

“COVID-19 - POSTCOVID SYNDROME” PANDEMIC: HARD LESSONS

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ABSTRACT

The author presents an analysis of the pandemic caused by the coronavirus “COVID-19” and its consequences from two points of view: based on 20 years of scientific and practical experience in the field of virology (the degree of Doctor of Medical Sciences in Virology and Biochemistry through the Higher Attestation Commission, for the development of a new generation of purified influenza vaccines). And 30 years of experience in leech therapy and hirudology. His assets include the creation of the first in Russia and the world department of leech therapy, the creation of an original technology for treatment with medical leeches – «**System Method of Leeching**».

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During the coronavirus pandemic, the author of this publication was engaged in the treatment and consultation of patients, training doctors in treatment technology, analyzing scientific information from world sources and writing his own scientific articles on the topic: “**COVID-19 – POSTCOVID SYNDROME**”. The author of this message is the author of a series of publications for 2020-2023, in which this pandemic was named by the author “**COVID-19 – POSTCOVID SYNDROME**”. The editors of six authoritative and specialized online magazines and three major international conferences in **Tokyo (2022)**, **London (2023)** and **Dubai (2023)** agreed with this name of the coronavirus pandemic. We offer you these publications:

I. Krashenyuk A.I. “COVID-19” – “POSTCOVID SYNDROME” Pandemic: Solutions of the Problem are Visible in the Application of Modern Hirudotherapy and Integrative Medicine.

Open Access Journal of Biomedical Science. 2022, May-June 4(3):1907-1909

II. Krashenyuk A.I. “COVID-19” – “POSTCOVID SYNDROME” Pandemic: How to Protect Doctors and Nurses in the “Red Zone” of Hospital? J. of Medical & Clinical Nursing, 2022, Volume 3(4): 1- 9.

III. Krashenyuk A.I. . “COVID-19” – “POSTCOVID SYNDROME” Pandemic: Complex Treatment with Medical Leeches, Including Detoxification. Confirmation of the Validity of the Theory “HOMOTOXICOLOGY” of H. - H. RECKEVEG.

Journal of Clinical Epidemiology & Toxicology, 2022, volume 3(4): 1-7

IV. Krashenyuk A.I. “COVID-19” – “POSTCOVID SYNDROME” Pandemic: The Problem is solved by Information Medicine – Hirudotherapy.

PriMera Scientific Medicine and Public Health, 1.4(2022): 05-09.

V. Krashenyuk A.I. “COVID-19” – “POSTCOVID SYNDROME” Pandemic: High Risks for Pregnant Women. Acta Scientific Medical Sciences 7.2 (2023): 71-82.

VI. Krashenyuk A.I. Pandemic “COVID-19 – POSTCOVID SYNDROME”: A System Method of Leeching is New and Effective Treatment. Journal of Virology Research & Reports, 2023, volume 4(2):1-12.

VII. Krashenyuk A.I. Pandemic “COVID-19 – POSTCOVID SYNDROME”. This name of pandemic allows us to better understand the meaning of the use of hirudotherapy in treatment.” “5th Edition of International Conference on Traditional Medicine, Ethnomedicine and Natural Therapies” Hybrid Event held on May 22-23, 2023 in Tokyo, Japan. Book of Abstracts “Traditional Medicine -2023”, p.52-53.

VIII. Krashenyuk A.I. Pandemic “COVID-19 – POSTCOVID SYNDROME”: was it possible to save the doctors and staff of the “Red zone” of hospitals from illness and death? Conference Program, Day 3, p.9. «3rd International Conference on Tissue Engineering & Regenerative Medicine», London, UK, 2023;

IX. Krashenyuk A.I. Pandemic “COVID-19 – POSTCOVID SYNDROME”: Hirudotherapy as an effective and Dominant monotherapy. Webinar Program, Oral speakers, p.16.

«3rd International Webinar on «Global Healthcare and Nutrition», Dubai, UAE, 2023.

The "COVID-19" coronavirus pandemic has caused tremendous strain on medical services around the world. The development of a new coronavirus pandemic in all countries of the world has revealed an important pattern of the epidemic process - the acute phase of the disease is always followed by a syndrome complex, called "POSTCOVID SYNDROME". We have proposed to the international scientific community the following concept for the name of this pandemic. The acute phase of the disease is "COVID-19", and the chronic phase is "POSTCOVID SYNDROME". Our article from the above-mentioned series of publications (VI) and speeches at international forums dedicated to the topic of the pandemic and the proposed title "COVID-19 – POSTCOVID SYNDROME" caused a great positive response from colleagues.

This proposal turned out to be rational not only from a taxonomic point of view, but also from the essence of the development of the infectious process. The fact is that in various publications on this topic, definitions of "LONG COVID", "SUBACUTE COVID" have appeared, which do not reflect the depth of understanding of the clinical process. As a result, the book "COVID-19 – POSTCOVID SYNDROME" PANDEMIC: OBSERVATIONS AND CONCLUSIONS. EXPERIENCE OF LEECH TREATMENT" was born. ASTERION Publishing House. 2023, St.- Petersburg, 220 p. This book reflects the author's point of view on the most important aspects of the pandemic "COVID-19 – POSTCOVID SYNDROME" [1-4]. Our article published earlier, which is close in topic, it only indicates only the plan, the scheme of the proposed work, the article did not fully reflect the essence of the problem touched upon [5]. Let's dwell in more detail on the "Hard Lessons" of the "COVID-19" coronavirus pandemic.

Lesson One (1). None of the antiviral drugs known to date has proven the ability to stop the development of the acute viral phase of the process. This phase lasts 2-3 weeks, and we can call it "COVID-19". The literature describes the use of some drugs that, according to the authors of these publications, were effective in the acute - "Viral phase of the disease". These are **Ivermectin** and **Hydroxychloroquine (Plaquenil)**.

