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# On the possible causal relationship of the COVID-19 viral disease with electromagnetic pollution of the environment and the main directions of its weakening

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**Abstract.** The purpose of the study is a systematic analysis of the processes associated with the emergence of the COVID-19 viral disease, it was concluded that the most likely reason for its appearance and spread throughout the world is the global impact of wireless local area networks Wi-Fi on the Earth's biosphere. Recommendations are formulated for weakening their negative impact on the human body. The necessity of using in the treatment of human diseases of viral and (or) inflammatory etiology of radiophysical technology based on modeling the microwave radiation of the Sun is substantiated. This makes it possible to activate inhibited enzyme complexes for the restoration of the free energy potential in cellular structures under hypoxic conditions, which is necessary for the synthesis of biostructures not only for antiviral, but also for antibacterial protection, regardless of the virus strain or one or another pathogenic microorganism. The proofs of the expediency of using the developed hardware and software tools for modeling the solar microwave radiation to provide antiviral protection are presented. Their main focus is related to the control of the radiation of these networks in various places of their use, the formation of new regulatory requirements for the used operating frequency range and the development of scientifically based recommendations for ensuring the safety of their use.

## 1. Introduction

The events of the end of 2019 and all of 2020, associated with the emergence of a new viral disease COVID-19 from the beginning in China, and then in almost all countries of the world, showed the unpreparedness of government agencies and the global health system to adequately respond to it. The lack of a vaccine against the SARS-CoV-2 coronavirus, recognized by the World Health Organization (WHO) and other effective means of countering it, has led to decisions by the governments of a number of states, unprecedented in modern history, to prevent the spread of this virus among the population. In particular, the borders of states are being closed; movement of the population across territories is limited; a ban is introduced on holding various kinds of mass events; there is a transition to distance learning in schools, secondary and higher educational institutions, and much more.



Despite the scale of the ongoing measures to protect against coronavirus, one cannot fail to note their paradoxicality. And it consists in the fact that the main reason for such a sharp increase in viral activity is still not clear. It can in no way be associated with the previously known causes of pandemics in the past: low level of sanitary and epidemiological measures, increased solar activity, catastrophic phenomena in nature in the form of vast regions subjected to droughts, floods, etc. There are no such reasons at present. But this means that there is another reason, and it, most likely, is associated with modern features of human life, which have a negative impact on his ability to effectively resist the new strain of coronavirus. Ignorance of the reasons for the increase in viral activity makes the prospects for the development of the human population "vague" even in the near future. Now there is no certainty that "tomorrow" there will not be another coronavirus that infects humans. It should be noted that several dozen of its strains are currently circulating in the wild. And in this regard, no one can guarantee that a particular strain of coronavirus, for a reason that is still unknown, will not overcome the interspecific barrier from wildlife to humans.

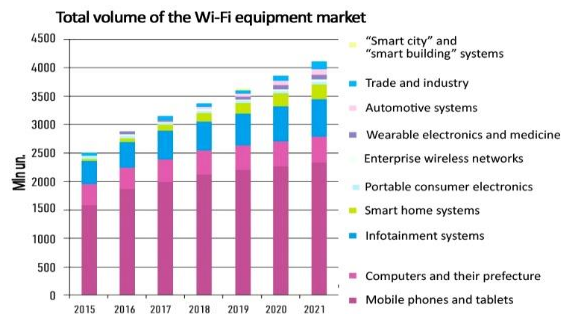
All of the above makes it relevant to conduct a study, the purpose of which is to determine the most likely cause of global activity in the world of the corona virus SARS-CoV-2 and to justify, on its basis, the need for organizational and medical-technical measures to reduce it. Evaluation of the effectiveness of these measures can become the basis not only for the prevention of the appearance of new types of coronaviruses in the human population, but also for decisions taken to weaken their negative impact on the human body at the present time and in the future.

## **2. Possible causal relationship of the COVID-19 viral disease with electromagnetic pollution of the environment**

Most human coronaviruses, such as acute respiratory illness (ARVI), cause mild symptoms of colds or gastroenteritis ("food poisoning"). However, since 2002, the clinical situation with the coronavirus has changed dramatically. And this is due to the emergence of severe acute respiratory syndrome (SARS), which is accompanied by rapidly developing pneumonia, respiratory and renal failure. Then, in 2015, there was an outbreak of Middle East Respiratory Syndrome (MERS). Finally, in 2019, the new coronavirus SARS-CoV-2 emerged. The clinic of the above-mentioned coronavirus infections is somewhat similar to the extremely severe variant of ARVI. But there are also their previously unknown manifestations.

