EVOLUTIONARY MEMORY OF LIVING MATTER IN THE CONTEXT OF EXTREMELY HIGH FREQUENCY EXPOSURE OF AN ORGANISM

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Abstract. This research deals with the phenomenon of an «evolutionary memory» of a living being. The experimental studies carried out on animals (mice) revealed remote pathomorphological responses to a low-intensity EHF-radiation, consisting in a stable suppression of processes of proliferation and differentiation of cells. A scientific hypothesis is advanced that concerns the phenomenon of the evolutionary memory. The authors discuss this hypothesis with the use of physics of living matter, synergetics and other theories explaining an interaction between high-frequency electromagnetic fields and a living matter.

Key words: EHF-radiation, remote pathomorphological changes, proliferation, differentiation, physics of living matter, synergetics, blood, liver, adrenal glands

1. Introduction
The study of interaction of electromagnetic field (EMF) with a living matter during the last 10-15 years has been dominating in biophysics, biology of complex systems, theory of functional systems. It is explained both by the level of reached knowledge, allowing us to be on the verge of solving of the most complex problem of vital functions, and by modern medicine towards the use of methods of treatment without medicaments, based on the use of low-intensive (bioinformation) EMF, first of all of extremely high frequency (EHF) [1-8].

The data in the given area [3-9], following the logic of expansion of knowledge according to the scheme «analysis → synthesis» [5], prompt us to pay attention to more delicate effects, discovered in the experiments on an irradiation of bioobjects by electromagnetic radiation (EMR). It is the analysis of the whole totality of the factors, being discovered that lets construct, i.e. synthesize, a clear picture of occurring processes.

In the present work the aspect of «evolutionary memory» (further in the text this word combination is used without inverted commas) is considered in the experimental and theoretical plans, which explains the complex mechanism of interaction of EMR of bioinformation (non-thermal) intensity with alive substance.

2. The category of evolutionary memory
Considering various aspects of vital functions, the biologists, especially specializing in the theory of functional systems and self-organizing of biosystems, use the terms of «biological time», «evolutionary time» [7]; note that this tradition goes back to the basic works of I. Prigozhin and G. Hacken on self-organizing and thermodynamics of open systems.
The evolutionary or biological time is separated by definition from the physical time, applied to a lifeless nature. Since there exists evolutionary time, introduction of a category of evolutionary memory into biology of complex systems is not contradictory logically. As we shall be convinced below, this category is not especially formalized, but carries in itself a deep general biological sense. For the introduction into a problem we shall give two characteristic examples.

Let us consider the fundamental of the organization of life, a molecule of DNA, or more precisely speaking, its information contents [8]. In work [10] the optimality of an information code of DNA was investigated. Thus, that factor was taken into account that during evolution with the complication of the organization of an alive matter the length \( L \) of a DNA chain is increased (according to R. Flindt for \textit{homo sapiens} \( L = 3 \times 10^9 \), and, for example, for the most primitive bacterial virus \textit{FH174} \( L = 5386 \)). The figures are not comparable, of course.

The length of a chain of DNA, from the information point of view, can be defined as \( L = \ln N / \ln n \), where \( N \) is the number of possibilities being coded in DNA, and \( n \) is the optimal number of the letters in the alphabet of DNA. If we solve the problem of optimization of number \( n \), appropriate to \( L \) in the concrete DNA [10], we shall obtain that the «acting» alphabet (A, C, G, T) is optimal only for viruses. Already the bacteriophage \( \lambda \) and the bacteria \textit{E.coli} will have the alphabets with optimal number of letters 13 and 245, respectively, and for \textit{homo sapiens} \( n_{opt} = 47780 \). Note that the optimality of alphabet and information being coded with its help submit to the laws of synergetics (Y. Hacken), regulating the basic processes of vital function. However in given case these laws are broken. The reason is clear: the alive nature cannot rebuild the fundamental constructions in the process of evolution. Thus, we deal with evolutionary memory.