As for **Ivermectin**, it should be said that the drug is not new and belongs to the class of broad-spectrum antiparasitic drugs included in the WHO list of essential drugs for the treatment of a number of parasitic diseases, such as: onchocerciasis (river blindness), strongyloidiasis and other helminthiasis transmitted through the soil. The drug is also used to treat scabies. **Hydroxychloroquine (Plaquenil)** is known as a drug that is active against erythrocyte forms of plasmodium.

It has anti-inflammatory and moderate immunosuppressive activity. Indications: malaria, rheumatoid arthritis, systemic lupus erythematosus, scleroderma. As the description of these drugs suggests, none of them have antiviral properties. In other words, following the recommendations of the WHO, we follow the principle:

Use Everything That is at Hand!

We draw the attention of our colleagues to a domestic drug that we have been using for many years to treat influenza viruses of various strains, as well as herpes viruses of various serotypes. This is the drug "**Anandin**". Its creator is O.V.Travkin. From a chemical point

of view, it is a copolymer of two components: N-Acridoneacetic Acid and Dimethylaminopropyl-Glucofuranose. Probably, it was the chemical structure of this drug that caused its almost no toxicity. For many years, it has been used as an antiviral drug in veterinary medicine. In the Order of the Ministry of Health of the Russian Federation No269 of July 14, 2000, Anandin is allowed for the treatment of humans. Extract from the mentioned Order: The drug belongs to new highly active synthetic organic compounds, being a low-molecular inducer of cytokines (interferons, TNF, interleukins). It is effective against almost all classes, both DNA- and RNA- genomic viruses, and has immunomodulatory and anti-inflammatory activity. The maximum concentration of the drug in the blood serum is observed 2 hours after intramuscular administration, in an unchanged form, Anandin is excreted from the body with urine, and after 24 hours it is not detected in the blood and urine. No accumulation of the drug in the body was found even after repeated administration.

Indications

Anandin is used to treat severe viral infections such as hemorrhagic fever with renal syndrome (**HFRS**). It is especially effective when used in the early stages of the disease (up to 5-6 days of the disease). A significant role in the trial of Anandin in the treatment of HFRS and the introduction of this drug in the treatment of humans was played by the director of the Pasteur Research Institute of Epidemiology and Microbiology, professor F.S. Noskov (1991-94).

Anandin has shown high efficacy even before the coronavirus pandemic, both in the treatment of different strains of the influenza virus and in the treatment of various strains of the herpes virus. Our experience has shown (more than 500 cases) that Anandin was effective both in the first phase of the disease - "**Viral**" and in the second, "**Inflammatory phase**", when the virus penetrates the lower parts of the lungs and enters the circulatory system.

Lesson Two (2). The acute phase is followed by a chronic process that we call "POSTCOVID SYNDROME". This phase of the disease lasts 18-24 months, and sometimes more, up to 36 months. And patients' complaints usually take the form: "Doctor, a lot of time has passed since the illness, two or more years, but I cannot reach the state of health that I had before the coronavirus disease!" And this is the main danger for those who have suffered a mild, moderate or severe form of the course.

In some patients, it looks like mild discomfort. It should be noted that in the "POSTCOVID ERA", myocardial infarctions and strokes have sharply "rejuvenated". "For six months after suffering from COVID-19, there is a high risk of death from complications caused by the infection." This was announced on the air of the TV channel "**Russia 24**" by the Minister of Health of Russia **Mikhail Murashko** on August 31, 2021. The Minister of Health noted the need to undergo an in-depth medical examination for those who have had a coronavirus infection in recent months. According to Minister **M. Murashko**, at this time, the appearance of various kinds of complications associated with the formation of blood clots, damage to the nervous and cardiovascular systems is possible, i.e. confirmed the conclusions of the Moscow City Scientific Society of Therapists named after **Professor S.P. Botkin (MCSST)** regarding the pathogenesis of the "POSTCOVID SYNDROME" [6]. A D-dimer level of more than 1000 ng/ml should be considered a marker of a high risk of an unfavorable outcome. The mechanism of D-dimer reduction by leech salivary gland secretion is associated with the action of Destabilase-M [7].

Extended medical examination in order to identify complications after coronavirus infection and further treatment began in the regions of Russia on July 1, 2021.

However, it was not possible to complete the medical examination in full due to a lack of funding for the project.

Lesson Three (3). "POSTCOVID SYNDROME" is dangerous with the sudden development of thrombosis and related complications. As an analysis of the development of the pandemic in many countries has shown, 80-85% of patients suffer from this infection in mild to moderate severity. And only 15-20% of patients, due to concomitant diseases, need hospitalization and round-the-clock monitoring by medical personnel. During this period of the chronic phase of the disease, it is necessary to control the most informative markers of the possible development of thrombosis: **the dynamics of D-dimers, prothrombin time, fibrinogen level, the number of platelets in the blood of those who have recovered.**

In practice, such large-scale monitoring is impossible. As you know, the recommended treatment for the prevention of thrombosis is oral anticoagulants. And for detoxification, it is recommended to use plasmapheresis. However, both of these recommended methods of treatment have a number of significant drawbacks and contraindications, especially when used for a long time, bleeding manifestations closely related to "COVID-19", even in patients without disseminated intravascular coagulation [8,9].

The physician should remain alert for spontaneous bleeding in patients with "COVID-19", with nonspecific abdominal discomfort, or taking therapeutic doses of anticoagulants [10]. In other words, patients with "POSTCOVID- SYNDROME" are at increased risk of both thrombosis and bleeding due to an imbalance in platelet production and destruction along with other coagulopathies [11-14]. Analysis of the causes of bleeding in patients with severe "COVID-19" is cytokine storm syndrome associated with immune disorders [15,16].

