Technical Information

Chlorine dioxide and its adjuvants

An innovative approach to decentralized SARS-CoV-2 pandemic control and prophylaxis

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Regardless of the connection between the criticism of media-political institutions about the medical effects of chlorine dioxide (ClO2) solutions on humans, they always withheld from the general public that only a lack of approval of chlorine dioxide solutions as a medicine leads to an obligatory warning in the application by worldwide competent authorities - they never assess the medical effect of chlorine dioxide solutions. As the large-scale pharmacological industry currently has no approved chlorine dioxide drug, the WHO is, therefore, unable to provide such a drug against the SARS-CoV-2 virus. That is why I am writing this document so that people can form a free opinion. The free formation of opinion in health matters is my particular interest.

Rainer Taufertshöfer, independent medical journalist and registered german naturopath

Based on the chlorine dioxide gas dissolved in water used for "disinfection purposes" in the United States Army, the most significant possible potential of chlorine dioxide solutions, to cope with current and future pandemics, is justified. Elaborating compressed scientific facts, the non-toxicity of chlorine dioxide solutions, their antiviral properties, and the possibility of oral or intravenous accumulation of the active ingredient in the bloodstream, is revealed. The results of scientific research and the results of my chlorine dioxide research, which I have been

conducting intensively for nine years, are reduced to a minimum, for the clarity of a far-reaching field of study.

1. U.S. patent application for an injection containing chlorine dioxide

In January 2019, in the United States of America, the patent application of Chinese inventors from Shenzhen was published. Their intention is the use of injections containing chlorine dioxide in therapeutic applications that show in-vivo (in the living organism), stem cell regeneration, anti-tumor, and anti-aging effects.

This patent application of a chlorine dioxide injection has, according to its originators, a high pharmacological effect, which enables the ablation of tumors and the promotion of tissue regeneration of the damaged tissue.

The patent application further states that a chlorine dioxide injection stimulates an immune response by removing target tumors, which causes the immune system to inhibit or eliminates distal tumors or metastatic tumors. (1)

Note: I discovered the described medical effects, as well as the application and specialized manufacturing processes of chlorine dioxide injection/infusion solutions, as early as 2014, and since then, I have continuously developed them. There is the possibility that the production facility for chlorine dioxide injection/infusion solutions developed by me, could be immediately applied in all clinical departments.

In the meantime, I have optimized my process engineering. This application makes it possible to produce 1000 ml of a 0.3% chlorine dioxide injection/infusion solution with an average venous blood pH of 7.4 within thirty minutes, which is sufficient for 100 applications. The total raw material cost of these 100 applications is 0.33 US dollars. The manufacturing costs for such a production facility are about 273 US dollars. The structure is designed in such a way that any user without any previous technical knowledge could install it according to an instruction video and use the produced chlorine dioxide solutions professionally.

In my opinion, decentralized mass production of this solution would be of great strategic importance in case of a disrupted infrastructure.

2. U.S. patent application for injection, inhalation and oral medicines containing chlorine dioxide

In October 2013, a Chinese originator from Beijing submitted a patent application for a chlorine dioxide drug for the treatment of tissue damaged by cancer. These innovative treatment technologies of regenerative medicine with chlorine dioxide based on the functional and morphological restoration of inflammatory and injured tissues, including cancer and infectious pneumonia.

Regenerative medicine using chlorine dioxide is currently attracting significant attention in medical circles as a new treatment option for a wide variety of diseases. These modern treatment technologies of various routes of administration of chlorine dioxide solutions, such as injection, inhalation, topical, and oral application, aim at restoring the function of tissues and organs in which dysfunctions have caused by damage and/or injury or inflammation. (2)

Note: The inventors are pursuing the goal of using chlorine dioxide as a drug for diseases that also include COVID-19-related phenomena. These include inflammation, infectious pneumonia, viral myocarditis, and vascular diseases. In my opinion, these hold the potential to revolutionize stagnant forms of therapy. The production process for chlorine dioxide injection/infusion solutions, which I described in the note to point 1, is also suitable for the production of oral, inhalation, or topical applicable solutions on the same scale and in the same quality.

3. Bioassays showed that chlorine dioxide inhibits viral replication of reproductive and respiratory syndrome (PRRSV: Porcine Reproductive and Respiratory Syndrome), the inflammatory response of infected host cells and inactivates the PRRSV virus

A Chinese study from Sun Yat-Sen University in 2018, entitled "Chlorine dioxide inhibits the replication of porcine reproductive and respiratory syndrome virus by blocking viral attachment", aimed to determine the virus inhibitory properties and underlying molecular mechanisms of chlorine dioxide (ClO2) against PRRSV infection in vitro ("outside organism").

