofen in the form of an information copy was studied on 66 patients (40 women and 26 men), who were divided into three groups. In the first group, 26 patients received copies of ibuprofen, the second group of 23 patients received pharmacotherapy with the drug itself, and the third placebo group consisted of 17 people [19]. Statistical analysis showed that bogie therapy one month later was as effective as treatment with ibuprofen itself, and in these groups the analgesic effect was significantly higher than in the placebo group.

Of particular interest is the study of the effect on the functional state of the cardiovascular system of athletes (qualified runners) of an information copy of fibrinolysin prepared by the homeopathic method with an activity of 20,000 units. [21]. As a result of receiving a copy in the form of homeopathic granules in the athletes of the experimental group, compared with the control group, there was a significant increase in the functional capabilities of the cardiovascular

systems. The results obtained can be evidence of the adaptive influence of the information copy of fibrinolysin and participation in the regulation of the functional state of the circulatory apparatus of athletes.

One of the first publications on clinical studies of the use of individual bioresonance therapies can be considered the article by A. Foletti and M. Cozzolino, which presents preliminary results of treatment of elderly patients over 70 years of age with kidney disease [20]. The study included 58 patients (women and men with an average age of 74.8 ± 3.7 years) with chronic renal failure of I and II degrees. Individual bioresonance agents were obtained by picking up electromagnetic oscillations from a patient in a low-frequency range (up to 20 kHz) and transferring information through a solenoid to water placed in it. Patients took one drop of the received funds at the beginning of the week with a further increase of 1 drop per day to 6 drops at the end of the week. The treatment was carried out every 3 months for 1 year. The results were assessed by the glomerular filtration rate, which was recorded at the beginning and at the end of treatment. The results showed a statistically significant improvement in renal function from baseline, which was similar in direction for both women and men, with no difference between the two groups.

The alleged mechanism of the therapeutic action of bioresonance individual therapyA substantiated transition from pharmacological drugs to bioresonance means of individual therapy requires a qualitatively new understanding of the processes of formation and interaction of such means with biological systems. The available theoretical and experimental data allow us to conclude that the usual ideas about the mechanisms of the therapeutic action of allopathic agents are unacceptable for bioresonance individual therapy.

Distilled water, physiological and aqueous-alcoholic solutions are most often used as liquid carriers, and homeopathic grits (milk sugar) are used as solid carriers. Taking into account the presence of free and bound water in these media, let us consider and analyze the results of research in such a complex and ambiguous area, which is called the "memory" of water [22, 23]. The use of quotation marks is due to the fact that many common ideas about the preservation of any information in water are either only hypothetical or poorly substantiated experimentally [24–26]. In general, the concept of "memory" of water is the ability of water to change and maintain its structural properties for a certain period after contact with a substance or as a result of external physical factors. The existence of long-lived structures in water, which are a kind of memory elements that carry information about a substance or physical effect, are used to form a biological or therapeutic effect. Currently, there is no convincing enough evidence to support the existence of such a long-term "memory" of water, but, on the other hand

On the other hand, there is a growing number of facts that indicate the existence of such a phenomenon.

Water is the most studied and at the same time the most unknown substance, because, as recognized by the scientific community, traditional methods and well-established theories have now proved to be insufficiently effective in revealing the properties of water. It is not an easy task to present even a brief history of the issue called the "memory" of water, which is due to many difficulties due to the large amount of information and many contradictions, and is beyond the scope of the issue under consideration. The discussion about the "memory" of water began in 1977 and revived significantly after the publication of the results of experiments by a research group headed by J. Benveniste [10]. The assessment of these studies is best left to a member of the group: or not promote knowledge of the structure of water. It is possible that the preliminary interpretation proposed by Jacques (here I mean Jacques Benveniste - approx. author), must be modified or even abandoned. Time and future research will show ... "[22, p. 45].

It should be admitted that at present, despite significant advances in the study of the structure of water, there is no complete clarity on this problem; research and debate continues. A detailed analysis of the properties of water, its structure and role in biological processes is given in a collective monograph published in 2006 [27]. However, one way or another, the phenomenon of "memory" of water plays an important role in expanding the practical application of the BRT method in the prevention and treatment of various diseases [28].

Currently, there is no single recognized model of the structure of water that would fully describe all its properties, despite the fact that there were a lot of proposals [29, 30]. Water molecules are dipoles in structure, which determines their polarity, which plays an important role in dissociation processes. Due to the presence of hydrogen bonds, each water molecule forms a bond with four neighboring molecules, forming a three-dimensional network structure that manifests itself in a crystalline state when ice forms. Water in a liquid state is a disordered liquid due to the fragility of hydrogen bonds, which is the reason for the inhomogeneity in its structure. Subsequently, it was suggested that an ice-like network structure exists in liquid water. A feature of the structure of water, which is

Of all the currently proposed water models, three groups can be distinguished:

- cluster model, in which water was presented in the form of clusters or a set of molecules connected by hydrogen bonds, which are located among other molecules not connected with clusters;
- clathrate models that consider water as consisting of a continuous framework of hydrogen-bonded molecules with voids in which

other water molecules are located;

- mixed models, in which the structural unit of water is a cluster consisting of clathrates, in which the molecules are connected by hydrogen bonds and thus form a dynamic spatial continuous network.

It should be emphasized that, despite many shortcomings, the cluster model is used in most cases for the theoretical and experimental substantiation of the formation of a long-term "memory" of water [31, 32].

