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Physical Principles of Ultra-Weak Radiation Emission in Biological Systems

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ABSTRACT

Applied scientific research is currently concentrating primarily on biochemical analysis. A comprehensive physiological consideration takes a back seat. But a physiological consideration presupposes that every biological system contains a functional conglomerate that works functionally through energetic as well as morphological facts and thus finely controlled in signal chains.

A principle of physics says that energy controls matter. Basic research in physics and biology already offers comprehensive insights into the legal conditions that enable and determine the viability of biological systems. However, this means that it is necessary to look for these connections in order to bring the theoretical foundations closer to scientific analyzes of biological processes. Ultra-weak radiation in biological systems is one such phenomenon that develops from the impact of energetic processes on organic matter. The physical principles for these processes are explained to substantiate the scientific nature of the phenomenon.

Keywords

Electromagnetic radiation, Resonance energy, Ultra-weak cellular radiation.

Introduction

Electromagnetic radiation in the sense of light and the adjacent infrared and ultraviolet ranges is one of the basic requirements of life. In this spectrum, ultra-weak radiation emissions have different formation mechanisms and physiological functions [1].

They can be divided into four categories:

- Ultra-weak radiation occurs at interfaces between organic material and structurally changed water, the so-called exclusion zones. This radiation activates the germination of plant seeds [2].
- It also arises from the influence of resonance energy on atoms and molecules of organic compounds.
- Mitosis, a high-energy process, results in the emission of ultra-low-frequency radiation with defined frequencies that stimulate specific developments in the signaling system.
- One has to assume that cell renewal and the process of wound healing in highly organized bodies, as well as cell division of unicellular organisms, are stimulated or controlled by the ultra-weak cell radiation [3].

The observations of the ultra-weak cell radiation include the phenomenon of fluorescence or chemiluminescence, which is to be separated from the ultra-weak cell radiation. Fluorescence as a phenomenon of exposure to light and its absorption on various substances are associated with biochemical reactions. On the other hand, the cell's own radiation is understood as an expression of the effect of the resonance energy of the surrounding magnetic field on biological structures. It is not to be seen as a product of physiological chemical reactions in response to exogenous influences. These mechanisms will be discussed. Without the evolutionarily acquired dependence of life on the earth's magnetic field, life is not possible. Uncertainties are undoubtedly open, such as the question of the coherence of the photons [4,5]. But these open questions are no reason to dismiss the phenomenon of radiation as esoteric. It's a matter of future research.

All in all, one has to assume that the physical and energetic conditions and their laws form a unit that only seems to differ from

our understanding through physiological perspectives.

Discussion

The energetic conditions of space are in an immeasurably dynamic state. This dynamic is not limited to the macrocosm, but can also be found in the energetic states of the microcosm, which enable the existence of organic structures and thus life. In this form of consideration, it is a limitless dynamic flow that controls the basic physical conditions, such as magnetism and gravitation, as a flow of energy, the dynamics of the atoms and molecules of organic matter and enables their function [1]. With reference to the findings of theoretical physics and quantum mechanics, conclusions can be drawn that make it possible and understandable to explain biological processes and thus enable deeper insights into the regulation of life processes. At the same time, processes of the biochemical processes, the biochemical interactions of the molecules in the cell system as well as the function of the signal chains can be explained in more detail.

One such system is the ultra-weak cell self-radiation [6,7]. It can be assumed that this radiation represents a form of regulation in the cell system. When A. Gurwitsch observed this phenomenon in 1923 during the germination process of plant seeds, he called this radiation "mitogenetic radiation" because he believed that the light radiation made it possible for the so-called Morphological Field, which he postulated in 1910, to control embryonic development. That is, he suspected the origin in mitosis, which, like the metabolic activities of the cell, is associated with high-energy processes. Despite many attempts, it was not possible to make objectification possible for decades. Only the technological development in the 1960s led to a quantification of the radiation intensities, among others in the working group of Popp [8,9].

