Exchange electronic interactions as the main factor of maintaining the sustainability of organism homeostasis

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Abstract. It has been shown that the exchange electronic interactions of the body’s water structures fulfil an essential biological function aimed at maintaining electrical disequilibrium in the body. The associated water phase, maintained at a certain level due to the influx of electrons from the environment, performs primary regulatory functions in the cellular body structures. The external environment as an electron source is an active participant in the body systems homeostatic regulation, which forms its epigenesis.

1. Introduction

Non-local exchange electronic interactions of biological objects with the environment is a new direction in science, based on quantum coupling between self-similar water structures, which is confirmed by experimentally established regularities obtained in [1, 2]. The basis of the physical mechanism of non-local electronic interaction between water structures is related to the physical features of the organizing phase of water. This phase is represented by the metastable states of polymorphic ices, stabilized at normal atmospheric pressure by an electrostatic field formed by delocalized electrons in nano-cavities (the associated water phase) [2].

The delocalization of electrons and protons in the associated water phase cells (monopolar structures of polymorphic ice-VI, carrying a negative charge, and polymorphic ice-VII (VIII), having a positive charge – the phase “associates”) is formed due to the “freezing” of electrons (protons) by the electric field of ice surface with a strength of the order of $10^8 ... 10^{10}$ V/em (according to the Svishchev I. works [1]) and their acquisition of the properties of the second kind high-temperature superconductivity (like granular superconductors with on/off intermittency) [2].

The concept of “quantum coherence” is at the heart of macroscopic quantum effects manifested by a system of delocalized electrons, which, according to Vedral V. and Lloyd S. [3-5], plays a central role in biological systems. Derivatives from quantum coherence are the spatial and temporal parameters of quantum non-locality, which is understood as the connection of spatially separated states or processes through the quantum potential in the de Broglie-Bohm theory [6]; it is responsible for the interaction of events spaced apart in space and time (the so-called transactional interpretation of quantum mechanics [1, 6]). In quantum mechanics (Copenhagen interpretation), such connections are usually called non-local correlations, but not transaction.

Exchange electronic interactions of the body water structures perform an important biological function aimed at maintaining electrical disequilibrium to ensure the stability of homeostasis (for the stability of homeostasis the number of negative charges in the body must exceed the number of positive...
charges). The measure of electrical disequilibrium is the volume fraction of the associated water phase in the body structures, which varies from 9 to 23 %, stabilized by negative electric charges. The optimal values of the associated water phase fraction in the body correspond to the stability of adaptation (20-23 %). Low values of the phase fraction (less than 12-14 %) correspond to the pathological states of the organ observed in diseases, as well as in aging. The content of the associated water phase below 12 % leads to failure of adaptation [7-9].

The experimentally revealed connection of non-infectious diseases with the electrophysical state of the environment makes it necessary to study the mechanisms of its maintenance when the adaptation process that determines the subsequent pathology of the body appears and fails. An organism is a macroscopic quantum system, each organ and each cell of which are in electronic interaction not only with each other, but also with structures of similar properties in the environment [9]. It is because of non-local connections that health and disease are significantly dependent on the electrophysical state of the environment. This connection is made through the exchange interaction of electronic quantum oscillators. As a result, there is a transfer of charge and information in the form of self-similar wave packets of electrons. It has been experimentally revealed that when water is physically excited, its electronic activity decreases, since a significant part of the energy is transferred to quantum-coupled objects, that is, a kind of quantum “swing” appears [9]. After changing the direction of the process, the situation changes to the opposite. The energy of electrons is redistributed towards the sample of water treated by an external field and through it is transmitted to a living organism.

The presence of the “quantum swings” in electronic metabolic processes explains the oscillatory modes of the water energy state in the cells and systems of the body and the associated temporary changes in its redox potential and electromagnetic activity. “Quantum swings” are formed by a system of conjugated electrons in the chain structures of the associated water phase and the structures of the organism, which co-operatively self-organize into a macroscopic quantum state [1, 9].

The redistributions of electrons density in spatially separated water samples were experimentally recorded, one of which was subjected to treatment with low-intensity electromagnetic radiation [1, 9, 10]. In parallel, changes in the electrochemical parameters of water and the concentration of peroxide anion-radicals formed as a result of quantum condensation of electrons on paramagnetic oxygen in the associated water phase (hydrated electron → superoxide anion-radical → peroxide anion-radical) were observed [1].

It is assumed that non-local changes in the state of electrons Bose-condensate in interacting (quantum-correlated) objects do not require powerful influences and rather insignificant changes in their physical state that can affect the redistribution of the $\Psi$-function of the delocalized state of electrons in a water environment.

In order to clarify this assumption, studies were carried out on the spatial redistribution of the electron density under manual mechanical perturbation (turns in the horizontal plane) of one of the interconnected objects (water in a polymer container).