The PRRS (Porcine Reproductive and Respiratory Syndrome) virus belongs to the family of RNA viruses (Note: like the SARS-CoV-2 virus). Since the 1980s, PRRSV has been one of the most economically problematic swine diseases in the world, which appears uncontrollable due to its wide range of variations and persistent infection. The reason for this is that the PRRS vaccines developed since then cannot effectively prevent the outbreak of the disease and provide low protection.

The research group determined that in a standardized reaction sequence (a specific method for detecting the antiviral effect of chlorine dioxide (ClO2)), chlorine dioxide strongly inhibits PRRSV replication by interfering with RNA and protein synthesis.

Several stages of binding, entry and release tests of the viral life cycle revealed that chlorine dioxide (ClO2) inhibits the process of PRRSV binding (mainly the attachment stage of the virus life cycle) to the host cell and additionally inactivates the virus by degrading the genome and structural proteins of PRRSV.

PRRSV infection further induces the release of pro-inflammatory factors such as IL-1, IL-6, TNF-α, which contribute to the pathogenesis and inflammatory response that can lead to cell apoptosis if production is sustained and increased. In summary, the Chinese study found that chlorine dioxide (ClO2) inhibits the inflammatory response of virus-infected host cells by lowering the mRNA levels of pro-inflammatory cytokines, thereby supporting host resistance to PRRSV infection. (3)

Note: The work of Sun Yat-Sen University shows, among other things, that within forty years, it has not been possible to develop an effective vaccine that reliably protects against Porcine Reproductive and Respiratory Syndrome (PRRSV), which is endemically prevalent in pig breeding. However, the far-reaching economic damage that has occurred worldwide since then would provide sufficient incentives to do so. The studies of those Chinese scientists show a promising solution in a bioassay with chlorine dioxide solutions to this problem. These prevent viral replication, inhibit the inflammatory response of infected host cells (this effect of releasing pro-inflammatory factors, such as IL-1, IL-6, TNF-α, is also found in SARS-CoV-2 infected host cells (8)) and inactivate the PRRSV virus.

4. Chinese Study (2005) on the resistance of the severe acute respiratory syndrome-associated SARS-CoV virus

Chinese researchers showed that SARS-CoV could persist in vitro for two days in hospital wastewater, domestic sewage, and dechlorinated tap water. At temperatures of 20 degrees Celsius, it persists for three days in feces and at least 17 days in urine.

SARS-CoV can persist at 4 degrees Celsius, 14 days in wastewater, and at least 17 days in feces or urine. The concentration of chlorine dioxide effective against SARS-CoV is to be sufficient for complete inactivation of SARS-CoV at 2.19 mg/L in wastewater. (4)

Note: Chlorine dioxide thus inactivates SARS-CoV even in low concentrations. Based on these results, I made a public appeal on 29.01.2020 to all doctors treating patients worldwide, theoretically based on the effective chlorine dioxide doses mentioned under point 4). This appeal received very well on a large scale. At the same time, we started written and telephone contact attempts, which were directed, among others, to the German government and its health authorities, the embassies of the North American countries, the Asian countries, and those of the European countries. These, in turn, have remained unanswered to this day.

With my experience values, I addressed myself, with the following statement to all doctors worldwide, in the fight against the SARS-CoV-2 virus:

"An effective chlorine dioxide dose of 2.19 mg/L [note: see the study, as mentioned earlier] corresponds to a quantity of 0.00219 g/L chlorine dioxide. One liter of a 0.3% chlorine dioxide solution contains 3 g/L chlorine dioxide.

My oral chlorine dioxide intake (pH value of 7.0) is 0.3 g/L daily. In extreme situations, I administer up to 0.6 g/2L daily - e.g., during my development aid missions abroad.

From this, I deduce that my personal daily oral maximum dose, the chlorine dioxide concentration effective against the SARS-CoV-2 virus, is 270 times (rounded) higher.

If oral intake no longer seems possible due to the patient's comatose condition, I would add 0.03g of chlorine dioxide (= 10 ml of a 0.3% chlorine dioxide infusion solution (CDI solution, pH value of 7.4)) to 500ml of isotonic saline solution (0,9%), which I administer up to twice daily. Even this low dosage exceeds the chlorine dioxide does effectively against the SARS-CoV-2 virus by 13 times (rounded).

If it reasonably assumed that this amount of chlorine dioxide dilutes in the human organism, the efficacy concentration mentioned in the study above is achieved in any case. Positive results should be seen after 3-10 days at the latest." (7)

Based on my observations, those affected were able to care for and heal themselves independently, even in cases of severe suffering, such as the skin disease cutaneous leishmaniasis, typhus (abdominalis), malaria, pneumonia, or various forms of cancer.

