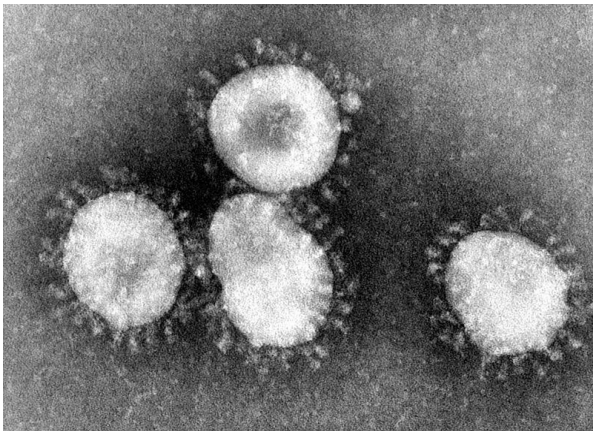


# Chlorine Dioxide against Coronavirus: a revolutionary, simple and effective approach

March 2020 DOI: 10.13140/RG.2.2.23856.71680 License CC BY-NC-SA 4.0 Project: Toxicity study of chlorine dioxide in solution (CDS) ingested orally Andreas Ludwig Kalcker co. : Liechtensteiner Verein für Wissenschaft und Gesundheit LI-9491 Ruggel [www.lvwg.org](http://www.lvwg.org) E-mail [alk@lvwg.org](mailto:alk@lvwg.org)

Chlorine dioxide (ClO<sub>2</sub>) has been used for over 100 years to combat all types of bacteria, viruses and fungi successfully. It acts as a disinfectant, since in its mode of action it turns out to be an oxidant. [1# BiologicalEfficacyList ] It is very similar to the way our own body acts, for example in phagocytosis, where an oxidation process is used to eliminate all kinds of pathogens. Chlorine dioxide (ClO<sub>2</sub>) is a yellowish gas that, to date, has not been introduced into the conventional pharmacopoeia as an active ingredient, although it is used on a mandatory basis to disinfect and preserve blood bags for transfusions. [2# Alcide studies on blood disinfection] It is also used in most bottled waters suitable for consumption, since it does not leave toxic residues; besides, it is a gas that is very soluble in water and evaporates from 11 °C.



The recent Covid-19 coronavirus pandemic demands urgent solutions with new approaches. Therefore, chlorine dioxide (ClO<sub>2</sub>) in low-dose aqueous solution promises to be an ideal, rapid and effective solution. All too often, the solution is in the simplest of ways. The approach is as follows: on the one hand we know that viruses are absolutely sensitive to oxidation and on the other hand, if it works in human blood bags against viruses such as HIV and other pathogens, why would it not work organically against the coronavirus?

1. Chlorine dioxide removes viruses through the process of selective oxidation in a very short time. It does this by denaturing the capsid proteins, and then oxidizes the genetic material of the virus, disabling it.