The other example is connected with the efforts of the authors to reconstruct the consequence of influence of EMR EHF on alive substance during its evolution by the methods of experimental modeling [9]. In particular we were interested with a consequence of the evolutionary period of remote biogeochemical epochs. According to V.I. Vernadsky, when, on the one hand, in the sufficiently simple forms of organization of living matter (simple, but already possessing all the structural attributes of organ-system organization of the modern higher forms) all the complex «program» of evolution of living matter was finally marked, on the other hand, geotectonics of the Earth was still unstable; atmosphere, magmatic processes and others unstable biogeochemical neoplasms constantly changed the intensity of influence to alive objects of EMF in all ranges of lengths of their waves: from low-frequency, acoustoelectrical fields of continuous thunderstorms up to rigid ultra-violet, X-ray and \( \gamma \)-radiations of space, taking into account the variability of filtering properties of unstable atmosphere of the Earth. Undoubtedly, the instability of natural EHF fields changed and hence caused changing of the characteristics of norm of a susceptibility of EMR EHF, and consequently intensifying the processes of adaptation.

As the object of modeling in [9] the ecaudate amphibians \textit{Bufo viridis} (young green toads) were used; the influence of EMR EHF on an induction of micronuclei was investigated on the frequencies of 34.52 GHz and 35.20 GHz. The analysis of results of an irradiation was conducted through peripheral blood and has shown that the influence of EMR EHF depresses the division of cells, and the consequence of this process is the decrease of frequency of micronuclei forming.

Evaluating the results of the model experiment, one can affirm that at the remote biogeochemical epochs the influence of the natural EMF, including EMR EHF, changed the norm \( (N) \) to a rather considerable degree, causing the corresponding compensatory mechanisms of adaptation \( (A) \). But since during the continuous periods of time these
influences carried a probabilistic character \((\pm \text{var}\ N \rightarrow \pm \text{var}\ A)\), alive organisms and cellular structures forming them received an «electromagnetic training».

The account for the aforesaid, it should be stressed that norm and adaptation for an alive organism are concepts, which are very closely connected and dynamically varied during evolution. One may assume [7] that they are connected by a certain evolutionary equation:

\[
\Delta A = F(N, A_{ev}),
\]

where the functional dependence \(F\) of adaptation on the norm is multiparametrical and nonlinear. As it follows from (1), adaptation and norm are the functions from parameters \(\eta_{ev}\) and \(\nu_{ev}\), respectively, – the parameters of evolutionary time, unlike the physical time, not possessing the quality of uniformity. To all appearance, G. Nikilis and I. Prigozhin understood it in this sense as well [11]. The nonlinearity of the equation (1) is conditioned by the evolutionary time-dependence of parameters \(P_i\) and \(\Pi_j\) of adaptation and norm, respectively.

Taking into account (1), the results of the model experiment may be treated in the sense that the norm of perception of EMR EHF in every next evolutionary period is some range of allowable changes of the latter with the appropriate range of the change of compensating adaptation:

\[
\Delta N = F(N, A_{ev}),
\]

(2)

(The rest parameters in (2) are identical to the parameters in (1)). These changes do not disappear during evolution without leaving a trace, but remain in the form of evolutionary memory, and this memory is kept not only in structure of DNA of alive being, but also in the whole formation of structure – from cellular structures till the mechanisms of thinking, – passing through evolutionary development of the forms of alive organisms.

It is in this concrete sense that we use the concept of evolutionary memory in the present work.

3. Remote pathomorphological reaction of the influence of EMR EHF on an organism

As it has been already said in introduction, the researches of the influence of the coherent EMR EHF of non-thermal intensity on an alive organism are actively conducted at present. In works [1-8] the obtained and generalized results let us affirm that under such influences the activation of own cellular EMF takes place, and this is a biophysical basis for the use of the effects of EMR EHF in the context of EHF-therapy.

