

About help from physicists in fighting sars-cov-19 and its mutations

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Abstract

Annotation: Currently, the SARS-CoV-19 (COVID-19) coronavirus pandemic is the main threat to all of humanity. This threat is constantly growing as new and more aggressive mutations emerge. The main ways of fighting viruses are currently recognized: vaccination, disinfection, quartzization and isolation. However, they all have their own advantages and disadvantages. The analysis of these shortcomings and the search for ways to eliminate them is an important and urgent task, which is the main goal of the work performed.

Methods: a critical analysis of the emerging problems of traditional ways and methods of biophysical impact on viruses. Scientific novelty lies in the rationale for a new biophysical way to combat COVID-19 and in setting the tasks that are required to be solved.

Results of work: Vaccination is considered to be the most effective method of combating COVID-19. However, it has weakened, but not prevented, the spread of viruses, as it acts in pursuit of its new mutations. This leads to local periods of lack of immune protection, in which the only way is used - the introduction of restrictions on the lifestyle and activities of people, up to rigid isolation. Other traditional ways to combat COVID-19 involve disinfection and quartzing. However, the entry of an infected person into this area after they have been carried out nullifies their results and leads to the need for new disinfection. Therefore, all traditional methods are limited by the time and conditions of their implementation and the duration of effective action, and most importantly, they require a large investment of time, intellectual, technical, economic and labor resources to achieve the desired result (especially the creation of vaccines). Since all of them did not solve the problem of eliminating the pandemic and destroying viruses, but only slowed down their spread, it is proposed to discuss another way - their destruction by the method of resonant oscillations (vibrations) created by electromagnetic fields from external sources. On the basis of this, the 1st task was formulated for further work: search for the resonant frequency range destroying viruses, and the 2nd task the search for the frequency range that activates the virus, in order to exclude its appearance in the development of new electronic systems and technical devices. The need for a fundamental solution to these problems at the level of state and non-state health organizations with the wide involvement of physicists and biophysicists is brought up for discussion by the scientific community of all countries of the world. Such a path could create the basis for their quick and effective solution.

Keywords: External Physical Fields and Energies Affecting Viruses, Destruction of Viruses by Resonant Vibrations.

Introduction

The work relates to the spheres of biophysics and virology, in particular to the effect of physical external induced fields on bacteria and viruses.

The SARS-CoV-19 coronavirus (hereinafter COVID-19) pandemic poses a threat to all of mankind, and this threat is currently constantly growing. Recently, many mutations of the virus have appeared that are more aggressive and harmful than its original strains. At the same

time, they are constantly and very quickly updated [1,2].

There are currently 4 recognized main ways to fight viruses: vaccination, disinfection, quartzization and isolation (lockdown). However, they all have their advantages and disadvantages and do not provide 100% success in this fight.

Therefore, increasing the effectiveness of the fight against COVID-19 concerns every caring person and scientist who is able to contribute

to this fight. The physicists of the world must not remain aloof from this struggle [3]. Any possible variant of this fight, including that proposed in this work, is worth careful consideration and detailed analysis of all its capabilities.

The analysis of these shortcomings and the search for ways to eliminate them is an important and urgent task, which is the main goal of the work performed.

The initial research methods are: a critical analysis of the emerging problems of traditional ways and methods of physical and biophysical impact on viruses. Scientific novelty lies in the rationale for a new way to combat COVID-19 and in setting the tasks that are required to solve them.

Results of work: The analysis showed that vaccination is recognized as the main way to combat COVID-19 [3]. However, he does not solve all problems. It can provide individual protection for a person, but it does not allow the virus to be destroyed in the environment, even with the development of herd immunity in $\frac{2}{3}$ of the world's population (about 4...5 billion people). Already for the 1st and 2nd dose vaccination, 11 billion doses vaccine [4] (this is a huge number of 14 characters: 11,000,000,000) are needed, which must be evenly performed all over the world in the shortest possible time, which is not yet in reality. As of the end of August 2021, about 5 billion vaccinations were made and about 2 billion people were vaccinated.

Besides, immunity has a limited effective period, which requires re-vaccination. To improve reliability, is supposed to vaccinate with the 3rd dose [5] (it's another 5,500,000,000 doses of the vaccine). However third vaccine dose may boost antibody quantity, but not his quality to combat new strains [6]. The International Health Organization asks not to do the 3rd vaccination for an even distribution of vaccines in the world.