It is an emission of photons in the visible and adjacent UV range of electromagnetic radiation. How can one explain the origin of photon emission? The development of life forms on earth was shaped by magnetic fields from the outset and has become a cornerstone of life in the course of evolution. The feedback plays a major role in this. The interaction of magnetic fields and biological matter can be explained by energetic transfer of the resonance energy to biological molecules or structures. This electromagnetic radiation is characterized by amplitude and frequency and the interaction with the matter depends on the frequency. In its effect on molecules, this resonance energy leads to molecular vibrations with an increase in energy. The oscillating electric field of the incident radiation induces an oscillating dipole moment in the system. The energy is then absorbed by the system. The frequency v of the incident radiation must satisfy the relationship $v=\Delta ES/h$. This process leads that the atoms of the molecules vibrate against each other, which carry to a change in the angular momentum of the electrons. The size can be recognized by determining the spin. The properties of the magnetic field are also differentiated into paramagnetism and diamagnetism. These processes of frequency-dependent resonance, which presupposes the resonance conditions, are based on the energy levels of a system that is tuned to the frequency of monochromatic radiation. The energies of the electromagnetic field and of vibrating atoms are quantized, a term introduced by Niels Bohr in 1913 with the formula $\Delta E=hv$. From this, in terms of the wave-particle duality, it can be derived that the electromagnetic radiation of the energy hv is emitted as a photon. If this consideration is interpreted as an interpretation of photoelectric effects that are observed on metallic objects, then the energetic relationship between photons and electrons can be explained. Related to the given topic, it means that the electromagnetic radiation as a photon transfers its energy to electrons [10].

With regard to organic material, be it the early development of the first forms of life or today's biological systems with complex structures, this means that the influence of magnetic fields is of fundamental importance. Resonance energy is the energetic form that energetically upgrades organic materials, activates biochemical processes and controls signaling systems. Accordingly, the monochromatic electromagnetic radiation is responsible as a kind of information carrier for specific physiological processes. Viewing photons as information carriers can be found in the experiments that Anton Zeilinger [11] has been conducting for years. A mental transference in the fundamentals only seems logical. One must not allow oneself to be influenced by the fact that the ultra-weak cellular radiation is of extremely low intensities by today's standards. This is a relative quantitative classification, so to speak. The biochemical findings and their functional connections are one thing. But there is also a starting impulse that activates these systems and that is the energy supply. And this supply results from the evolutionary connection with the physical laws of nature that control the macrocosm as well as the microcosm.

The meaning of the ultra-weak radiation can be seen differently, as a momentum or better as an information carrier. The basic states of life defined by P. Nurse [12] indicate that information occupies a central place. All life forms are self-sustaining and self-organizing as a result of evolution. This is a basic idea that was already expressed by Immanuel Kant in the 18th century when he stated that living beings are living organisms with a tendency towards a coherent and self-regulating ability. From today's point of view, one has to process the thought by realizing that only through information and information management can the cell keep its operations in order in their extreme complexity. The multitude of biochemical reactions must "communicate" and "coordinate" with each other in order to maintain a state of homeostasis. And this inner state is only regulated by information. The feedback plays a role here, which ultimately contributes to the activation of the signal chains. A complex system requires the signaling pathways to stabilize life-sustaining functional behavior.

In order to better explore the mechanisms of life and the detailed processes associated with it, reference is once again made to Paul Nurse, who stated: "... It may be that the complexity of biology leads to strange and contra inductive explanations and the biologist to the solution of these mysteries will need even more support from scientists from other disciplines - such as mathematicians, computer scientists, physicists and even philosophers, who are

more practiced and less attuned to everyday experience in the familiar world. ..."

Conclusion

Biological systems are fundamentally characterized by energetic processes. The basic physical laws in the atoms and molecules regulate the processes in a highly ordered regularity and order, which is not equal in inanimate matter. Understanding and using this requires a willingness to transfer knowledge across disciplines. There are numerous examples of dynamic relationships between energy and matter in the natural sciences. One of them is the ultra-weak cell radiation, which represents a corresponding link in its importance. It conveys the basis of the magnetic field effect as an evolutionary factor with the development of life forms and their functional or physiological stability. Without magnetism as an environmental factor, there is no life. Incorporating this consideration into active scientific work appears to be an important task. This is the only way to gain new insights into the development of life forms and thus to success. In this respect, physiology is to be seen in its fundamental importance as a link between energy and organic matter.

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