However, the researches being conducted the authors, partially reflected in works [3, 4, 6, 12, 13], have shown a certain impossibility of the removal of irreversible disturbance of homeostasis as a result of the influence of EMR on the integral organism. Also the complexity of the biological effects of the influence of EMR EHF, the variety of forms of their display are established. The character of the observable effects is determined both by physical parameters of radiation and by own parameters of functional systems of an organism.

The radiation of an EHF-range, making more active the own EMF of cells, can cause both positive and negative responses of an organism. The proper work of the functional systems under the influence of EMR EHF can be essentially transformed, acquiring pathological features, right up to the formation of irreversible changes, including those leading to the lethal outcome.

The extensive and authentic information about the opportunity of development of negative processes is given by the study of remote results of influence of EMR EHF on an organism, the more so as in the literature we have not found more or less well-reasoned and
experimentally confirmed works on this subject. We shall emphasize once again that the remote results of an irradiation of EMR EHF in «therapeutic dozes» are being investigated.

As object of research the mice including of the C57/B16 line have been used. The mode of an irradiation $f = 37$ GHz had been used; the power of the bioobject brought to the surface was $P \leq 0.3$ mW/cm$^2$; the time of an irradiation was $t_{ir} = 15$ minutes.

During the experiment we put the task of estimation of the dynamics of morphofunctional changes fixed earlier in the rats of the Wistar line during the first seven days after an irradiation by EMR EHF with the same modes, and coinciding with the data in [6]. At the same time we took into account the biological effects, obtained in the experiments on microorganisms [1] and Drosophila melanogaster [6], including the negative character of the type of reduction of the osmotic resistance of the membranes of erythrocytes, accompanying by the reduction of permeability of membranes for the ions of potassium by 30-40 percent, and this is connected with the change of potential of clamp.

As it has been established in the first stage of researches [6], immediately after an irradiation of an organism by EMR EHF, the target cells reacting on the irradiation most sharply are the cells of red marrow, peripheral blood, hepatocytes and also the vessels of a microcirculatory channel. For this reason at study of the remote results of EHF-irradiation these structures are the objects of immediate attention.

The results of the research. The supervision over the experimental mice during 6 months after the influence of EMR EHF let us expose the following biological effects: 75 percent of the animals were observed to have aggressive behaviour and the absence of the reproductive function; in 15 percent of cases stillbirth and death of newborn little mice during the first 2-3 days were registered. Only 10 percent of the animals had the posterity. After 5-6 months the death of 5 experimental mice is fixed; 60 percent of the irradiated mice were registered to have a progressing decrease of weight, loss of a wool, trophic changes on the skin covers (Fig. 1).

The research of morphological changes in the organs and the tissues of alive mice was carried out. Red marrow, peripheral blood, tissues of the liver, kidneys, adrenal glands and head brain were subjected to morphological research.

The heaviest changes were revealed in red marrow and peripheral blood. The changes on the part of red marrow were characterized by an oppression of the blood creation in the red

![Fig. 1. The external changes in mice: 1 – the control mouse; 2, 3 – the experimental mice.](image-url)
The picture of the peripheral blood was characterized by the absence of granules in leukocytes and lymphopenia. There were observed individual lymphocytes and hypersegmented neutrophiles, the erythrocytes containing the remains of nuclei; expressed macrocytosis, anisocytosis and poikilocytosis (Figs. 3-5).

The revealed changes testify to formation of the immunodeficient status and the displastic anemia in the experimental animals.

The research of the tissue of the liver has revealed the presence of dystrophic changes in hepatocytes in a form of granular and hydropic degeneration, hypertrophy of nuclei and high mitotic activity in all zones of classical hepatic segments, that is evidence of high activity of regenerative degeneration (Fig. 6).
The authors are not inclined to explain high mitotic activity of hepatocytes only by the result of the influence of EMR EHF, as in the given case one cannot completely exclude the reaction of the liver on the influence of toxic products of metabolism and (or) antigen stimulation. At the same time, one cannot exclude a direct injuring action of EMR EHF on the genetic device of cells, which leads to displastic processes and breach of processes both of proliferation and differentiation of cells, that is indicated by the decrease of quantity of two-nuclear hepatocytes up to 3-5 percent on the background of high mitotic activity. In this connection it is expedient to lead a parallel between the displastic changes in the red marrow and their presence in the tissue of the liver.
In a tissue of the kidneys the most significant changes are fixed in the renal glomeruli. The expansion of vascular loops is accompanied by interposition of mesangia and intra- and extracapillary, presumably immunocomplex, sediments are revealed. The changes in the renal glomeruli were characterized by granular and hydropic degeneration (Fig. 7).