Besides, immunity has a limited duration, which requires re-vaccination. New mutations of viruses also require new vaccinations. The problem is compounded by the emergence of new, more aggressive and harmful strains. Therefore, constant development of new vaccines is required, which is mainly of carried out in the catching up, with new strains in the get ahead of them. This leads to local periods of lack of immune protection in people, the fight against which is possible only by introducing restrictions that are unfavorable both for residents and for the economy of all countries of the world. Even a country like the People's Republic of China, which has made great strides in the fight against COVID-19, had to introduce lockdown when new strains of viruses emerged [7].

This process "catching up" becomes endless and requires the involvement of new intellectual, labor and material and technical resources, which are diverted from other important areas of the development of human life and activities.

Each new wave of coronavirus mutation is "cooler" than the previous one, which carries additional dangers.

For example, "Delta" virus is more aggressive [8]:

1. Infects 1.5 more often.
2. Dangerous not only for the elderly, but also for the young.
3. Develops faster to threatening phases its 2 ... 3 days.

4. More often requires the use of artificial ventilation and treatment in intensive care.
5. It his more difficult to treat, requires new treatment regimens.
6. Leads to higher mortality.

New mutations are even more aggressive. The list of mutations is constantly growing, the aggressiveness and speed of the spread of viruses is increasing, which constitutes a constant potential threat of losing control over the development of the situation. Delta plus variant also known as AY.1- spreads more easily, binds more easily to lung cells and is potentially resistant to monoclonal antibody therapy, a potent intravenous infusion of antibodies to neutralization the virus [8]. The Epsilon mutation lead to the destruction of antibodies to COVID-19 already formed in humans [9] and poses a threat to the emergence of the 4th pandemic wave. The Lambda variant of the coronavirus, first identified in Peru and now spreading in South America, is highly infectious and more resistant to vaccines than the original version of the virus the emerged from Wuhan, China.

Other Disadvantages of Vaccination

1. Each of these doses vaccine must be of worked out and delivered without violating storage conditions and then vaccinated by medical personnel, which requires a lot of costs money and labor.
2. The duration of effective action of vaccines is limited to 1- $\frac{1}{2}$ years, so they need to be repeated with the same expenditures of time, money and labor of medicals (Figure 1) [9].
3. The body of each person is individual in the production of antibodies, its will manifest itself after the 3-4th vaccinations, therefore, some people may have a "cytokine storm" [10], which will complicate the appointment of vaccinations and lead in increase in hospitalizations and an increase in mortality.



Figure 1: The time period after which the effectiveness of the COVID-19 vaccines decreases: Johnson & Johnson is 8 months, CoronaVac is 6 months, Pfizer is 4-6 months, Moderna is 3 months, AstraZeneca is 2-3 months. <https://www.slovoidilo.ua/2021/07/30/infografika/suspilstvo/vakcynacziya-covid-19-yak-dovho-zberihayetsya-imunitet>

The number of cases of the manifestation of a "cytokine storm" can be much higher than the number of cases of COVID-19. Because pharmaceutical companies are aware of the potential for a "cytokine storm", they have prepared ahead of time to release billions of doses of drugs. However, in addition to the hospitalization and the availability of beds, there is a problem of timely identification of patients and their treatment.

An important negative role is played by the reluctance (fear) of a part of the population to be vaccinated. Therefore, modern methods

of dealing with this problem provide for explanatory work and restrictions for the unvaccinated in the freedom to visit places of work, study and rest, as well as the possibility of movement between regions and countries. At the same time, violations of human rights and freedoms are prohibited by the international community. However, they give way to people's right to be protected from COVID-19 infection. Therefore, vaccination cannot be avoided by everyone who wants to work and communicate with people not remotely. Thus, vaccination is required not only to maintain health, but also in order not to become an outcast in the social environment of society. The sooner people understand this, the sooner the victory over COVID-19 is possible. It is unlikely that it will be possible to sit out "in the bushes" in the hope that collective immunity will be developed without personal participation all people. The risk of infection, especially with new COVID-19 mutations, is too great.

However, the hope that herd immunity will eliminate the soil for the emergence and development of new viruses is still dubious. Considering that the effectiveness of vaccination drops sharply [11], this requires a new vaccination for those who were vaccinated more than six months ago, so the simultaneous achievement of herd immunity in 70% of the population becomes a big problem.