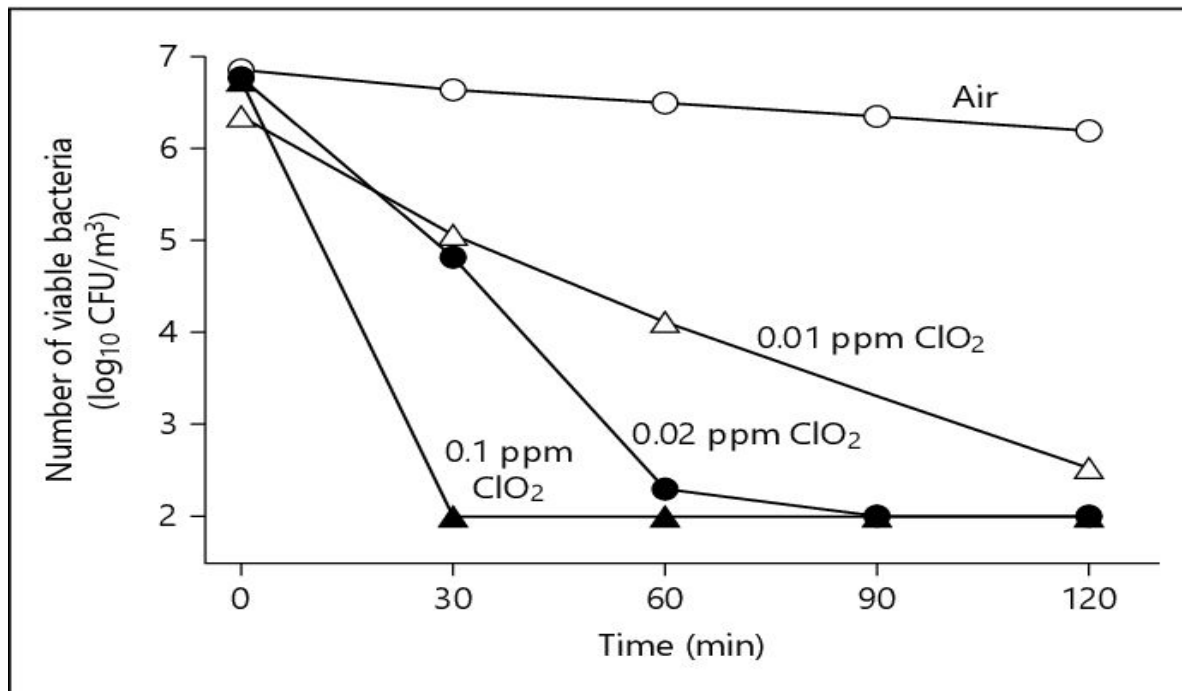
The application of chlorine dioxide (ClO<sub>2</sub>) orally or even parenterally is a different approach that has been studied by Andreas Ludwig Kalcker for more than thirteen years with a result of three pharmaceutical patents for parenteral use. It can be produced by any pharmacy as an extemporaneous preparation and has been used in a similar form as (DAC N-055) in the old German Drug Codex as "Sodium Chlorosum" since 1990.

So far, only vaccine based solutions have been proposed, resulting in extremely slow and risky processes, as they always require sufficient energy reserves that a body affected with

the disease cannot provide. The great advantage of chlorine dioxide (ClO<sub>2</sub>) is that it works for any viral subspecies and there is no possible resistance to this type of oxidation (let's not forget that this substance has been used for 100 years in waste water without generating any resistance). [\[#3 Investigation on virucidal activity of chlorine dioxide\]](#) 2. There is already scientific evidence that chlorine dioxide is effective on coronavirus SARS-CoV-2, a base virus of COVID-19 [\[SARS Fact Sheet, National Agricultural Biosecurity Center, Kansas State University\]](#) and the Coronavirus family in general - [\[Chlorine Dioxide, Part 1 A Versatile, High-Value Sterilant for the Biopharmaceutical Industry, Barry Wintner, Anthony Contino, Gary O'Neill. BioProcess International DECEMBER 2005.\]](#) It has also been shown to be effective in human coronavirus [\[#4 BASF Aseptrol document\]](#) and in animals such as dogs, known as canine respiratory coronavirus, or cats, including the feline enteric coronavirus (FECV) and the better known feline infectious peritonitis virus (FIPV), since it denatures the capsules by oxidation inactivating the virus in a short time [\[2-log 4.2 / 4-log 25.1 Source USEPA 2003 WHO Guidelines for drinking water Quality\]](#).

[Pharmacology](#). 2016;97(5-6):301-6. doi: 10.1159/000444503. Epub 2016 Mar 1.

Inactivation of Airborne Bacteria and Viruses Using Extremely Low Concentrations of Chlorine Dioxide Gas.



It should be noted that chlorine dioxide for ingestion is a new antiviral approach because it is an oxidant and manages to eliminate any subspecies or variations of viruses by combustion. [\[6#ClO<sub>2</sub> is a size selective biocide\]](#) Given the emergency situation in which we currently find ourselves with Covid-19, the oral use of ClO<sub>2</sub> is considered immediately through a protocol already known and used.