The morphological researches of the adrenal glands have been carried out taking into account their large role in the formation of both adaptive reactions and pathological changes at a system level. Visually in all the mice there was the hypertrophy of the adrenal glands which can be considered as an adaptive reaction in response to the injury, caused by EMR EHF. During the microscopic research there have been revealed the hypertrophy of both cortical and cerebral layers of the adrenal glands with numerous hemorrhages in them (Fig. 8). The most pronounced hypertrophy is expressed by the cells of a cerebral layer in the
The cytoplasm of which are revealed multiple granules of lipofuscin. The specified changes are evidence of the hyperfunction of the adrenal glands, which can be regarded as an adaptive reaction on the action of the injuring factor of EMR EHF.

Thus, the comparison of the remote pathomorphological effects with the results, obtained in the early periods of time after the influence of EMR EHF, let us retrace two stages of reciprocal reaction. The primary reaction is formed directly after the influence of EMR EHF and it is most brightly expressed during the first week, it is characterized by the stimulation of the processes of regeneration. The reaction is expressed both in cells, initially having a high mitotic activity (the red marrow), and in highly differentiated cells, on the part of which the intracellular regeneration is observed, which consequence is a regenerative hypertrophy of the tissue of the liver. The specified changes are accompanied by the increase of activity of microcirculation and the formation of the arterial hyperemia.

The revealed primary reactions temporarily result to the formation of positive biological effects, directed to the elimination of an injury. The remote results are evidence of the formation of negative reaction, manifesting in the oppression of processes of proliferation and differentiation of cells, the displastic changes, the formation of trophic disorders, the decrease of resistance of an organism, forming on the background of an exhaustion of stress systems.

The allocated above words are conclusions from the performed experimental researches and they are of extreme importance value both for the rating of clinical application of EHF-therapy and for the development of a subject of the present work, to what we shall return below.

4. The hypothesis for the factor of evolutionary memory in the context of EHF-irradiation of an organism

The results of the carried out and considered above experimental researches allow to accent attention on the fact of an oppression of processes of proliferation and differentiation of cells as result of an EHF-irradiation. It allows the authors to put forward the following scientific hypothesis, proceeding from the conceptions, ratified in modern science, for the
transfer of information in the structured (in the form of organism) alive substance by superlowintensive EMF in the form of solitons and holograms, which read out the information from DNA, thus setting the program of structuring an organism and maintenance of ability to live. The author's concept on this account has been stated in [3-8].

Note that unlike some new and rather «categorical» theories such as «wave genome» one, our concept assumes equal participation in the intraorganismic transfer of information of solitonic-holographic EMF, biochemical reactions, electrochemical reactions (in neurons), blood flow – they are enumerated on the attributes of the reduction of speed of an information exchange. Alive organism is a very complex self-organizing system that the nature has not provided multilevel reservation.

We recognize that the influence of EMR EHF is the factor causing a resonance with the own EMF of cells. Supposing that the soliton holograms (see [8]) form spatial-temporary «field framework» of biosystems and contain the information on a field (wave) images-predecessors, including the information on primary, evolutionally most ancient DNA and RNA, it is possible to assume that EMR EHF is the factor which is able to spur to activity of these evolutionally ancient informational systems of a modern organism genome. Taking into account the ability of own cellular EMF to an exchange of regulatory information at the intra-cellular, intercellular levels, and at the levels of tissues, organs and their systems, respectively, one should regard spurring to activity of this original information as a signal, stimulating the mitotic activity of cells.