Therefore, reusable vaccinations in the next 2-3 years and the threat of a cytokine storm can be an unfavorable reality and COVID will exist and manifest itself like the flu, which also brings many deaths. Hence, it is necessary to search for new more effective ways. At the same time, disinfection with chemicals and ultraviolet light cannot be in this way. They can destroy viruses, but they also have their drawbacks and limitations in their application.

For example Disinfection with ultraviolet light (quartzing) kills everything of total cells. Including cells of our body have damage. Therefore, at the time of its holding, everyone must leave the premises. Including the person, with is carrier of COVID-19 viruses.

When he returns to this room, quartzing will be useless.

A similar problem arises when using chemical disinfection. In addition, it requires not only equipment, but also specially trained personnel.

An effective, but most unfavorable method of struggle is the use of quarantine and isolation, due to the psychological consequences for people and the decline of the economies of countries. Therefore, the protest movement along this path is growing in all countries of the world, which can only be suppressed by tough measures that are unacceptable in countries with developed democracies.

The analysis shows that virologists and doctors will not be able to solve all the problems before 3-5 years. The success with smallpox and other viruses is due to the fact that the vaccines for them were of long-term effectiveness. Hence, it is necessary to search for new more effective ways, which is an important and urgent scientific and practical task posed in this work.

Biophysical methods are accepted as basic. One of them is the virulent effect of physical fields on the life and activity of viruses.

It is based on the phenomenon of resonance, leading to an abrupt increase in the amplitude A of forced vibrations of a system, when the frequency ω of the external influence of vibrations on them approaches any of their natural vibrations ω_0 [12]. The phenomenon of resonance is widely used in engineering for the mechanical destruction of materials and structures created from them [12].

The possibility of a vibrational resonance effect on bacteria and viruses was substantiated at the beginning of the 20th century by scientists Alexander Gurvich (Russia) [13] and Royal Rife (USA) [14]. These works are considered controversial, but the personal experience of the author presented in [15] gave a positive result, which was confirmed by many other researchers.

The presence of vibrations and the possibility of their perception are characteristic at the cellular level for biological organisms, and at deeper levels of material world: molecular, atomic and that of elementary particles. These levels are characterized by the dualism of states in which their substance and wave (field) properties are manifested.

The totality of the above data indicates the need to take into account and study physical fields in all material objects of the macro, micro, and nanoworld, to which COVID-19 belongs. Therefore, physicists of the world engaged in research in these areas should provide their assistance in the fight against coronavirus.

The method proposed in this work is associated with the identification of the frequency range (wavelengths) of induced vibrations at which the resonance of the COVID-19 viruses occurs.

The initial parameter can be the diameter of these viruses $d = 80 \dots 120 \text{ nm}$ [16]. The resonant wavelength λ of the induced electromagnetic fields must be comparable or multiple of these dimensions. Therefore, the assumed range of vibrations will be the value of the frequency ν , which is determined by the dependence:

$$\nu = \frac{c}{\lambda} = \frac{0.3 \cdot 10^9 \left(\frac{m}{s}\right)}{80 \dots 120 \cdot 10^{-9} (m)} = 3.75 \dots 2.5 \cdot 10^{15} (s^{-1}),$$

It should be noted that viruses are destroyed by ultraviolet with a wavelength of less than 280 nm [17]. This corresponds to the level of the indicated sizes of viruses and the resulting vibrations (1), since ultraviolet waves have vibrations in a similar range. In fact, the size of COVID-19 viruses (and many other viruses) is commensurate with half the wavelength of this radiation.

However, this range of vibrations is typical for monolithic objects, and viruses and bacteria are physic-biological objects that have their own range of vibrations for life. Researchers from the Massachusetts Institute of Technology [18] have found that the virus envelope quickly degrades at frequencies of 25 and 50 MHz (25...50·106 Hz), both in water and air. Studies of the structure of the COVID-19 virus (Figure 2) showed that its shell is thin and hard enough to be exposed to vibrations and the possibility of resonant destruction arose. Swinging "thorns" during vibration causes stresses and cracks and breaks of the shell at the root of the "thorn".