Another problem of recent decades is associated with the growing electromagnetic pollution of the environment and its negative impact on the human body. Recently, a significant contribution to the electromagnetic pollution of the environment has been made by the wireless local area network technology with devices based on IEEE 802.11 standards, called: "Wi-Fi technology" [1]. Sources of electromagnetic pollution of the environment are base stations with radiation power of transmitting devices from 10 W, located in the territories. In home and office environments, this technology provides for the use of transmitting devices with a power of 100 mW - in the frequency range 2.40-2.48 GHz and 200 mW - in the frequency range 5.15-5.35 GHz and 5.65-5.85 GHz.

It's hard to imagine a world without Wi-Fi today. Almost all electronics have Wi-Fi modules, for example, monoblocks, phones, cameras, TVs, etc. In the modern world, Wi-Fi technologies are developing very rapidly (figure 1) [2]. The prospect of digitalization of many aspects of the life of the state and society as a whole is directly related to their application.



**Figure 1.** The total volume of the world market for Wi-Fi equipment.

But, unfortunately, there is also a negative side of the active introduction of wireless local area networks into human life. And it is associated with the growing level of electromagnetic pollution of the environment and its negative impact on objects of wildlife and humans, in particular. There is a change in the main parameters of electromagnetic pollution: an expansion of the frequency range, an increase in the intensity of electromagnetic radiation, especially in places of compact residence of the population, etc.

In this regard, one cannot but pay attention to the fact that the increase in viral activity occurred during the period of active introduction of Wi-Fi technology, i.e., from the beginning of 2000 to the present. If such a pattern takes place, then Wi-Fi technology, despite all the assurances of the manufacturers of its equipment about its safety for humans, should be considered as a possible reason for the growth in the human population of diseases associated with the new coronavirus.

The mechanism of such a connection between the new viral disease and Wi-Fi technology is not yet clear. At the same time, it is necessary to pay attention to the features of this technology. First of all, this concerns the new operating frequency range 5.15-5.35 GHz and 5.65-5.85 GHz Wi-Fi technology [1]. It began to partially coincide with the most significant for organism's frequency range of 3.0-30.0 GHz from the spectrum of the solar microwave radiation reaching the Earth's surface [3]. Microwave radiation of the Sun in the specified frequency range throughout the evolution of organisms played a controlling role in maintaining their homeostasis [3].

The use of sources of technogenic radiation in this frequency range leads to a decrease in the control role for organisms of this natural electromagnetic factor. This radiation becomes a masking interference, suppressing the possibility of "receiving" by the body of microwave radiation from the Sun in the specified frequency range.

Another feature of Wi-Fi technology is the high density of coverage of territories around the world and specific territories, in particular. With the massive need for the use of remote access in many areas of human activity, as well as for distance learning in schools and higher educational institutions, the demand for equipment for wireless local area networks has increased significantly. The use of these networks practically in a round-the-clock mode of their operation cannot but negatively affect the human body even with a low power of electromagnetic radiation of the routers used.

The topic of electromagnetic pollution of the environment has become especially relevant since the globalization of mobile communication systems, satellite navigation systems and wireless local area networks [4]. The results of experimental studies to assess the harm used in these systems of electromagnetic radiation on organisms and humans, in particular, are contradictory [5]. A brief summary of most of these studies can be reflected in one phrase: there is an influence of man-made electromagnetic radiation on organisms, but they do not bring any significant harm to them.

We can agree with this statement when it comes to the impact of these radiation on the body of a healthy person. But in relation to a person with certain chronic diseases or children, such a conclusion is rather negative. There are no relevant studies on this score. At the same time, it was reliably established in experiments that these radiations negatively affect the life process of small mammals [6] and birds [7]. In living nature, this situation is typical for territories adjacent to settlements with a developed system of local wireless networks. This means that representatives of the fauna and flora of these territories will also be under the influence of man-made radiation. Violation of the natural

mechanisms of regulation in wild organisms leading a herd lifestyle, under the influence of radiation from wireless local networks, can lead to the emergence of foci of various types of infections of bacterial and viral etiology. Moreover, the general mechanism of changes in such organisms and in humans under the influence of technogenic radiation may underlie the susceptibility of the latter to the same virus strain circulating in nature. In our case, this is the SARS-CoV-2 coronavirus. In this regard, the fact that the spread of coronavirus in China began with bats in the vicinity of Wuhan, with which the person was in contact, should be considered not accidental.