Quite naturally that first of all the truncal (cambial) cells with initial high mitotic activity react on receipt of a signal. It is explained from the evolutionary point of view as following. At occurrence of life on the Earth the given information had major general biological value; it is possible that exactly the continuously acting signals to division of evolutionally primary cells were basic in occurrence, development and preservation of life on the planet. As for the presence of such signals, we already characterized a biogeochemical status of the Earth at the moment of origin of life with abundance of natural fields and radiation.

To that moment the quantitative accumulation of biomass was the most essential for «fastening» of alive, where there was no some more place for proliferation and differentiation. Due to constant signals to division the pool of primitive cells has collected, which was sufficient for self-maintenance of a primary cellular population and resulted to variety of cells during natural selection.

During evolution, in the process of accumulation of sufficient pool of proliferating cells, the conditions were generated and there was a biological necessity in differentiation and in functional specialization of cells. As a consequence, there were the mechanisms, supervising the processes of proliferation and regulating the differentiation of cells. These mechanisms were generated both at the level of genome (for example, genes-suppressors), and at the level of fermentative systems, regulating the processes of division of cells (regulating proteins).

Spurring to activity of the original informational systems, kept in evolutionary memory of modern organisms, naturally entails the stimulation of proliferation and differentiation, since in the organism there exist the mechanisms, providing the differentiation of newly formed young cells. This effect also displays as primary organism reaction on influence of EMR EHF that was fixed in experiments [6]: the stimulation of circulation of the blood in the marrow and the increase of the contents of leukocytes in the peripheral blood immediately after an irradiation. The same effect underlies EHF-therapy.

The formation of remote secondary reaction to influence of EMR EHF can be explained by the fact that the spurring of mitotic activity for a modern highly organized organism is a biological nonsense: the mechanisms, limiting immune, hormone, fermentative
processes are included. The formed process is inadequate in relation to basic homeostatic parameters and leads to formation of damage reactions at a level of genome, the consequence of that is the blocking of mitotic activity and the occurrence mutations, including pathological ones.

It is impossible to exclude the formation of pathological changes from the regulating systems responsible for processes of proliferation and differentiation of cells. Taking into account that at morphological researches the attributes of an oppression of proliferation were revealed, it is necessary to assume that the primary damage is formed at a level of genome of divided cells.

Thus, according to the assumed hypothesis, the inclusion of the factor of evolutionary memory at an EHF-irradiation takes place according to the scheme, given in Fig. 9.

In Fig. 9 three levels of reactions of an organism to EHF-influence are allocated: I – the informational-field interaction at cellular and subcellular levels; II – the primary positive reaction; III – the secondary (remote) negative reaction.

As for the concrete mechanisms, realized directly at a cellular level during the formation of primary and secondary reactions, it is necessary to note their variety and realization by the principles of direct and return dependence or, reasoning in the terms of the theory of functional systems, by the principles of positive and negative feedback.

So, for example, during formation of the primary reaction a high activity of the factors of fermentative systems, stimulating colonies, takes place, which are responsible for processes of replication of DNA and transmission. And at a level of genome it is impossible to exclude such mechanisms as activation of promotors, fixing of promotors to the «silent» genes, «jumping» genes, the replacement of nucleotide bases. As a consequence, it is impossible to
exclude the opportunity of spurring up to activity of oncogenes and the formation of malignant neoplasms in more remote terms.

Among other adverse consequences* it is necessary to take into account the opportunity of the formation of pathological mutations, leading to the hereditary diseases, including lethal mutations. The most probable early complications are the immunodeficient status and/or autoimmune aggression. All this is evidently shown in executed experiments (see above).

Figuratively speaking – do not wake a sleeping beast! Maybe, the nature has provided mechanisms of preservation of evolutionary memory expecting that early or late its child, *homo sapiens*, will begin correcting target destinations of the nature that is admitted till the certain limits, by the way, rather rigidly limited.