5. Japanese specialist publication (2000) on the hematological effects of chlorine dioxide on in vitro exposure of mice, rats, and human blood and on subchronic exposure of mice

Based on 33 scientific references to evaluate the medical effects of chlorine dioxide, a Japanese research group, from the Faculty of Pharmaceutical Sciences, Setsunan University, investigated the hematological effects of chlorine dioxide (ClO2) and its metabolites. Chlorine dioxide also accumulates in the bloodstream during oral uptake and shows statistically significant hematological changes only at higher doses than 1000mg/l ClO2. At these high doses, chlorine dioxide caused acute hematotoxicity to mouse blood by producing reactive oxygen species (hydrogen peroxide [H2O2] formation) and by weakening the protective systems against oxidative stress in erythrocytes, thus inducing hemolysis, while human erythrocytes appeared more resistant. (5)

Note: As the Japanese Study was able to show, the chlorine dioxide concentrations of a maximum 300 mg/l that I used are physiologically safe concerning a hematological effect. They can also find, based on my nine-year-old research observations, confirmation. They also show that chlorine dioxide accumulates in the bloodstream even when taken orally. Thus, oral COVID-19 therapy seems to be more suitable for non-intubated

patients. Mainly as compared to intravenous, with an oral application, significantly higher dosages can be used.

6. U.S. Army Natick Soldier Research, Development and Engineering Center (NSRDEC): "Natick plays key role in helping to fight spread of Ebola"

The U.S. Army report documents that chlorine dioxide has been able to destroy all pathogens tested to date, and as a broad-spectrum biocide, kills spores, bacteria, viruses, and fungi. Chlorine dioxide can kill bacteria spores, which are much more difficult to kill than viruses, such as Ebola.

As a versatile disinfectant, any industry can benefit from the effects of chlorine dioxide, including medicine, wastewater treatment, public health, food safety, personal hygiene, and household uses. Furthermore, its various strengths make it suitable for sterilizing medical instruments and in toothpaste to combat germs in the mouth.

Note: In summary, the U.S. Army states that all pathogens tested so far destroyed by contact with chlorine dioxide, including even very resistant bacteria spores. Besides the production of chlorine dioxide injection solutions, the oral and topical applicable solutions, my development can also be used for the decontamination of surfaces and rooms. On this basis, the result is a wide range of possible applications.

The research work of the U.S. Army Natick Soldier Research, Development and Engineering Center, in addition to the far-reaching possibilities of the use of chlorine dioxide, presented in this paper, reveals the tremendous potential, how other pathogens, such as SARS-CoV-2, or even biological weapons attacks, could be countered.

7. *Chlorine dioxide and its adjuvants*
An analysis of SARS-CoV-2 controlled autophagy shows that spermidine has the potential of antiviral therapeutics

The German chief virologist Professor Dr. Christian Drosten, of the Institute of Virology at the Berlin Charité, belongs to a group of scientists whose research results published with the title "Analysis of SARS-CoV-2 controlled autophagy reveals spermidine, MK-2206, and niclosamide as putative antiviral therapeutics" in April 2020. The highly pathogenic respiratory syndrome of the Middle East (MERS)-CoV and the importance of autophagy in controlling the spread of this viral infection cited as a significant example.

In addition to two conventional medical preparations, the organic polyamine spermidine was examined in laboratory tests for its antiviral properties. The results showed that infected tissue treated with spermidine (100 µM) inhibited the proliferation of SARS-

CoV-2 by up to 66%. By a pre-treatment with spermidine, as part of prophylactic treatment, the reproduction of the virus, at non-toxic concentrations of 333.3 µM, could be reduced by 85%. (9)

Note: Based on these study results, spermidine produced by man is an important protective mechanism against SARS-CoV-2 infections. Monoaminopropylputrescine, also known as spermidine, formed in all living organisms, is a biogenic polyamine that plays a decisive role in the regeneration of an organism and cell growth.

The degradation of damaged cell components and their reuse is also known as the body's own "recycling system", or autophagy, resulting in protection against many diseases, for example.

Based on the inhibition of autophagy triggered by SARS-CoV-2 infections and the resulting COVID-19 diseases, public health and the global economy are threatened by the lack of approved specific drugs or vaccines.

The problem of inhibition of autophagy inducing human spermidine production could be compensated by additional doses, mainly of plant foods, as part of prophylactic SARS-CoV-2 treatment, but also a COVID-19 intensive therapy.

The wheat grain consists of the reproductive-element inside, the wheat germ. The latter, in turn, is enclosed by a starchy endosperm used in flour production. The outer hull is called wheat bran. Wheat germ contains the highest content of spermidine of all foods, up to 0.4mg/g. Besides, the spermidine contained in wheat germ shows antitumor, cardioprotective, and neuroprotective effects.