Lesson Four (4). We offer an alternative method - "SYSTEM METHOD OF LEECH THERAPY" (SML) (Patent RF No 2787525). The proposed method is based on 30 years of experience in the use of SML in elderly people with multiple organ pathologies and children who were treated at the Academy of Hirudotherapy in St.- Petersburg [17]. Our experience in the treatment of "POSTCOVID SYNDROME" in the period 2020-2023 has shown the high effectiveness of SML.

The medicinal leech has a full range of biologically active components of the secretion of the salivary glands, which suppress all mechanisms of the pathogenesis of coronavirus, including antiviral and antimicrobial effects, when we have a combined effect of the virus and a microbial agent. The author of the article in the period from June 30 to July 8, 2021 in the **Republic of Uzbekistan**, where he provided advisory assistance to the doctors of the "Red Zone" in the hospital "Zangiota-2" in the treatment of patients with coronavirus using the technology of the "System method of leech therapy", which led to a decrease in the severity of complications and mortality of patients.

Lesson Five (5). There are convincing statistics on the high morbidity and mortality of doctors who worked in the "Red Zone" during the pandemic. First of all, we are talking about nurses and surgeons, that is, medical personnel who have to contact the bodies of sick people for the longest time. At first glance, it

seems that this is due to the violation of the epidemic regime by medical personnel.

However, the author claims that in this case the factor of remote interaction of the "Aquasystem of a sick person" with the "Aquasystem of a healthy person" by means of wave radiation may play a role.

As evidence, the author cites the discovery of Academician V.P. Kaznacheev and co-authors entitled: "The phenomenon of intercellular remote electromagnetic interactions in the system of two tissue cultures" (**priority number and date: 122, dated 15.02.1966**) and supplements this discovery with his own experimental results on humans, using ultraviolet irradiation of volunteers as a model.

Our scientifically based proposal to reduce the severity of complications from coronavirus infection and reduce the incidence of doctors in the "Red Zone" is expressed in two publications (**II**) and, unfortunately, it has not yet been reflected in the form of widespread application in practice [18]. Although doctors who know the "System Method of Leech Therapy" have successfully used this method in the "Red Zone" during the pandemic.

Lesson Six (6). Many of our patients note that they were sick 2-3 times during the pandemic. This suggests that, having been ill with one strain of coronavirus, the human immune system is not able to protect itself from other antigenic variants (strains) of coronavirus. These facts make you wonder what strains of coronavirus should be prepared against for the population? Experts of the Global Vaccine Data Network cited data on 99 million vaccinated people from 8 countries, which was commented on by **Academician A. Gintsburg, Director of the National Research Center for Epidemiology and Microbiology named after N.F. Gamaleya of the Ministry of Health of Russia** - a study in which the results of the use of mRNA vaccines and their impact on the health of vaccinated patients were presented. The study showed that vaccines that protect against severe "COVID-19" disease can provoke a higher risk of heart inflammation, blood clots in the brain after immunization, as well as the occurrence of Guillain-Barré syndrome (autoimmune damage to the peripheral nervous system), neurological disorders. Academician Gintsburg explained that this is due to the fact that the vaccines of "Pfizer" and "Moderna", created on the **mRNA platform**, are perceived by the body as foreign information.

He explained that messenger RNA, when it is introduced into the human body, due to the evolutionary features of our cells, is perceived as foreign information, viral, which must be destroyed. The "COVID-19" virus pandemic has led to the end of an era that has dominated over the past 2 centuries – the era of corpuscular vaccines, both live and killed (inactivated). The highest strain variability of the coronavirus showed that all types of vaccines that were used in different countries ended in their complete fiasco.

What to do next? What way will Humanity find out of this situation? What new scientific paradigm will come to protect Humanity from extermination? And is there such a paradigm outside of vaccinology? Such a paradigm exists, and it originated in Russia and has already proven its worth. We will talk about another one, little-known side of immunity, and it turned out to be completely unexpected – the biophysical component associated with the state of the "Human aquasystems". The term "Human aquasystems" was proposed by the Russian professor **V.I.**

Slesarev, Doctor of Chemical Sciences [19]. This new concept will still require changing the minds of a large body of virologists, epidemiologists, and doctors, but this is always the case after major discoveries.

The problem of interaction in the "Microbe (virus)-water-cell" system has been known for a long time, and the author of this article was the first to establish that the difference in the immunogenicity of different strains of influenza viruses depends on their hydrophobicity [20]. Previously, this pattern was established for proteins, and for viruses, this relationship was established for the first time using the two-phase "Ficol-Dextran" system. The established relationship between the "hydrophobicity" of viruses and their immunogenicity, between the "hydrophobicity" of viruses and the affinity for hemagglutination inhibitors is of fundamental importance for the selection of viral strains that are candidates for vaccines [20]. Inhibitor-sensitive strains of influenza viruses turned out to be more hydrophobic than inhibitor-resistant ones. When comparing the values of **K** (relative hydrophobicity coefficient), a significant difference was noted in antipodal strains: strain 4/I (susceptible to inhibitors), strain 4/II (resistant to inhibitors).