5. Comment to the hypothesis in the light of the existing concepts of electromagnetic biology

Let us consider the advanced hypothesis in a context of the most known theories of interaction of EMF with an alive matter.

In the theory, stated in [14], the central place is allocated to the concepts of code fields of the distributed system of chromosome radiators – in addition to a well known matrix synthesis of proteins. This theory is self-coordinated in the sense that the mechanism of fractal convolution of the spatial-temporary characteristics of biosystem in its chromosomes with the account of neighboring microstructures follows from the chosen approach to the analysis of functioning the genetic mechanism. Beside the fractal convolution, this mechanism includes the holographic memory and soliton structure of the transfer of the information in DNA. In particular, in [14] a fragment of multilevel epigenetic relations is analyzed (Fig. 10).

According to the scheme in Fig. 10, the influence of external EMR EHF can be considered as a source of structural instability of DNA. This provoked instability generates the system of mutually correlated responses at the lower structural-dynamic levels of DNA and the field (holographic, solitonic) reflection, i.e. as a matter of fact – the distortion of a «working» electromagnetic signal. These distortions of EMF are further transferred (see Fig. 10) to the systems of informational epigenetic structures: extracellular matrix and cytoskeleton. Then the biochemical mechanisms, «remembering» of the fact of external influence in the form of EMR EHF are engaged.

In [14] the assumption is stated about direct storing of field signals (including external influence) by the liquid crystal bioenvironments, including deformed external EMR EHF holograms, produced by DNA, all the more that the collagen, which is the basis of a

![Fig. 10. A fragment of multilevel epigenetic relations.](image)

* Unfortunately, it is not simple the assumption; the newest results, obtained by the authors, partially confirm told, though some longer researches on repeatability of results are required.
connective tissue and extracellular matrix, is the universal environment for the recording of holograms (on gelatin, i.e. a modification of collagen, practically all technical holograms are recorded). The rest part of the chain of pathogenesis in the aspect of evolutionary memory is constructed similarly to the one considered above.

The founder of sinergetics, which is based on the modern studies of alive beings as self-organizing systems, G. Hacken [15] marks that the basic question of morphogenesis: whence initially non-differentiated cells know where and how to be differentiated? The question of an evolutionary principle of constant formation of new biostructures is accordingly supposed also, for with the increase of number of the latter the volume of evolutionary memory (Fig. 11) grows also.

In a separately taken cell \( k_i \in K^i \) there is no information that this cell must be a member of \( K^i \)-cells, forming the \( i \)-th kind of a tissue of an organism (Hacken gives a well known example: the cell from the central part of the body of an embryo, replaced into a cerebral section, developed into an eye. By the way, carefully having comprehended this experiment, it is possible to reach a conclusion that ... it nothing proves). Hence it follows that the cell of a tissue receives the information on its position from the surrounding cells, then the differentiation follows [16, 17].

Thus, there is such situation: the cell receives information on its subsequent development, taking it from its position in a cellular tissue («positional information»), although it initially contains DNA with all necessary program of structuring an organism (?!). Let us leave it while by a question. As for the bearer of the positional information, in morphogenesis it is supposed biochemical «initial structure», arising at joint action of biochemical reactions and diffusion of biomolecules – morphogenes (analogue in chemistry – the Belousov-Zhabotinsky’s reaction). Under enough high localization of morphgenes the genes are included into the process, what results to differentiation.

Hence, the classical molecular biology [16, 17] ambiguously interprets the connection of differentiation with the orientation of processes of structuring of an organism, and, it means that it leaves out the question of evolutionary memory.

In this sense other founder of physics of the alive and quantum medicine – S.P. Sitko [2], asking himself the question (what directs the process of differentiation and structural character of an organism ?), reasonable supposes that the basis of positional information is non-local self-concerted potential supporting quantified nonlocal EMF of an organism.

