

# Human Energetic Light System

Konstantin Korotkov\*, Liberman I Jacob

<sup>1</sup>Federal State Budget Institution "Saint-Petersburg Scientific-Research Institute for Physical Culture", Ligovski prospect 56, NIIFC, St. Petersburg, 199000, Russia; <sup>2</sup>Private Consultant, Hawaii, USA

## ABSTRACT

On the basis of the latest biophysical ideas, the mechanisms of light influence on biological structures at the molecular, organ and information levels are discussed, which allows explaining the practical effects of light applications in a wide spectral range in medical practice for therapy and diagnostics. Particular emphasis is placed on the use of laser radiation.

**Keywords:** Biophysical Mechanisms; Light Diagnostics; Light Treatment; Integrative Medicine; Bio-Well

## INTRODUCTION

The use of light in medicine began in the middle of the 19th century and the results achieved have led to the widespread use of developed methods. One of the first Nobel Prize in Medicine was awarded in 1903 to Danish doctor Niels Ryberg Finsen in recognition of his achievements in treating diseases - especially lupus tuberculosis - with concentrated light radiation. Many doctors in Europe and USA have successfully used light and chromotherapy to treat a variety of diseases. New stage of development started in 1980th with publishing several groundbreaking works [1,2] and establishing the relationship between the lack of light and winter depression in Northern countries [3]. Since 1990, the penetration of light and chromotherapy into medicine has been widespread, and there are now more than ten thousand publications on the subject each year. Light therapy became an essential part of the integrative medicine.

In this paper we will not discuss the influence of light on the psychological and physiological condition of a person at the perception of light through sight. Thousands of works are devoted to this topic, and even a brief overview of the main results exceeds the volume of this publication. We'll focus on the mechanisms of light influence on biological tissues.

## LIGHT EMISSION BY THE BIOLOGICAL TISSUES

It is well known that in order to extract energy from the ATP molecule, it should be hydrolyzed to ADP (accepting H) and phosphoric acid (accepting OH). Free energy is needed to perform useful work (muscle contraction, for example) and is released in the course of the hydrolysis of the ATP molecule. However, in order to get H and OH for ATP hydrolysis, a covalent bond in the water molecule should initially split. The quantity of energy needed to split a water molecule (about 110 kcal/mol or 4,8 eV per one H-O bond) incomparably exceeds the quantity of energy released as a result of ATP hydrolysis (7-10 kcal/mol).

Paradoxically, this discrepancy was never discussed. Scholars satisfy themselves with the following explanation: that in the course of recombining the H and OH free radicals with the fragments of the molecule that undergoes hydrolysis, approximately the same quantity of energy is released as is required for splitting a water molecule into free radicals and for a molecule to be hydrolyzed.

Nevertheless, the existence of an overall balance is not the solution to the problem. Energy that might compensate for the energy invested in water splitting only appears after water splitting has occurred and not before.

To our knowledge the only scientist, who suggested the solution to this paradox and who presented experimental evidence supporting his suggestion, was Alexander Gurwitsch

\*Correspondence to: Konstantin Korotkov, Federal State Budget Institution "Saint-Petersburg Scientific-Research Institute for Physical Culture", Ligovski prospect 56, NIIFC, St. Petersburg, 199000, Russia, Tel: 79219368394; E-mail: korotkov2000@gmail.com

Received: June 30, 2020; Accepted: July 20, 2020; Published: July 27, 2020

Citation: Korotkov K, Liberman IJ (2020) Human Energetic Light System. Biol Med (Aligarh) 12:468. doi: 10.35248/0974-8369.20.12.468.

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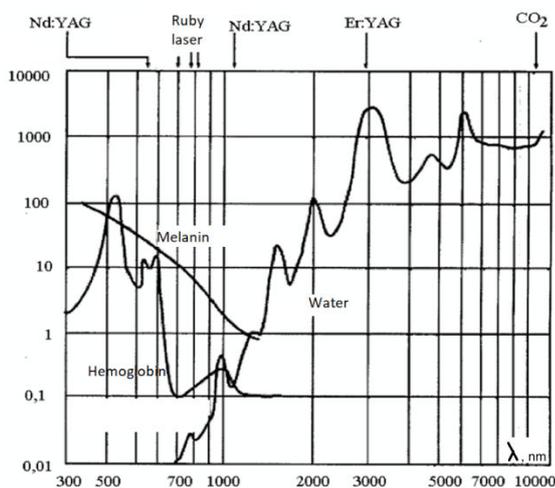
(1874-1954), the discoverer of the so called “Mitogenetic radiation” (MGR), ultra-weak radiation in the UV range of the spectrum [4].

Gurwitsch noticed that one of the sources of MGR was the enzyme-catalyzed hydrolysis of different organic compounds occurring in aqueous solutions. Though the intensity of UV photon flux from reaction systems was very low, the energy of UV photons could reach 7 eV – more than enough to split a water molecule and for a molecule to be hydrolyzed.

His discovery was not confirmed by that-day Western scientists, and his ideas was forgotten. Only by mid-60th using ultra-sensitive photon counters, it was re-discovered and gave rise to the so-called “biophotonic” research. In this approach people study ultra-weak photon emission from different biological subjects, kept in total darkness. It was shown that this emission reflects vital activity of a subject.