Both strains were obtained by selection (immunopress) from the original population of the virus A (Khabarovsk)74/77 (H1N1). Strains 4/I and 4/II differed in immunogenicity by 24,2 times, and in hydrophobicity by 10 times. The strains of the Victorian variety differed in immunogenicity by 9,4 times, the difference in hydrophobicity was 2,7 times. Probably, this mechanism - a change in hydrophobicity in the process of virus reproduction, is one of the options to avoid control from the mechanisms of human immunity, which gave rise to new variants of coronavirus during the "COVID-19" virus pandemic. The method of treating infectious diseases, including viral diseases, using specialized drugs (SD), as well as vaccines, is well known. However, due to several outbreaks of viral infections that have arisen in recent years (chicken and swine flu, SARS, Ebola), the efforts of doctors around the world have failed to develop effective drugs and vaccines, despite the billions of dollars spent on their development. Fortunately, these viral epidemics proceeded according to a favorable scenario and ended over time by themselves [21]. The situation is different with the "COVID-19" coronavirus epidemic, the outbreak of which, despite unsurpassed quarantine measures up to the closure of borders between countries and the complete isolation of the population, has grown into a pandemic. Moreover, experts give disappointing forecasts about its further course: the countries do not have enough hospital beds, doctors, medical equipment, existing drugs are ineffective, but even they are not enough, the development of the vaccine is promised to be completed in a few months at best. The world is in a deep economic crisis, and it is not clear how the situation will develop further. The current situation points to the urgent need to find alternative ways to control outbreaks of new infections, especially viral infections. Otherwise, with the current trend of increasing the mutational capacity of viruses and the likelihood of ancient pathogenic bacteria getting into the waters from melted glaciers, to which people have no immunity, humanity may not have time to develop drugs and vaccines.

Physicist, professor of the University of Tyumen L.P. Semikhina proposed a device for changing the properties of proton-containing objects, including a power source and an emitter, in which the source of radiation is the polarized spins of protons of the polymer material of the tube placed in the field of a solenoid, in which

an amplitude-modulated alternating magnetic field of resonant frequency is excited with the help of a generator [RU 2196320 C2, MPK30 G01N 24/12, published 10.01.2003] [22].

Professor L.P. Semikhina proposed an alternative way to combat outbreaks of new infections, based on biophysical technology to increase the immunity of humans and animals to pathogenic agents using electromagnetic fields, and also developed a device for its implementation.

The biophysical technology for preventing infectious epidemics, which makes it possible to increase the immunity of humans and animals to pathogenic agents, is based on the correlation of the state of water in animal cells with its evolutionary level and viability, revealed in [23,24].

The presence of such a correlation is indicated by Figure 1, which presents the frequency dependences of the tangent of the angle of dielectric losses ($tg\delta$) of water in the tissues of living beings of different evolutionary ladders obtained according to the method developed in [23].

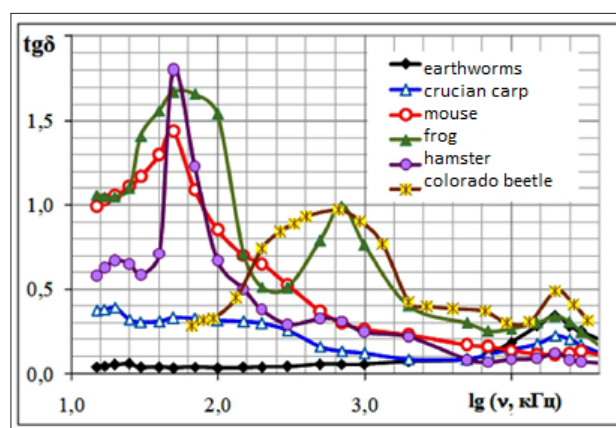


Figure 1: Dependence of the Tangent of the Angle of Dielectric Losses ($tg\delta$) of Water in the Tissues of Various Living Beings

As we can see, in all animals in the frequency range of 10 kHz – 30 MHz, maxima $tg\delta$ are revealed, which, as the evolutionary level of the animal increases, shift to the region of lower frequencies and grow in magnitude. According to Debye's theory, a decrease in the frequency / at which the maximum $tg\delta$ ($tg\delta_{max}$) of an object is observed corresponds to an increase in the size of the relaxing cluster of water molecules, that is, an increase in the degree of its structure. And an increase in $tg\delta_{max}$ values at frequency characterizes an increase in its interaction with surrounding biomolecules, that is, the degree of its connectivity.

The concepts of "degree of structuredness" and "degree of connectivity" of water in animal tissues in are concretized by introducing the parameters $K\delta$ and Kv , which are located in relation to the values of frequencies (Kv) and values of $tg\delta_{max}$ ($K\delta$), corresponding to two maxima $tg\delta$ for water states in a given biological object in the region of low (less than 1 MHz) and high (~20 MHz) frequencies [23].

Diagram in Figure 2 demonstrates that the parameter $K\delta$ increases as the evolutionary level of the animal increases. It follows from it that for the optimal vital activity of higher (mammals) and lower forms of the animal world, to which all pathogenic organisms can be attributed, a fundamentally different state of water in their tissues is necessary. For mammals, which include humans, the

optimal state of water is highly structured and strongly bound in their tissues with a strong interaction with biomacromolecules inside cells ($K\delta > 10$, $Kv \geq 400$), and for lower mammals, the least bound and most mobile state of water ($K\delta \approx Kv \approx 1$), similar to its usual, volumetric state in saline.

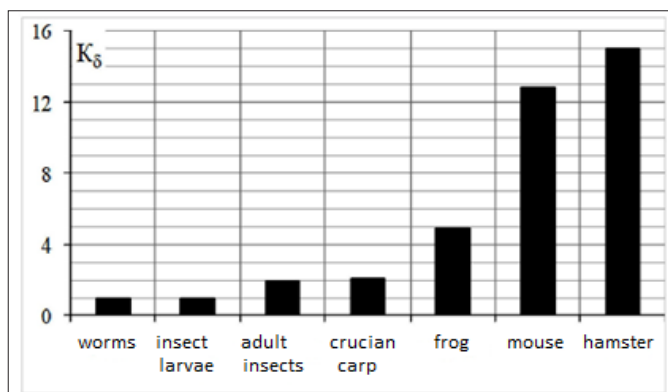


Figure 2: The Parameter $K\delta$ Increases as the Evolutionary Level of the Animal Increases

It is believed that in the case of higher animals (mammals), the main reason for the higher survival rate of such organisms, which in the course of evolution have learned to create a strongly bound state of water in their cells, is precisely the counteraction to the intensive reproduction in their organisms of viruses that appeared even before or at least in parallel with the development of cellular forms of life on Earth.

