

## Synergetics and the problem of multifactorial effects in reflexology

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### Introduction

The modern development in the field of medical care to the population, prevention and promotion of people's health is so wide and diverse that it impresses not only those who need treatment, but also the doctors themselves, who are faced with a dilemma - what to offer the patient from a large arsenal of means and methods of treatment for relief diseases. This situation has led to the development of evidence-based medicine, the basis of which is a thorough check of the proposed methods and methods of guaranteed treatment from the standpoint of clinical medicine and epidemiology [1]. Specialists in this field of medicine rightly note that "... knowledge of the mechanisms of development of diseases is based on information obtained from biochemistry, anatomy, physiology and other fundamental sciences ... However, clinical predictions based on the biological mechanisms of the disease, should be considered as hypotheses ... The fact is that the mechanisms of disease development are only partially disclosed, and many other factors (genetic, physical, social) affect the outcome of the disease "[1, p. 13]. In the era of development of cybernetics, electronics and informatics, the use of bioresonance and information-wave technologies in reflexotherapy for influencing the human body through acupuncture points and reflexogenic

zones closely related to many different functional systems [2-4].

### Quantum therapy

As most

research works

and

daily medical practice is widely used in the treatment of patients with magnetic, light, laser, galvanic therapy, electromagnetic fields in various frequency ranges, sound therapy [5, 6]. The changes that are taking place inherently mark birth quantum reflexology, in which various mechanisms of therapeutic effects on the human body are transferred from the macrolevel to the microlevel - the level of quantum processes of acceptor and receptor molecules, organelles and cells and superweak field interaction. As noted in his fundamental work on quantum medicine, physicist S.P. Sitko: "It is important to note that procedures over BAP are carried out by powers that carry counting quanta ( $10^{-21}$ - $10^{-20}$ )

W / Hzcm<sup>2</sup> "[7, p. 117]. A well-known specialist in the field of information medicine A.E. Bessonov describes this tendency as follows: "Of greatest interest in the clinic are aspects of the action of electromagnetic fields (EMF), associated not with the power of exposure and absorbed energy, but with the signal characteristics, with the information that is encoded in the corresponding fields and radiations and is significant for the biological system "[8, p. 60; emphasis on the author].

The same feature is pointed out by the doctor-reflexologist A.G. Polyakova "... A living organism should be approached as an open information-thermodynamic system that exchanges matter with the environment. energy and information in the process of implementing the law of adaptation ... "

adds more very important characteristic: "... The man is self-regulating autonomous electrical system "[9, p. 53].

The basics of looking at the body as hydrated macroquantum system were long ago expressed in the works of the famous English quantum physicist H. Frohlich (Oxford) and later developed by his follower S. Smith, an expert in the field of biological action of superweak EM fields [10, 11]. Experiments confirm the possibility of such

macroscopic quantum effects such as superconductivity, superfluidity in living systems [12]. One should take into account the high sensitivity of water to the quantum of the magnetic flux (Josephson effect) and the presence of the vector magnetic potential of the A-field (the Aharonov - Bohm effect), since there is a high gradient of the electric potential on the cell membranes [13].

Research in geomagnetobiology [14] confirms the macroquantum nature of living systems and the high sensitivity of living organisms to natural EM fields. On the example of many experimental studies, an exceptionally high sensitivity of functional processes occurring in a living organism, not to the valuefull vector

geomagnetic field, and daily fluctuations constituents - vertical and horizontal components are thousands of times lower in absolute level [fourteen]. In this regard, the work of magnetobiologists is of great interest to the therapeutic effect of GMF, where the most important characteristics are: uniformity fields on a scale comparable to a person's height; low assignment induction fields B (no more than 0.07 mT); wide spectrum of frequency f values in the infra-low frequency range from 0.0001 to 40 Hz, no skin effect for biological tissues, etc. [15, p. 84].

Synergetics as a science of the foundations of self-organization of biosystems

Here, attention should be paid to modern trends in physical and mathematical sciences, in which new views on the macroevolution of the world and the dynamics of microprocesses occurring in living systems have been developed - the fundamental provisions of the theory of catastrophes, chaos, bifurcation, which marked the birth of a new scientific discipline in the 21st century - synergetics, the science of systems and their coordinated work in the development of any natural process. Synergetics was developed as an interdisciplinary methodology, the patterns of which are associated with the nonlocality and quantization of processes and are described in terms of the theory of entropy and information.

Synergetics is the science of interaction and self-organization of complex developing systems, and the use of its principles can be realized with polyfactorial impact weak and superweak fields and radiation. She is based on a systemic cybernetic approach, using dissipative processes, theory strange attractors, considering the resharping, the role of noise presses with fluctuations that make up basis functioning of living systems [16, 17].