You should also pay attention to the processes taking place in recent decades associated with the enhancement of the resistant properties of microorganisms. Treatment of human inflammatory diseases with antibiotics does not always lead to a positive result. Microorganisms, causative agents of inflammation in the human body, began to show resistance to antibiotics, which several decades ago were successfully used in the treatment of a wide range of inflammatory diseases in humans. The mechanism for enhancing the resistant properties of bacterial microflora is generally known and associated with their intensive formation of biofilms. At the same time, the reason for the enhancement of these properties of microorganisms is still not clear. A number of scientists substantiate this increase with the increased influence on organisms of electromagnetic pollution of the environment [3]. If this statement does not find objection, then both the increase in viral activity and the problems of treating viral diseases can also be associated with man-made radiation, which over the past twenty years have acquired a global impact on wildlife.

### **3. The main directions of weakening the impact on the human body of wireless local area networks**

Based on the foregoing, the following organizational measures can be distinguished, aimed at weakening the effect of wireless local area networks on the human body:

- Create a monitoring system to assess the real radiation intensity of transmitting devices in places not only densely populated by the population, but also in areas adjacent to settlements. Currently, such control is not provided.
- It is necessary to intensify scientific research aimed at identifying the reasons for the activation of viral infection and the development of technologies to mitigate the negative impact on the body of electromagnetic radiation from wireless networks. Currently, research is relevant not to protect against electromagnetic radiation, but to counter it. Such research is extremely important for people with various types of chronic diseases.
- To exclude the interference of the most significant for organism's natural microwave radiation of the Sun reaching the Earth's surface, introduce a ban on the use of the wavelength range from 1 cm to 10 cm by global technologies of wireless communication nature.
- Until the main reason for the increase in coronavirus infection is clarified, limit the use of Wi-Fi technology in crowded places as much as possible: public transport, industrial premises, schools, child care facilities, hospitals, office premises, etc. Pay more attention to the use of wired local networks. Implementation of the recommendations to reduce the working time, especially for children, in wireless local area networks is an important preventive measure to weaken their negative impact on the human body.

### **4. On the technology of counteracting electromagnetic pollution of the environment - a potential basis for the prevention and treatment of human viral diseases**

The general mechanism for enhancing the resistant properties of bacterial microflora and viral activity is associated with hypoxic phenomena in the human body. They are mainly due to unfavorable environmental factors of the life of organisms. Very indicative is only one fact, which was reported by the Meteonovosti portal [8]: the sun in Moscow during the winter (2019-2020) shone only 72 hours. With a seasonal norm of 123 hours of sunshine, residents of the capital received only 59% of the norm. Deficiency of "solar" vitamin D is directly related to a decrease in the effectiveness of the body's antioxidant defense, leading to an increase in hypoxic manifestations in the body.

Recent events have shown that electromagnetic pollution of the environment has also begun to play an important role in this. Changes in bacterial and viral activity are especially important for people with various types of chronic diseases. Substitution of anaerobic energy exchange in cellular structures underlies the inactivation of their enzymatic complexes. This leads to an untimely immune response (cellular, humoral) when inflammation occurs. Under the same conditions, when the virus enters the human body, antiviral protection is also not effective for the timely formation of intracellular interferon to block the multiplication of the virus and extracellular, mainly, immunoglobulin M for its destruction.

The practice of treating the Covid-19 viral disease in the absence of a vaccine has shown low effectiveness of the treatment carried out with the help of well-known medications. Recommendations for the use of a particular drug are constantly changing. The most recommended treatment procedures are associated with the abundant use of water, the use of antipyretic and analgesic medications, if necessary. With this approach to the treatment of the Covid-19 viral disease, a favorable outcome (without complications) is inherent only in organisms with a high potential for free energy, which ensures a timely immune response to a viral "attack". Formed after a disease in the body, antibodies in the form of immunoglobulin G corresponding to the virus make it possible for a certain period of time to protect the body from repeated disease by it.

But there are often cases when the human body cannot independently cope with the negative manifestations of the virus in cellular structures. Necrosis of the cells affected by the virus causes inflammation. The success of treatment with this development of events depends on the effectiveness of the antibiotics taken. And if antibiotics are ineffective in the fight against inflammation, then death for the patient is almost inevitable.

Based on the foregoing, it follows that technologies are needed that are comparable in their effectiveness not only to the result of using a vaccine that allows the formation of appropriate antibodies in the body, but also to reduce the resistance of microorganisms to antibiotics in the process of treating inflammation in the body. Moreover, these technologies should weaken the negative impact on organisms of electromagnetic pollution of the environment.