The antiviral effect of the highly structured state of water lies in the very principle of the life of viruses, which, in order to implement its three main stages (introduction into the host cell, creation of their copies inside this cell and exit from the cell), must overcome potential barriers created by intermolecular interactions inside the host cells.

The stronger these interactions, the more difficult it is for viruses to overcome them in order to enter the host cell and rearrange them to carry out the process of replication (the creation of multiple copies of themselves inside the cell).

Therefore, the development of viruses can also be blocked by enhancing intermolecular interactions in animal and human cells.

However, the highly structured and highly bound state of water in their tissues, which has arisen in the course of evolution and in the course of evolution, with a very strong interaction with biomacromolecules inside cells, has been increasingly destroyed in recent years under the influence of various unfavorable factors (ecological, psychological and physical fields of various nature). These effects on animals are equivalent to a decrease in the level of its evolutionary development, since they reduce the values of the parameters Kv and $K\delta$.

For example, for the demonstration in **Figure 3** effects of the stress state on the mouse (curve 1 is the frequency dependence of the mouse $tg\delta$ in the resting state, and curve 2 is in the state of stress), the parameter $K\delta$ of the mouse mammal decreases by 4 times and drops to a value below the level of $K\delta$ of an amphibian animal (frog).

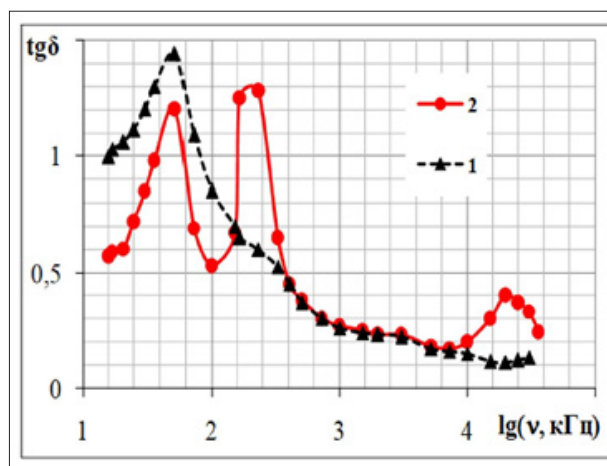


Figure 3: Effects of Stress on a Mouse

Curve 1 - Is the FREQUENCY Dependence of the Mouse $tg\delta$ at rest;

Curve 2 - Is The Frequency Dependence of the $tg\delta$ of the mouse under stress;

And the destruction of the highly structured and highly bound state of water with a very strong interaction with biomacromolecules inside human cells under the influence of adverse factors leads to a decrease in its ability to resist viral infections, an increase in the mutational ability of viruses and an acceleration of the process of reproduction of bacteria by their division inside his body.

The essence of this phenomenon is that with a highly structured and strongly bound state of water in the tissues of animals, the processes of regeneration in them are sharply slowed down, which causes the loss of the ability of higher animals to restore lost body parts, but at the same time this leads to a significant decrease in the ability of bacteria to multiply in their bodies, and viruses to mutate.

The dependence reflected in Figure 2 **indicates that the second factor is more important than the first**. Consequently, the immunity or immunity of human and animal organisms to infectious agents is determined not only by the response of the immune system to these agents, which is well known in biology and medicine, but also by intermolecular interactions within the host cells, which in turn are determined by the state of the water in these cells.

Professor L.P. Semikhina proposes to call this component of immunity "Biophysical immunity" [25].

The high importance of this part of immunity can be shown by the example of the **COVID-19** coronavirus pandemic. The essence of the phenomenon is that the biophysical and immune components of immunity have the opposite dependence on the age of a person.

While the immune component of immunity in a person is fully formed only by the age of 20, the biophysical part of immunity is mainly formed even before the birth of a child, in the mother's body, but its effectiveness gradually decreases with the age of a person under the influence of unfavorable factors (past diseases, stress, poor environmental conditions, etc.).

In this case, a lower percentage of "COVID-19" coronavirus incidence in children indicates that in the case of this disease, it is the **biophysical component of human immunity that is more important**. Indeed, by the end of 2021, the number of registered cases of the disease, according to Rosstat, was 10.5 million people, of which children accounted for 9.5% (570 thousand), and a significant part of the sick children suffered from the infection in a mild form or asymptomatic [26,27]. The reason is that this virus, which has passed from animals of a lower evolutionary level than humans, as a result, is able to penetrate only into cells with reduced intermolecular interactions, which prevail in the elderly. However, due to the deterioration of the environmental situation, the quality of nutrition and a sharp increase in the impact of all kinds of electromagnetic fields, especially microwave frequencies, in recent decades a process has been launched on Earth that contributes to a decrease in the biophysical component of immunity not only in the elderly, **but also in children born to mothers with a low level of immunity**.

Mankind has actually begun to move downward along the one presented in **Figure 2** evolutionary dependence.

In the case of water, the effect of weak electromagnetic fields (WEMF) of the device is carried out on ortho-modifications of its molecules (75% of such molecules in ordinary water) with parallel proton spins, providing a sharp increase in the degree of orientation of their magnetic moments along the No field. As a result, water enters a paramagnetic state with much stronger intermolecular interactions due to spin-spin interactions (one of the strongest physical interactions) between the proton spins of its molecules oriented along the Ngeo (\perp).