8. *Chlorine dioxide and its adjuvants*

Among medicinal plants, the mayweed (Anthemis hyalina) shows a remarkable effect against the coronavirus

A study conducted in 2013 by the Department of Medical Biology, Faculty of Medicine, University of Gaziantep, Turkey, investigates the effects of extracts of black cumin (nigella satvia, Ns), mayweed (anthemis hyalina, Ah) and orange zest (citrus sinensis, Cs) on the replication of the DNA or RNA of the coronavirus and the expression of the TRP gene family. These three medicinal plants are used in folk medicine to combat antimicrobial diseases.

After treating CoV-infected cells with a mayweed-extract, the viral load decreased within 6 to 8 hours to an undetectable level. (10)

Note: While to the scientists of this study, the reason for the reduced viral load after an extract treatment seems unclear, at least the potential of naturopathic empirical medicine is recognizable in this example and offers a large field of possible interaction with orthodox medical institutions.

9. *Chlorine dioxide and its adjuvants*
Chinese herbal formula - an approach to COVID-19 prevention

In April 2020, a group of Chinese and English researchers published results from clinical and population studies, which investigates Chinese medicine to prevent infectious respiratory virus diseases.

In five studies, using Chinese medicine to prevent respiratory virus diseases, no participant fell ill. The most commonly used herbal mixture consisted of Astragali Radix (Huang Qi), Glycyrrhizae Radix (Gan Cao), Saposhnikoviae Radix (Fang Feng), Rhizoma Atractylodis macrocephalae (Bai Zhu), Lonicerae Japonicae Flos (Jin Yin Hua) and Fructus Forsythia (Lian Qiao). (11)

Note: In summary, the researchers concluded that based on historical records and human evidence for the prevention of SARS and H1N1 infections, Chinese herbal prescriptions represent a preventive, therapeutic approach to COVID-19 in high-risk populations. To further confirm this, they recommend "prospective, rigorous population studies to confirm the potential preventive effect of CM [note: Chinese medicine]" (11).

Conclusion

As an aqueous solution, but also in its gaseous form, chlorine dioxide offers enormous potential in the oral and intravenous treatment of infectious diseases, including COVID-19. As I was able to elaborate, chlorine dioxide deactivates viruses and can be enriched orally or intravenously in the bloodstream. Furthermore, even impracticable doses are non-toxic. These features offer an innovative approach to pandemic control and prevention. Against this background, the inclusion of chlorine dioxide in the discussion on defense against biological weapons attacks seems equally sensible.

The broad spectrum of possible chlorine dioxide applications is not only verified by the promising therapy results of individual users worldwide, but also by the study results and patent applications presented in this paper. Besides, chlorine dioxide appears to be suitable for the treatment of tissue damage and tumors of all kinds, as well as for clinical and military decontamination applications.

Based on my developed process technology for the production of chlorine dioxide solutions, decentralized facilities could produce large quantities of chlorine dioxide solu-

tions for oral, intravenous, and topical applications at low production costs. The possibility of a decentralized production facility would play a strategically valuable role in the event of a disrupted infrastructure, for example, in social crises.

Among insiders, chlorine dioxide solutions are considered a "secret weapon", including professors and doctors of all disciplines. Likewise, microbiologists, who have been researching the microbiome for 30 years, support the strongly diluted chlorine dioxide solution, since it does not reach the intestinal flora according to the intake method developed by me, is exclusively absorbed into the bloodstream via the stomach lining and in this way unfolds its effect in the human organism as described in this paper.

In conclusion, I would like to mention that my research results indicate that chlorine dioxide, in addition to its broad spectrum of action mentioned in this paper, can dissolve therapy blockages, which, according to my observations, can lead to a more solid therapy success with a coordinated alternating intake regimen. This possibility could pave the way for numerous plant adjuvants, e.g., in chlorine dioxide-COVID-19 and tumor therapy.

From my wealth of experience in German and international herbal medicine, the list of active herbal ingredients that show an antiviral effect could be supplemented at will and continued with anticarcinogenic active ingredients.

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Medical Disclaimer:

Statements of healing in any form are prohibited by law and are not made by me in this paper. I would like to point out that parts of the methods of production and treatment presented here originate from experienced naturopathic medicine, which is not generally accepted methods in the sense of recognition by conventional medicine.

All statements made about properties and effects, as well as indications of the presented procedures are based on the knowledge and experience of the respective research work itself, parts of which are not shared by the currently prevailing conventional medicine, worldwide health authorities, and leading media.

For legal reasons, this paper, therefore, contains only a summary of literature research and personal experience. The information given is solely the opinion of the respective authors and myself (Rainer Taufertshöfer) and does not constitute medical advice.

The use of the given information is always and exclusively at your responsibility. In particular, I do not assume any liability for improvements or deterioration of your state of health and refer you to the relevant safety guidelines of the respective substances.

If you have an existing illness, always consult a doctor or alternative practitioner.