### THE MECHANISMS OF LIGHT INFLUENCE TO BIOLOGICAL TISSUES

Penetration of light into the skin strongly depends on wavelength. Most organic molecules display strong absorption in the ultraviolet region, and so penetration in the UV is very weak (a few microns). In the visible range (blue, green and yellow), absorption is principally due to hemoglobin and melanin. These are the main targets and acting mechanisms of the chromotherapy. Red and near infra-red (600 to 1200 nm) wavelengths are weakly absorbed and penetrate deeply into the tissue (this penetration is, however, limited by optical scattering). In the near and far infra-red, it is water which absorbs intensely (Figure 1).



**Figure 1:** Absorption spectra of the main chromophores of the bio-tissue.

For low-intensity light therapy we need to pay attention to subtle biophysical mechanisms. One of the keys may be the direct influence of light to mitochondria, the energy-producing engine of life. Light of specific frequencies in the wide range from 400 to 820 nm influence the one of the last links in the mitochondrial respirator6-y chain that driven by the enzyme cytochrome c oxidase [5]. This led to the establishment of the

scientific and practical line under the name photobiomodulation. Different conditions for which this therapy has shown positive outcome [6-8].

Very important, that the effect of light depends largely on the initial state of living tissue. Healthy cells already in an optimal state react less, whereas it is mostly cells that are sick or in need of oxygen that are stimulated. This highly beneficial system of autoregulation also tends to reestablish the acid-based equilibrium of the cells.

Several mechanisms of the light influence may be related to water and first of all to the oxygen transport by capillaries. It was shown that this process is more efficient under the influence of light of the infra-red (IR) spectra [9]. As we understand, this mechanism offers a powerful additional factor for explaining the effects of IR radiation on biological organisms.

The above data can be summarized by indicating the main mechanisms of light influence in different spectral ranges:

- in the near UV range this is primarily an energy effect,
- in the visible range it is mainly an information effect, both through vision and skin,
- in near IR and IR it is a molecular effect.

In many cases, we may use both laser and LED light, but in all therapeutic applications, it is low-intensity radiation.

### USING LIGHT IN HUMAN ANALYSIS

Gas Discharge Visualisation (GDV) technology was developed in Russia by a team led by Dr. Konstantin Korotkov in 1995. The Electrophotonic Imaging device (EPI/GDV) is based on the stimulation of ultra-violet photons and electrons emission from an object when it is placed in an electromagnetic field and subjected to brief electrical pulses. Voltage pulses stimulate optoelectronic emissions that are amplified in the gas discharge, and light produced by this process is recorded by a sensitive CCD (charge coupled device) camera that converts it into a colored computer image, or “Bio-gram”. Data obtained from the fingers of both hands are converted into a Human Energy Field image and various graphs using proprietary sophisticated software. The latest device, termed “Bio-Well” ([www.Bio-Well.com](http://www.Bio-Well.com)) allows users to capture images, then with the instrument and securely transmit the all information data is sent to the to a cloud server server, where sophisticated proprietary software process analyzes the images, calculates a set of parameters and sends returns the processed data back to the user software in the form of as different detailed graphs and images. The primary advantages of this approach include data is safety security and portability, efficiency of time (data analysis transmissions typically take seconds to complete).

The parameters of the image generated from photographing the finger surface under electrical stimulation creates a neurovascular reaction of the skin, influenced by the real time physiologic status of all organs and systems. A specialized software complex registers these readings as parameters which elucidate the person’s state of wellbeing at that time [10-12].

Bio-Well produces several interrelated outcomes: (1) Overall energy, measured in Joules, (2) Stress level and balance between physiological & psycho emotional states, (3) Relative position and parameters of Chakras, (4) Energy distribution along the acupuncture meridians, (5) Health Status, (5) Sympathetic - Parasympathetic balance and (6) Energy Reserve. The Health Status radial diagram reflects the current health status state of the various subsystems of the subject, in comparison compared to a large number of apparently healthy subjects in the database, while the Energy Reserve radial diagram reflects the potential for future health problems if not corrected. Electrophotonic Imaging is not considered a medical technology; it is the evaluation of wellness and vitality through the analysis of human energy.

This technology has major implications for all health related fields. A comprehensive review of these varied electrophotonic applications can be found in [12,13]. Research with the Bio-Well device is currently in process at universities and research institutes worldwide in the areas of medicine, "energy medicine", athletic training, biophysics, parapsychology, and other disciplines. Electrophotonic technology provides a convenient and user-friendly method to assess patients with a wide range of issues and can also be utilized to assess responses to drugs, meditation, stress reduction therapy and any other interventions.

The data presented by Bio-Well software is based on the statistical analysis of an extensive database of parameters for over 200,000 people; These are mixed varied population ranging from 18 to 100 years old, both men and women, both generally healthy, and but having chronic diseases.

## CONCLUSION

Comprehensive understanding of the biophysical mechanisms of light influence to the biological tissues allows developing new methods of integrative treatment and use it for the benefits of patients. Using light for the analysis of the psychophysiological state of people and evaluation of their response to the therapy opens up new horizons for the implementation of light into wide medical practice.

We are Light Beings and we need to show this to people.

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