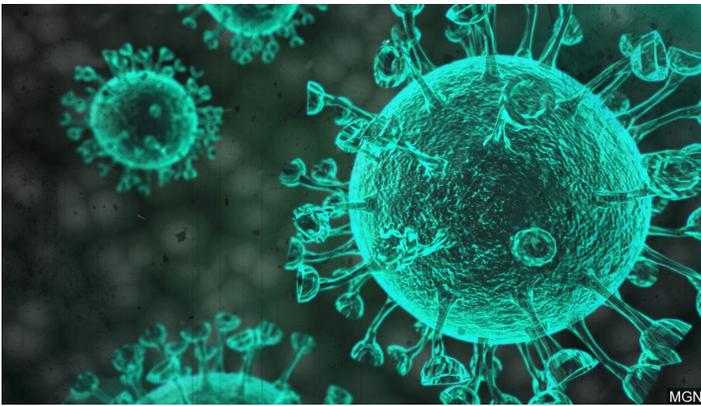


Figure 2: General view of COVID-19 viruses. https://www.google.com.ua/search?q=covid-19+pictures&sxsrf=ALeKk00IazCDA6d39ZGgQ0Vo3opgPxdEnQ:1629444125112&tbm=isch&source=iu&ictx=1&fir=12MGY7PbUTly4M%252CJmWOKheb66NVdM%252C_&vet=1&usg=AI4_kQ1Wpk4iv1dGyyF0Y_Tkco9_JF2jQ&sa=X&ved=2ahUKewjOm4iyiL_yAhWoAxAIHSEPD0EQ9QF6BAgeEAE&biw=1084&bih=561#imgrc=qvS7KdrcaCSiJM

An example of such an effect on *Euglena Veridic* in water is shown in Figure 3, its destruction occurs at the weakest point food input and output.

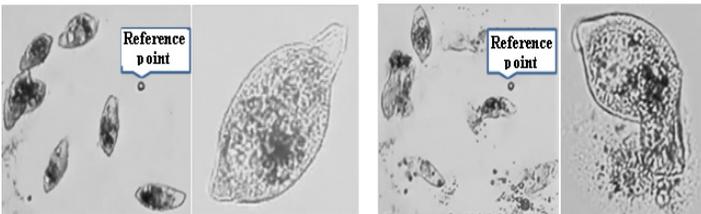


Figure 3: The state of microorganisms before (a) and after (b) exposure to induced fields with a frequency of 1.15 kHz (photo provided by DETA-ELIS “DeVita” holding www.deta-elis.ru).

A peculiarity of these processes is that for other microorganisms, with their natural vibration frequency not coinciding with the induced one, the phenomenon of resonance and other harmful effects and consequences do arise is not.

Within the framework of the data presented, there is reason to believe that external (induced) physical fields will have a selective resonant effect on COVID-19 and other viruses.

Therefore, the next goal of the work performed [3] is to justify the need for a broad study of such an impact.

The lack of personal available facilities to carry out the above-mentioned studies induces formulating them in this work, as the task for other researchers. Therefore, the next scientific novelty of the work performed is the formulation of tasks and conditions for researching the impact of physical fields on COVID-19 and other viruses [3].

There is reason to believe that from level 25 and 50 MHz, direct and feedback fields with the virus are possible. Therefore, it is also possible to create electronic devices that detect viruses in a space. This research requires 2 conditions:

1. the presence of sources for the formation of ultrahigh frequencies;
2. the presence of virus strains.

Such opportunities exist in many developed countries around the world that have investigated COVID-19:

Consequently, it is already the case that there exists a real opportunity to carry out research to identify resonant frequencies for COVID-19. To attract the attention of scientists of the world to the solution of this problem, 5 reports were made at international scientific conferences-webinars and a topic for discussion on LinkedIn was proposed.

The publication of this work by [3] was also proposed in journals for physicists. Therefore, a number of her information is repeated: the first task the setting comes down to organizing, conducting, and financing these studies. If intellectual resources and funds will be wheel allocated for such research, which were allocated for the creation of vaccines, the result is possible within a year.

The main Advantages of the Resonant Method

1. Universality regardless of the internal mutations of the virus (the main impact is related to the size of the virus, which is easier to determine than other of its parameters, and select the necessary vibrations for them).
2. Possibility of action only in areas of risk of infection while a person is in them.
3. Constancy or periodical constant of action in these areas, for example: 1 ... 20 minutes of switching on, which alternate after 1 ... 20 minutes of switching off, without interruptions and withdrawals from this zone of people, (which is typical for the method of quartzizing).