One of these technologies is associated with the medical use of a device for simulating the solar microwave radiation reaching the Earth's surface [9]. Its application makes it possible to restore in the body in conditions of electromagnetic pollution of the environment the natural mechanisms of regulation, which underlie the evolution of living nature. The developed device (figure 2), protected by the RF patent under the name: "Device for reducing the resistant properties of microorganisms" [10], implements the known knowledge about the structure of low-frequency variations, the parameters of amplitude pulsations and the type of polarization of the solar microwave radiation in the frequency range 4.0–4.3 GHz with a maximum intensity not exceeding  $100 \mu\text{W} / \text{cm}^2$ . This device makes it possible to simulate bursts of solar microwave radiation in the range of values from several seconds to tens of minutes, both with linear and chaotic polarization. The amplitude spectrum of such radiation can vary in width, shape, and intensity.



**Figure 2.** Device for simulating solar microwave radiation (AIMT-1) in the frequency range (4.0–4.3) GHz.

The corrective effect of using the developed device is based on the "radio vibration" effect [11], based on the excitation of elastic vibrations in the cellular structures of the body upon absorption of microwave radiation. Such oscillations, entering into resonance with the natural oscillations of the molecular structures of the cell, will contribute to the "breaking" of weak bonds of enzymes with their non-functional inhibitors and, as a consequence, provide the necessary activity of enzymes in order to increase the efficiency of the synthesis of ATP and other biostructures for the formation of the necessary antiviral defense to counteract development of negative processes in the human body.

Verification of the developed device during microbiological, biological and clinical studies gives grounds to draw the following conclusions:

- Experimental studies using the developed device prove that the change in biophysical and biochemical properties of opportunistic microflora under the influence of microwave radiation generated by the device helps to reduce the resistance of microorganisms to antimicrobial drugs [12].
- Application of the developed device for various kinds of disorders of homeostatic functions of the body promotes disaggregation of erythrocytes, accelerated restoration of oxygen transport function of blood, aerobic energy exchange, protective functions in peritoneal cells of the monocytic and neutrophilic series [13, 14].
- Physiotherapy [15-19], based on the use of hardware simulating the solar microwave radiation in the frequency range 4.0 ... 4.3 GHz with a power flux density not exceeding 100  $\mu\text{W} / \text{cm}^2$ , is not associated with the phase of the disease. The effectiveness of microwave therapy is the higher, the earlier it is included in the treatment of the disease. It is reliably manifested in a decrease in the activity of inflammation, a (30-40) % reduction in drug consumption and an accelerated (by a quarter) normalization of homeostatic functions.

Summarizing the results of the studies and on the basis of the above, it is possible to make a prediction about the possibility of effective use of the simulated low-intensity microwave radiation of the Sun in the frequency range 4.0 ... 4.3 GHz as antiviral protection when the body is infected with one or another virus.

## 5. Conclusion

The temporal consistency of the processes of globalization of the use of wireless local area network Wi-Fi and the amplification of viral activity around the world gives reason to assert with a high probability that the new viral disease Covid-19 is directly related to electromagnetic pollution of the environment, the main source of which is radiation from wireless LAN transmitting devices networks.

The conclusion about the possible causal relationship of the Covid-19 viral disease with the massive spread of wireless local area network Wi-Fi technology underlies the feasibility of developing and carrying out appropriate organizational measures to mitigate the negative impact on organisms of electromagnetic pollution of the environment with modern wireless local area networks. Their main focus is related to the control of the radiation of these networks in various places of their use, the formation of new regulatory requirements for the used operating frequency range and the development of scientifically based recommendations to ensure the safety of their use.

Another important point discussed in the article is that medical technologies are needed to treat viral and inflammatory diseases, taking into account the modern real factor of changing the properties of the environment - this is its electromagnetic pollution. As practice shows, it is becoming more and more difficult to solve the problem of restoring disturbed homeostasis with drugs alone. This determines the advisability of using radiophysical nature-like technologies for the prevention and treatment of human diseases on the basis of autonomous or in combination with drugs, developed hardware and software tools for simulating the solar microwave radiation reaching the Earth's surface.

A new approach to the treatment of viral and inflammatory human diseases requires medical science to understand that the real possibilities of medical methods of treating human diseases have reached potential limits. It is necessary to actively introduce into medical practice nature-like technologies that implement evolutionarily significant regulatory mechanisms for organisms [20].

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