From these positions, that is considering alive substance by the fourth level of quantification in Weiskopf’s «quantum scale of rank» (after nuclear, atomic and molecular),
the influence of the external EMR EHF can be regarded as a disturbance of a non-local field, being formed by a self-concerted potential \( \phi \):

\[
\text{var} \left[ \begin{array}{c} E' \\ H' \end{array} \right]_{\text{NL}} - \text{grad} \, \phi = 0 .
\]

(3)

As a consequence of irreversible character of the processes, described in (3), this external disturbance of a signal stimulates the effectiveness of non-local potential, making active the biochemical reactions at a cellular level (the primary effect of EHF-irradiation), but further results in the infringement of a self-consistency (3) (secondary, remote effect). And the essence of evolutionary memory, from a quantum position, is in degeneration of (3) into a simpler form of description – returning to the forms of a field for the elementary organisms; hence there appear the effects of an oppression of proliferation and differentiation.

By the way, the disturbance of potential results in degeneration into simpler forms for other quantification levels located lower in the «Weiskopf’s scale of rank»; the nuclear physics gives a great number of examples to it.

At last, there is one more evident analogy of radiophysical order: the influence of external disturbance on a MHF (EHF) system, working on the maximum modes, results in nonconsistency of the system with the transition of processes into elementary wave-leading oscillations.

6. Conclusions

The phenomenological hypothesis for evolutionary memory, suggested in paper, gives a qualitative explanation of the effects of remote consequences of an EHF-irradiation, really observed in experiment. (By the way, under the irradiation of an organism with EMR of obvious «non-therapeutic» MHF-range we have a direct injuring action as the primary effect [18].) Not aspiring to the truth in the last instance, the authors hope for fruitful discussion of the proposed hypothesis, having a general biological meaning.

Another not less essential moment concerns a widely distributed clinical practice of EHF-therapy. Who will begin to affirm 100 percent utility for the whole organism of X-ray 100-year-old practice of its mass use? A field influence on alive organism demands a further research. And in the clinical practice the most frequent question is a bioethical choice between a measure of benefit and harm from one or other procedure. And the measure of utility of EHF-therapy must be increased by the system designing of the appropriate biotechnical systems already now, taking into account all possible effects from EHF-irradiation. The authors of their researches [4, 6, 19] follow this motto.

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ЭВОЛЮЦИОННАЯ ПАМЯТЬ ЖИВОГО В КОНТЕКСТЕ КРАЙНЕВЫСОКОЧАСТОТНОГО ОБЛУЧЕНИЯ ОРГАНИЗМА

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Настоящее теоретико-экспериментальное исследование посвящено обоснованию феномена «эволюционной памяти» живого. Эта память может рассматриваться в контексте биофизики, биохимии, биомеханики, физиологии и пр. – главное же и существенное то, что на любом этапе (уровне) эволюции живого эта память имманентна любому организму. В биомеханике – это, например, кинематика движения, в биофизике – вся совокупность соответствующих процессов на уровнях от субъективного до организменного. В настоящей работе эволюционная память исследуется в контексте нетеплового (биоинформационного) облучения организма электромагнитными волнами крайневысокочастотного (КВЧ) диапазона (более 30 ГГц) – диапазон выбран из тех соображений, что именно он используется в клинике немедикаментозного (лучевого, полевого) лечения. Выполненные экспериментальные исследования на животных (мышах) выявили отдаленные патологические реакции на нетепловое КВЧ-воздействие, заключающиеся в стойком угнетении процессов пролиферации и дифференцировки клеток. Выдвинута научная гипотеза о феномене эволюционной памяти. Гипотеза рассмотрена с позиций авторской концепции с
привлечением базовых положений физики живого, синергетики и других теорий, объясняющих взаимодействие высокочастотных электромагнитных полей с живым веществом.

Материал статьи обладает принципиальной новизной и практической важностью для КВЧ-терапии и диагностики в клинической медицине. Библ. 19.

Ключевые слова: крайневысокочастотное излучение, отдаленные патологические изменения, пролиферация, дифференцировка, физика живого, синергетика, кровь, печень, надпочечники

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