Water is highly sensitive to the effects of external factors of different nature, which lead to a change in its properties [33–36]. Such influences can be:

- exposure to direct electric current, causing electrolysis processes in water;
- exposure to electromagnetic fields and radiation (low-frequency, radio-frequency and microwave ranges) of low intensities;
- exposure to monochromatic optical radiation;
- the impact of acoustic vibrations of the infrasonic range;
- the impact of ultrasonic acoustic vibrations, leading, among other things, to the formation of cavitation in water;
- the effect of swirling water.

Recently, publications have appeared, according to which the study of the properties of water by modern physical methods will add factual material in favor of the existence of the "memory" of water.

In the process of studying ultrafast vibrational relaxation of pure water with wavenumbers from 3100 to 3700 cm using laser infrared spectroscopy-one it was found that the relaxation time increases with the frequency of the exciting laser radiation from 250 to 550 fs [37]. The experimentally discovered phenomenon has received the name "frequency memory" of water, since this relatively long stay in an excited state is associated with the structure of water. The results obtained can be regarded as new data demonstrating the presence of the "memory" effect, although its duration is extremely short.

It also seems expedient to refer to such a principle of the transfer and conservation of excited states in water and its thin films as a soliton. The term "soliton" is used as an abbreviation (solitary wave) of solitary waves, in the form of which excitation propagates in continuous media with dispersion and nonlinearity [38, 39]. A solitary wave was first described by the Scottish physicist J. Scott Russell, who observed the formation of such a wave and left a description of this phenomenon. Developing the problem of solitary waves, DJ Korteweg and G. De Vries in 1895 derived an equation (later the Korteweg de Vries equation), which determines a non-sinusoidal waveform and its transformation into a sinusoidal one at the smallest amplitude.

Currently, solitons are an important object of modern physics, because, due to stability and self-organization, as well as the preservation of shape and

rate after interaction, many phenomena can be explained, including the high transfer efficiency and energy conservation in molecular systems with hydrogen bonds [39, 40]. It is known that in various processes occurring in an aqueous medium, a proton is transferred through hydrogen bonds in a chain of water molecules, which is described by the Grottgus hopping mechanism. Modeling of proton conductivity in chains of water molecules shows that the potential energy curve of a proton in a hydrogen bridge is characterized by two minima (potential barriers). The results of the numerical experiment indicate that the proton mobility is realized in the form of successive jumps (hopping mechanism) along the chain of hydrogen bonds through potential barriers. Thus, the chain will have the following distribution of charges: in places of compression, a positive charge will form, and in places of rarefaction, a negative one. It is also possible for protons to tunnel through a potential barrier in the hydrogen bridges of a chain of water molecules. However, existing traditional theories (tunneling and the hopping mechanism) are not able to fully explain the effects of conservation of external influence. Application of the concept of solitons, developed and formulated by A.S. Davydov, makes it possible to explain a number of phenomena associated with the influence of external influences, including of an electromagnetic nature, on the properties of water. It is assumed that the electromagnetic influence affects the kinetics of the proton exchange, leading to the relay-race mechanism of proton hopping, which is in full accordance with the Grottgus principle.

It is logical to assume that during the formation of a bioresonance agent through electromagnetic transfer from the primary carrier, long-lived solitons can appear in the copy, the parameters of which are determined by collective vibrations of protons along hydrogen bonds and by the structure of the lattice formed by water molecules. The preservation and maintenance of the biological activity of bioresonance agents is due to the unique structural features of the hydrogen bond network and the cooperative interaction between water molecules. In this case, the entire volume of the aquatic environment of the copy can be a source of electromagnetic oscillations, the parameters of which, on the one hand, are determined by the information parameters transmitted during recording on the medium (creation of an individual bioresonance agent), and on the other hand, are characterized by significant stability, which is characteristic exclusively of solitons and can persist indefinitely. At the same time, it should be pointed out that such processes can occur not only in a large volume of water, but also in thin films that exist in the pores and on the surface of homeopathic grits [41].

The existence of biosolitons in a living organism suggests probable ways of implementing a bioresonance individual therapy in a patient's body [42]. It can be assumed that when a bioresonance agent is taken, a signal is transmitted to the biosoliton structures of the body,

which is realized through chain and cascade mechanisms, which determines the high stability and effectiveness of the therapeutic effect of the signal of the bioresonance agent at the systemic level.

CONCLUSIONS

The mechanism of action of bioresonance means of individual therapy is based on the important role of stochastic synchronous and resonant processes in the systemic regulation of body functions. In order to form a therapeutic effect, the necessary state of the body can be recorded on a medium, which can be used as homeopathic grains or aqueous solutions. When using water as a carrier, the high efficiency of preserving information of a therapeutic nature in molecular systems with hydrogen bonds can be justified due to the presence of solitons, in the form of which excitation propagates in continuous media with dispersion and nonlinearity.

Perhaps, in the process of storing information of a therapeutic nature, an electromagnetic effect is exerted on the carrier, which affects the kinetics of electron or proton exchange, leading to the relay-race mechanism of hopping. Thus, despite the lack of a unified point of view on the preservation of its properties by water after external influences, this does not disprove the existence of certain dynamic structures in it that carry information about a substance or an acting physical factor. The use of an individual treatment agent to prolong the effect of bioresonance therapy opens up new prospects for increasing the effectiveness and expanding the capabilities of this method.

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