2. Methods
To register the quantum potential of electrons, we used the developed experimental prototype of a sensor for electrons Bose-condensate in the environment (based on nitrogen-vacancy NV centres in diamonds), based on mixing of the wave $\Psi$-functions of delocalized electrons. In this complex, a finely dispersed diamond-graphite mixture is used as a detector, which makes it possible to accumulate electrons in its impurity and intrinsic paramagnetic defects [11]. The sensor makes it possible to register the emission of electrons by the studied water sample $- \mid \Psi_s \mid^2$ by means of the recondensation of the interacting Bose-condensate of electrons to nitrogen-vacancy centres of zero charge (NV$^0$). The subsequent decay of the formed singlet state of the sensor material centre (NV) with a localized electron and its recondensation into the conduction band of graphite (n') has the form:

$$\Psi_{H_2O} \rightarrow \mid \Psi_s \mid^2 + NV^0 \rightarrow NV \rightarrow NV^0 + n'.$$  

(1)
To obtain the maximum signal, the sample with the test water is placed on the detector. Normal electrons signals are registered by a highly sensitive analogue-digital system from ZetLab. The importance of achieving a superconducting state of the sensor material is also due to the fact that for the implementation of quantum interaction with non-local objects, including the registration of electrons Bose-condensate, it is necessary to provide quantum entanglement (in terms of the Copenhagen interpretation of quantum physics) or, from the de Broglie–Bohm position, quantum entanglement coupling, which is understood as an electronic union with a non-local distant object [12].

For quantum coupling of both spatially separated water samples and between water and the human body, bioenergetically active bottled water of the same composition was used: one sample was installed on the sensor, the second one was rotated (in the operator’s hand).

The signal from the first water sample was registered in the basement of the building, the impact on the second sample was made in the laboratory room on the second floor of the same building.

Using the similar scheme, non-local responses to the action (photomodulation) were previously obtained, but without the participation of the operator [8, 9].

3. Results
The received responses to the time-limited exposure of the operator to water (2 minutes of manual, without mixing, circular movement of the container with water in the horizontal plane), performed on the second day of the experiment, indicate significant changes in the electronic component of quantum-coupled water (Table 1), which significantly exceeds the values previously obtained using water photomodulation technology [8, 9].

| Signal parameters          | Exposure, day |
|----------------------------|---------------|
|                            | 1  | 2    | 3    | 4    |
| Maximum of intensity (dB)  | 17.6 | 29.5 | 54.5 | 29.3 |
| Arithmetic mean            | 5.2 | 15.9 | 24.6 | 14.5 |
| Root mean square           | 7.7 | 17.1 | 26.2 | 16.7 |
| Standard deviation         | 5.7 | 6.3  | 9.0  | 8.2  |
| Fundamental frequency, Hz  | 0.047| 0.044| 0.027| 0.059|

Changes in the parameters of the sensor signals both in the direction of increasing the intensity (from 17.5 dB to 29.5 dB on the day of exposure to the coupled sample and up to 54.5 dB on the next day) and dispersion (2 and 3 times, respectively, by the second and the third days) indicate a high efficiency of non-local electron transfer through a system of coupled quantum oscillators, one of which is subject to an extremely weak mechanical perturbation. This suggests that in the physics of macroscopic quantum states of electrons, it is not the excitation energy that is important, but information (spin) coupling.

Based on the studied phenomena, a methodology for non-local diagnostics and correction of the functional state of the human body systems is proposed, which makes it possible to register quantum information about an object (an organism) according to the emission characteristics of a Bose-condensate of electrons in water (quantum diagnostics of the body systems state) and their correction by the feedback system using water preparations of systemic homeostatic action.

The basis of the methodology for the non-local correction of the functional state of a person are the procedures for the preparation of quantum-correlated water samples (activation), the formation of their quantum conjugation with each other and with the human body, the non-local transfer (excitation) of the density of quantum states from a remote sample to the water structures of the human body, as a result of which the associated water phase of the body generates regulatory signals. The states of water
structures, which are quantum-correlated with a human body (with a modified structural and energy distribution of an associated water phase, in which peroxide associates are present), provides a balanced body system [4].

4. Conclusion
Maintenance of quantum-correlated states is important not only in medicine and ecology, but also in technologies for the long-term conservation of the bioenergetic activity of drinking water and food [9].

The analysis of the results obtained, taking into account the previously performed studies [1, 8, 9], leads to the logical conclusion that the consumption of naturally incompatible food products (for example, genetically modified and synthetic [13]) provokes breaks in the information and energy relationships of the body's systems with the environment, and, therefore, is the root cause of metabolic disorders in the body.

The important biological role of exchange electronic interactions of body's systems with the environment puts forward new requirements for hygiene in general, an essential component of epidemiological and sanitary-hygienic monitoring aimed at the formation of external conditions for preserving human health.

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