**On the energy mechanism of mitogenetic radiation in A.G. Gurwitsch's experiments with onion roots**

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Ultraweak (mitogenetic) radiation of biological objects was discovered almost a hundred years ago by an outstanding biologist-histologist A.G. Gurwitsch due to the effect of its UV component on cell division. In A.G. Gurwitsch's classical experiment two onion roots were used: one as a source of radiation (inductor), the other as its recipient (detector). These results and theoretical reasoning led Gurwitsch to the discovery that most exothermic reactions, both in the organism and in the experiment, are accompanied by radiation in the UV range, and the biological consequence of this radiation is the stimulation of cell divisions (mitosis) [1]. In the following years, this phenomenon was actively studied in dozens of laboratories around the world using both biological systems and instrumental detectors of high sensitivity as detectors. These studies showed the existence of UV and visible radiation (chemiluminescence) of a large number of biological objects, as well as model biochemical systems, but the nature of the released energy was not interpreted in all studies. As a theoretical justification of radiation generation, the generally recognized scheme of free-radical peroxidation, constructed as a result of the works of experimental scientific groups, was used [2]. However, such a scheme does not provide an answer to what the physical nature of radiation is.

The mechanism of luminescence discovered by Gurwitsch is fully explained based on the laws and concepts of quantum physics and bioenergetics [3]. Bioenergetics, based on the theoretical works of A.S. Davydov [4], D. Alexander [5], N.A. Bulenkov [6] and confirmed experimentally, shows that biopolymers of a living organism, being "energy machines", convert any external energy into organism-specific low-frequency quanta – solitons [4,5], which are then formed into two flows – "power", multi-quantum, and "control", single-quantum. In a living organism, all biopolymers and molecules are connected with each other by rod structures of water molecules into a single molecular-water system [3,6]. Control flow solitons, which interact with biopolymers only in resonance processes and are formed in the organism in excess, move through the molecular-water channels of the whole organism [3]. Solitons that have not reacted, as well as quanta of higher energies emitted in intermolecular reactions in cells, are radiated outside the organism, forming an electromagnetic shell around it, instrumentally measured in a wide range of energies, from the close UV to the extended low-frequency EMF spectrum. The visible part of the spectrum of this electromagnetic envelope of any living organism has long been called chemiluminescence in biology.

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