The extent to which an increase in post-exposure paramagnetism (WEMF) of the device is able to increase intermolecular interactions within the cells of living animals is demonstrated by the example of a live frog in **Figure 4**, which shows the frequency dependences $tg\delta$ of a live frog before (curve 1) and after the effect of the WEMF device (curve 2) on it, as well as of a live hamster (curve 3).

To prevent this process, while reducing the pathogenicity of various agents, especially those like the "COVID-19" coronavirus, it is necessary to restore a highly structured state of water in human tissues with a strong interaction with biomacromolecules, thereby increasing the level of the **biophysical component of immunity**.

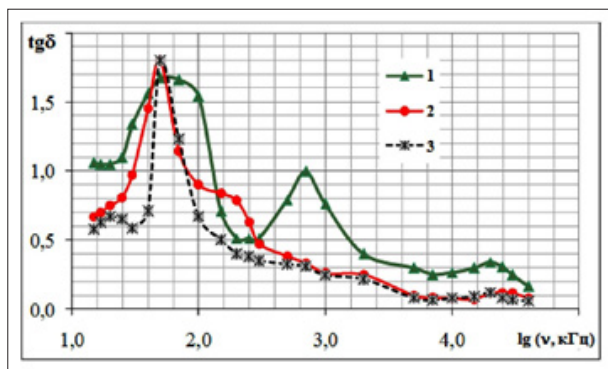


Figure 4: Influence of weak electromagnetic fields (WEMF) on the state of the frog's aquatic system

Curve1-Is the Frequency Dependence of The Frog at rest $tg\delta$;
Curve2- Is the Frequency Dependence of The Frog's $tg\delta$ after Exposure to WEMF;

Curve3-Is the Frequency Dependence of The Hamster's $tg\delta$ at rest.

The technical solution to this problem lies in the development of a device whose electromagnetic fields should be able to: a) restore the highly structured and highly bound state of water destroyed under the influence of adverse factors with a very strong interaction with biomacromolecules inside animal and human cells, thereby increasing their ability to resist various infections;b) to increase the efficiency of existing drugs and expand the range of their action. Such a technical solution to the problem posed allows the device (device) to be implemented, according to the patent of professor **L.P. Semikhina (PATENT RU 2742762 C1) [25]**.

As we can see, after exposure to the field, the state of water in the tissues of the frog turned out to be almost identical to its state in the tissues of a mammal, that is, an animal of a higher level of evolutionary development and with stronger intermolecular interactions in its cells.

In this case, the effect of WEMF with the help of a device developed by professor L.P. Semikhina should have a bactericidal, including antiviral effect, since it should help block the penetration of viruses into animal and human cells. The practical substantiation of «**Biophysical Immunity**» was vividly demonstrated by professor **L.P. Semikhina** on the model of mold suppression – pathogenic fungi (*Pseudomonas putida* – 36). At the same time, the bactericidal effect was extremely vivid, the concentration of microorganisms was reduced by 240 times, and their activity by 100,000 times [25].

The effectiveness of the therapeutic effect of the method and device (WEMS), and simultaneously on many sick birds, was tested and proven in the poultry farm workshop during an outbreak of a viral infection of unknown etiology (the length of the workshop is more than 100 m, the number of chickens is ~2000). This outbreak could not be suppressed for a month. The daily mortality of chickens reached 50 heads or more, despite the introduction of various drugs into their diet different SD.

After installing the device in this workshop, inside which a solution of antiviral drug was placed, which had previously been unsuccessfully tried to suppress the outbreak, the death of chickens due to infection stopped after 3 days.

Thus, the effect of SD was significantly enhanced [25]. Therefore, the developed device can be used to treat viral infections not only in humans, but also in animals, for example, bird and swine flu.

The results achieved using the device and method of professor **L.P. Semikhina** allow us to look to the future with optimism, since a method of combating any viral and bacterial infection, regardless of their strain affiliation, has been proposed. Preparing for the prevention and treatment of any viral infection will require health authorities in any country to have a sufficient number of such devices.

The ability to heal animals with the developed device was confirmed in the educational and experimental farm of the Tyumen Agricultural Academy on 20 one-month-old calves, which were fed with water for 2 months, which was treated with WEMF devices. The results of blood tests of this and a similar control group of calves, selected before and after the experiment, showed that the calves that took WEMF-treated water had an increase in the content of carotene, calcium, hemoglobin and erythrocytes in the blood, which indicates an increase in the resistance of their bodies. Veterinarians who

monitored the calves also noted the disappearance of pneumonia in them.

A significant therapeutic effect of the **WEMF** device was also noted in one of the calf barns, in which veterinarians could not cope with the death of calves due to the festering of their hooves, despite the use of **SD** and even amputation of the legs. After the calves were exposed to the **WEMF** device for 15 hours, inside which a solution of a previously used, but not effective antibiotic was placed, the mortality of calves ceased [25].

A significant problem is the potato bacillus – **Bacillus mesentericus** – a spore-bearing bacterium that infects flour, and, consequently, the bread baked from it. The following well-known drugs were used: a - pimaricin; b - nystatin; c - ampicillin; d - bisepitol; e - clonit. They turned out to be absolutely ineffective. However, the use of the same drugs in a similar test, but pre-treated for several hours with EMS devices, reveals drugs that can reduce the development of these bacteria many times over.

Thus, this experiment established that the **WEMF** effect of the developed device can not only significantly increase the effectiveness of existing drugs, but also expand the range of their action on pathogenic organisms [25]. Some methods of suppressing an outbreak of viral infection using **WEMF** were tested with a prototype of the proposed device during an outbreak of adenoviral conjunctivitis in Tyumen, in which the drugs recommended by doctors did not help, patients developed severe complications, and doctors who receive patients with this disease also fell ill. In, on the example of more than a hundred patients, it was shown that when using the prototype of the device of eye drops and ointments treated with **WEMF**, with which some patients were unsuccessfully treated for 1-2 weeks, a significant improvement in their condition was noted after 1-2 days, even in severe hemorrhagic conjunctivitis [28].