The provisions developed in synergetics are directly related to quantum processes taking place in a living organism. This is due to the fact that weak and superweak fields and radiation in a living organism have an information-signaling component. A multilevel organism consists of complex, well-functioning systems - nervous, respiratory,

digestive, endocrine and others. This high level requires for its assessment and influence of therapeutic agents and other physico-mathematical approaches, which leads researchers to the theory of sets, graphs, multifunctional systems. Synergetics inexorably intrudes into modern theories of the interaction of the organism with the environment and the understanding of the intimate processes of the exchange of matter, energy and information at the quantum level in living organisms and its principles are the basis for assessing the effects of biological action of the applied low-energy physical factors.

Based on the foregoing, we can propose to use synergistic approaches to combined multifactorial impact on the body, based on the synergistic characteristics of the body and its selective ability, fixed in it evolutionarily. For this purpose, it is possible to use ultra-weak in intensity effects in the form of micro- and macro-effects on the active zones of the body of various kinds of physical components - light, magnetic, electrical, sound, bioresonance effects in subthreshold intensities and doses. Thus, the body during treatment is not imposed any one coercive effect, therapy, but is left to choose the best option for treatment and recovery, and the main rule in this will be the well-known commandment in medicine: "Do no harm!"

To substantiate a synergistic approach in reflexotherapy treatment, we will consider the work performed in various fields of medical biophysics - magneto-, light-, laser therapy, bioresonance therapy in order to assess low, threshold effects that have a pronounced therapeutic effect. For example, the studies carried out show that due to the synergistic action, the greatest efficiency

magnesium therapy impact is observed with the combined use of low frequencies and low intensities, respectively, up to 0.05 kHz and 20 mT [19, p. 180].

In the works of specialists the most different biophysical directions, related to the treatment of a person, similar basic requirements and provisions are put forward when carrying out this kind of work. They boil down to the following:

- 1) the exposure parameters should be within the natural physical chemical processes of the body;
- 2) the effect should be achieved due to specific parameters - shape signal modulation, amplitude-frequency characteristics of the signal;
- 3) depending on the organ pathology, one should focus on the body's own rhythms [20, p. 196];
- 4) the organization of an integrated feedback system should be carried out using the "regulation zones" - carotid sinuses, zones, autonomic ganglia, thyroid gland, etc. [21, p. 48].

#### RPV and individual reactivity

The basis of the whole variety of acting physical factors is resonant field interaction (RFI) between the organism with external physical factors of the environment, in which the most important are frequency characteristics,

their modulation, polarization and coherent form of communication [22]. In this close interaction of external EMF and fields of a living organism, there is a kind of relationship based on RP, which imposes its own limitations:

closely spaced frequencies of the EM spectrum affect the processes of biological objects antagonistically (mutually opposite), remote frequencies are active sinbat, similar, same [23]. Due

With what has been said, we can cite the words of the famous American neurophysiologist VR Aidy, a specialist in electromagnetic fields: "There is an increasing amount of data on the existence of a direct effect between weak external fields and the nervous system of vertebrates.

As for the type of interaction, these phenomena themselves reveal rules that are not easy to explain "[24, p. 782]. Thus, when using exogenous EM frequencies in works on bioresonance reflexotherapy, one should take into account the phenomenon of synergism-antagonism in the action of these frequencies. And this is clearly stated in one of the works cited above: "It is necessary to understand that the currently used methods of" resonant "impact are a set of different in essence and, apparently, in the mechanisms of action of influence" [3, p. 320] ...

When using a synergistic method of treatment, one should bear in mind the need to comply with a number of general biological laws, including resonant-field type of interaction and accounting for patterns synergism-antagonism in the electromagnetic frequency range. Taking into account synergetics, one should also approach the problem constitutional types, individual reciprocal reactions organism to any external influences, both in norm and in pathology, "... since without a correct definition of the constitutional type, it is impossible to fully treat chronic pathology, which is currently the most pressing problem of all medical science" [25, p. 361].

The renowned medical specialist V.I. Bankov, considering the aging processes of the body and their management, emphasizes: "We need a" basic " individual assessment the state of the functional systems of the body responsible for metabolic and information support in real time, taking into account the possibility of electronic control informational state of DNA "[21, p. 48, emphasized by us - AD, EM). This is what evidence-based medicine specialists point out: "Doctors know their patients by sight, conduct research and are personally responsible for each patient. As a result, doctors tend to evaluate primarily individual characteristics each patient, they are very reluctant to group patients into groups according to risk, diagnosis, method of treatment and assess the patient's belonging to these groups in terms of the theory of probability "[1, p. 13; is highlighted everywhere by us. A.D., E.M.). A thorough medical statistical analysis, carried out by us to study the effectiveness of bioresonance therapy on a large contingent of patients with various pathologies (more than 100 thousand people), shows that a stable therapeutic effect is obtained in 70-75% of cases, and the remaining 30%, due to individual characteristics, require different adequate approach and treatment [26].

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