Therefore, such an action will apply to all new carriers of COVID-19, which fall into the zone of resonant vibrations at any time.

The setting of the second task is connected with the fact that, in addition to the frequency range of COVID-19 suppression, there may be a range of frequencies activating it. Therefore, it must be identified in order to exclude its occurrence in the development of any new technical systems.

Thus, the formulation of the first and second tasks of this work is presented for a wide discussion of the scientific community and government agencies of all countries of the world. Their relevance and the importance of early implementation are beyond doubt, which requires the creation of working scientific groups and funding for their work.

Thereafter can be create and further implement industrial production and widespread distribution of collective and individual electronic devices that ensure the destruction of COVID-19 by inducing resonant frequencies and vibrations (Figure 4).

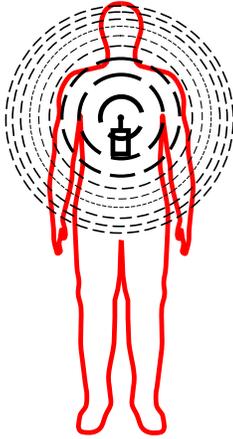


Figure 4: The scheme of the wave oscillations of the proposed electronic devices [15].

Such devices will be similar to the simplest smartphones, and in the future flash drives to computers. Therefore, they can be executed like medallions. Moreover, microchips that create such a frequency can be introduced into all smartphones and this creates ample business opportunities for manufacturers who produce them in the millions. Collective devices can be in the form of air conditioners, or built into air conditioners.

These devices do not belong to the therapeutic ones, which eliminates numerous problems of their use. They are only detecting and disinfecting, and the treatment should be carried out according to already worked out methods. They also do not reject vaccination and the need to produce and improve vaccines. However, they can reduce the cost of intellectual and material and technical resources for these works.

The experience accumulated earlier allows us to consider them highly effective. Without the help of physicists and biophysicists, only doctors, epidemiologists and virologists cannot cope with the COVID-19 pandemic. Given the relevance and importance of COVID-19 problems for all mankind, their solution should be as fast as possible. The entire population of the Earth has the right and should have information about another (resonant) method of combating COVID-19 viruses, therefore, it, as well as the progress of work along this path, should also be widely publicized in the media, as the success of publicized vaccination. With the threat of the new waves of a pandemic caused by COVID-19 mutations, the pace of work should be no less than for work on the creation of vaccines.

Similar principles are possible for other viruses as well.

Basic devise are already available, they must be improved, conduct research and legitimize its [15].

The restrictions of vaccination may be contrary to the interests of pharmaceutical companies. However, in addition to profits, the lives of millions of people are on the “other side of the scale”, which should be a decisive factor. At the end of August 2021, about 100 thousand people fall ill every day, and about a thousand die.

Conclusion

- ✓ In the conditions of rapid mutations of COVID-19, which further become more aggressive and harmful, the development of vaccines is usually lagging behind their appearance, therefore periods of insecurity of people, are created, and constant new expenditures of intellectual and material-technical resources are required to solve these problems.
- ✓ Within the framework of the known studies on the influence of induced electromagnetic frequencies and vibrations on bacteria and viruses, there are resonant frequencies, both destroying and activating them; therefore, their identification is necessary for COVID-19.
- ✓ Under conditions of limited opportunities for vaccination, disinfection with chemicals and ultraviolet light, the proposed way to combat COVID-19 using resonance frequencies from induced physical fields and vibrations may be more effective than existing ones.
- ✓ The main advantage of the proposed method of resonant action on viruses - its versatility depending on the virus dimensions and regardless of its internal mutations, which reduces the cost of intellectual and material and technical resources to achieve them.
- ✓ Constancy or constant period of action (1 ... 20 minutes of switching on, which alternate after 1 ... 20 minutes of switching) will apply to all new carriers of COVID-19 who fall into zone of resonance vibrations.
- ✓ Basic devise are already available, they must be improved, conduct research and legitimize its.
- ✓ A complete solution to the problem of combating COVID-19 is possible with a combined application of all ways: vaccination, disinfection with chemicals and ultraviolet light, and resonance frequencies from induced electromagnetic fields.
- ✓ Doctors, epidemiologists and virologists cannot cope with the COVID-19 pandemic without the help of physicists and biophysicists.

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