Cheap and affordable domestic drugs after treatment with the field became more effective than expensive imported drugs. The most significant therapeutic effect in the case of severe patients was achieved by the direct impact of the **WEMF** device on them. During the procedure (15-30 minutes), a weak solution of **SD** recommended by the doctor for the treatment of the patient's disease was injected into the device. This technique made it possible to eliminate all manifestations of even such a serious eye disease as keratitis in a few days and restore vision from 50% to 100%. And according to the monograph, the treatment of this eye disease can take more than a month, and vision is not completely restored [29].

Lesson Seven (7). The problem of rehabilitation of convalescents (convalescents). Since this is a long process that takes 18-24 months or more, the question arises, what to do, how to rehabilitate people?

Our experience shows that the use of the "**SYSTEM METHOD OF LEECHING**" (**SML**) is a safe and effective method of rehabilitation of convalescents. This topic is covered in detail in our earlier publication (**VI**).

Lesson Eight (8). In the medical world, the topic of suicide is usually associated with psychiatry. Prevention of suicidal behavior, which includes not only completed suicides, but also suicidal attempts and suicidal thoughts and intentions.

Suicidal intentions often remain hidden behind psychosomatic or affective complaints [30]. The topic of suicide in the culture of different countries, including Russia, is taboo: most people do not want to discuss it openly. This largely applies to doctors, among whom suicide cases are not so rare. The medical profession is associated with high levels of stress, which has become especially evident during the coronavirus pandemic. High workload is associated with emotional burnout, doctors are too well informed about the ways of dying and often witness the death of their patients. All this makes doctors a very vulnerable professional group: the suicide rate among doctors and medical workers is on average 1.5 times higher than among representatives of other professions [31].

On the other hand, a powerful anti-suicidal factor for doctors is the motive of serving and helping people, saving lives. The problem of suicide is much broader and more diverse than it appears in the analysis of mortality statistics, and in today's dynamically changing world with a high level of psychosocial stress, it is becoming more and more relevant.

Suicide is a complex and multifaceted phenomenon. Like any human phenomenon, suicide can be considered from various positions, in connection with which we can talk about a religious, philosophical, sociological, medical, evolutionary-genetic (ethological, psychological and psychosocial) approach [30].

In the context of the problem under discussion – the "**COVID-19**" coronavirus pandemic, or more precisely, the "**COVID-19-POSTCOVID SYNDROME**", we will consider possible biomarkers of suicide, especially in connection with technological progress in the field of molecular genetics.

The study of biomarkers of suicide is based on the assumption that suicidality is an evolutionarily formed form of human behavior [32]. Using the strategy of candidate genes, attempts were made to identify the role of genes of various brain systems (serotonergic, catecholamine, **GABA**, excitatory amino acids, etc.), as well as the stress response system (hypothalamic-pituitary-cortisol) in the pathogenesis of suicidal behavior. (The most convincing data were obtained in relation to brain serotonin, in particular, the tryptophan hydroxylase type 1 (**TRH1**) gene, the functional polymorphism of the serotonin transporter gene (**5-HTTLP**) and the monoamine oxidase gene (**MAOA**). These data are very useful for understanding the mechanism of depression relief in suicidal behavior, since, and our studies have shown the effect of medical leeches on the brain, with the involvement of all the above-mentioned systems in response to their impact – serotonergic, catecholamine system, **GABA** system, excitatory amino acid system [33].

In addition, genome-wide studies of suicidal behavior reveal other genes that are associated with the processes of cell differentiation, intercellular interaction, maintaining the stability of neuronal and glial structures, intracellular regulatory cascades, i.e. with the processes of development, formation and synaptic plasticity of the central nervous system [34]. And this most difficult problem is solved by the neurotrophic and **neuritstimulating components of leech secretion that we have discovered** [35]. For the first time, this fact was established by our research, and the components of leech secretion with these properties were identified in the laboratory of professor **I.P. Baskova**. They turned out to be **Destabilase-M, Bdelastazine, and Bdelin-B** [36].

Interestingly, there is a significant genetic correlation (overlap in genetic markers) between phenotypes such as suicide, attempted or suicidal thoughts, as well as bipolar disorder and schizophrenia [34]. One can only admire how our Russian zemstvo empiricist doctors in the 19th century relieved suicidal moods during the period of exacerbation in patients with schizophrenia and epilepsy, medical leeches.

Continuing the topic of genetic predisposition to suicide, we would like to note the analysis of various sources of information (more than 2,500 genes associated with suicide and 3,900 genes associated with mental disorders) and the identification of 40 genes presumably associated exclusively with suicidal behavior [37]. Among them, in addition to those mentioned, were genes related to the control of cell proliferation and DNA repair, as well as to the immune system [37].

We do not have data for Russia for the entire period of the coronavirus pandemic. There is a publication on the statistics of the Moscow Region (MR) on the report of the "Bureau of Forensic Medical Examination" in the period 2019-2020. The total number of suicides in 2020 increased by **5.8%** compared to 2019 [8] (2024 publication). The publication of 2022 speaks of 18 thousand (official data) deaths from suicide during the pandemic [30].

The preventive direction, traditionally strong in Russia, requires the unification of specialists of various profiles of systems and departments (culture, education, legal system, Ministry of Emergency Situations, Ministry of Internal Affairs). And, of course, the leading role should be taken by the health care system, taking into account the history of the use of medical leeches by zemstvo doctors as early as the 19th century, for the prevention of suicide [39].

Lesson Nine (9). Do not Vaccinate Pregnant Women!

This is evidenced by world experience. We considered this topic, which is tragic in many ways, using the example of stillbirth of children in women vaccinated against coronavirus during pregnancy. The tragedy is that without studying the properties of new vaccines against the "COVID-19" virus, doctors used vaccines in pregnant women. In addition, many materials have been proven and published on severe post-vaccination complications, including death or stillbirth in pregnant women who were vaccinated during pregnancy [40].

In the author's article (Krashenyuk A.I. "COVID-19" – "POSTCOVID SYNDROME" Pandemic: High Risks for Pregnant Women. Acta Scientific Medical Sciences 7.2 (2023): 71-82. (V) the topic is discussed at some length. To this we can only add that the use of the "System Method of Leech Therapy" (SML) (VI) made it possible to solve another important problem for pregnant women – the problem of miscarriage or "missed pregnancy". Today, in the "POSTCOVID ERA", this is becoming a global problem, which is based on the problem of connective tissue dysplasia.

Lesson Ten (10). Historical and Political.

This lesson did not arise by chance. This is evidenced by my personal and almost mystical experience.

At the request of the editors of the magazine "Newsweek" in 2002, I was approached by a journalist of this publication, Eve Conant, with a request to write an article for the magazine "The Current

State of Hirudotherapy in Russia". The editors decided to dedicate this issue to the topic: "**The Science of Alternative Medicine**".

I found this project interesting, since the magazine is sold in many countries of the world and I wanted to tell readers about the study of leeches and their use in Russia. An article was prepared in A4 format on 4 pages. The article talked about the discovery of neurotrophic factors, wave emission and other new, previously unknown to science facts about leeches and leech treatment. The treatment of many diseases of the human nervous system, **including Alzheimer's disease, is also mentioned.**

After the publication of the magazine, only one sentence remained of my article.

I quote it verbatim: "**Americans use synthetic hirudins, a major component of leech secretions, for thrombosis of tissue repair**", says **Dr. Albert Krashenyuk, President of St.-Petersburg's Hirudology Association. "But the most effective – and cheapest – thing to do is to use a real leech"**.

In fact, my phrase was edited incorrectly. It sounded like this: "**Never will the synthetic components of the leech secretion replace all the therapeutic power of the leech.**" I was referring to both the leech wave effect (it was discovered in 2001) and the discovery of the neurotrophic effect, which allows us to consider leech therapy as "**High Technology**".

Later, I learned that in the United States, **US President Ronald Reagan** and his wife **Nancy** died a slow death from Alzheimer's disease. Probably, the editors of **Newsweek** magazine considered my report about the possibility of improving the condition of patients with Alzheimer's disease untimely for the United States and its former leader [40]. But the "**Presidential theme**" did not end there. It was mysteriously continued 18 years later - this is a letter of thanks from the 45th **President of the United States Donald John Trump** for the advisory assistance provided to him.

The history of writing is as follows... Autumn 2020. The "**COVID-19**" virus pandemic is raging on the planet. One of the most affected countries is the United States. In the political culture of the United States, it is customary to speak openly, without hiding, about the problem that is called the "**Presidential theme**". And on the Internet, there is a message about the President's illness caused by the coronavirus and about the President's treatment method, including treatment with monoclonal antibodies.

At this time, my American patient **Susana Bowen** sends me a letter of thanks for helping me heal from coronavirus pneumonia with leech therapy using my technology. In my polite response and gratitude for the warm letter, he pointed out that from my point of view (doctor, virologist), the President is not treated effectively enough. And this letter of mine is sent by **Susana Bowen** to the President's wife, **Melania Trump**. The answer was not long in coming, and on October 19, 2020 I received a letter of thanks from the 45th President of the United States, **Donald John Trump**, for the advisory assistance provided to him (**Appendices: Figures 5-7**).

I think that the high level of stress resistance of the now 47th elected President of the United States is also related to the topic of leech therapy. To show so much courage during the election campaign, having survived 3 attempts on life, can only be a person with a **high level of stress resistance in our turbulent world.**



Figure 5: Cover of the magazine (“NEWSWEEK”, DECEMBER 2, 2002), in which the editors planned to publish an interview with the author of this publication. But the publication was “cut” for political reasons. (Journal from the author’s archive).

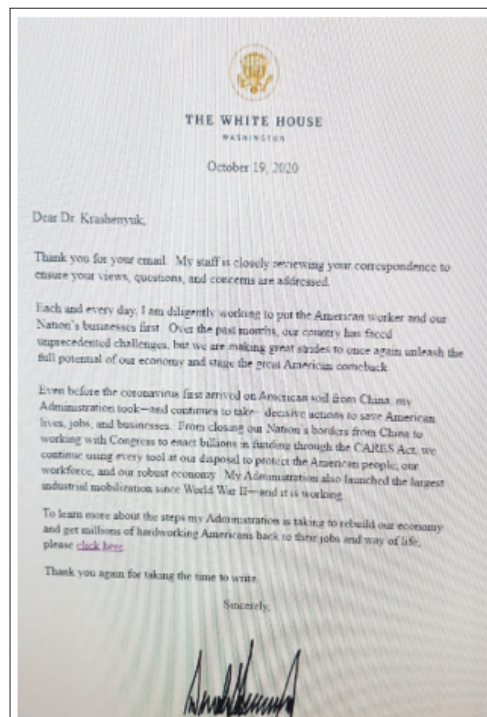


Figure 7: Letter of thanks from the 45th President of the United States Donald John Trump to Professor Albert Ivanovich Krashenyuk for advice in connection with the coronavirus disease “COVID-19”.



Figure 6: On page 51, of the author’s article on four pages of text, which discussed the possibility of treating Alzheimer’s disease, only one phrase remains: “Americans use synthetic hirudins, a major component of leech secretions, for thrombosis of tissue repair.” President Ronald Reagan died in 2004 of Alzheimer’s disease.

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