3. Toxicity: The biggest problems with drugs in general are due to their toxicity and side effects. New studies show its feasibility. [\[7#New ClO<sub>2</sub> safety evaluation 2017\]](#) Although the toxicity of chlorine dioxide is known for mass inhalation, there is not a single clinically proven death even at high doses from oral ingestion. [\[8#Controlled Clinical Evaluations of ClO<sub>2</sub> in Man\]](#) The LD<sub>50</sub> is considered to be 292 mg per kilogram for 14 days, where its equivalent

in a 50 kg adult would be 15,000 mg per two weeks of a gas dissolved in water (something almost impossible). [9# toxicity of clo2 and clorite ions] The sub toxic oral doses used are around 50 mg dissolved in 100 ml of water 10 times a day which is equivalent to 0.5 g per day. (and therefore only 1/30 of the above LD50 dose of 15 g ClO2 per day).

Chlorine dioxide dissociates, it decomposes in the human body in a few hours into an insignificant amount of common salt (NaCl) and oxygen(O2) within the human body. Measurements of venous blood gas have indicated that the affected patient's lung oxygenation capacity is substantially improved.

**Voluntary I.V. application of 500 ml NaCl(0.9%) with 50 ppm ClO2 concentration**

Patiënt-ID: ANNA Datum en tijd: 31/12/16 13:56:22				Patiënt-ID: ANNA Datum en tijd: 31/12/16 15:58:39			
<b>Resultaten: Gassen+</b>				<b>Resultaten: Gassen+</b>			
pH	7,271		Laag	pH	7,420		
pCO2	64,6	mmHg	Hoog	pCO2	39,9	mmHg	
pO2	34,0	mmHg	Laag	pO2	57,8	mmHg	Laag
cHCO3-	29,7	mmol/L	Hoog	cHCO3-	25,8	mmol/L	
BE(ecf)	2,8	mmol/L		BE(ecf)	1,4	mmol/L	
cSO2	55,2	%	Laag	cSO2	90,1	%	Laag
<b>Resultaten: Chem+</b>				<b>Resultaten: Chem+</b>			
Na+	143	mmol/L		Na+	141	mmol/L	
K+	3,8	mmol/L		K+	4,1	mmol/L	
Ca++	1,33	mmol/L		Ca++	1,24	mmol/L	
Cl-	102	mmol/L		Cl-	105	mmol/L	
cTCO2	31,7	mmol/L	Hoog	cTCO2	27,1	mmol/L	
Hct	38	%		Hct	35	%	Laag
cHgb	8,0	mmol/L		cHgb	7,3	mmol/L	Laag
BE(b)	1,3	mmol/L		BE(b)	1,3	mmol/L	
<b>Resultaten: Meta+</b>				<b>Resultaten: Meta+</b>			
Glu	88	mg/dL		Glu	90	mg/dL	
Lac	3,59	mmol/L	Hoog	Lac	0,74	mmol/L	
Crea	91	umol/L		Crea	108	umol/L	Hoog
<b>Referentiebereiken</b>				<b>Referentiebereiken</b>			
pH	7,350 - 7,450			pO2	83,0 - 108,0	mmHg	
pCO2	35,0 - 48,0	mmHg		cSO2	94,0 - 98,0	%	
pO2	83,0 - 108,0	mmHg		Hct	38 - 51	%	
cHCO3-	21,0 - 28,0	mmol/L		cHgb	7,4 - 10,6	mmol/L	
cSO2	94,0 - 98,0	%		Crea	45 - 105	umol/L	
cTCO2	22,0 - 29,0	mmol/L					
Lac	0,56 - 1,39	mmol/L					
Type monster: Veneus				Type monster: Veneus			
Hemodilutie: Nee				Hemodilutie: Nee			
Leeftijd: 32 jaar				Leeftijd: 32 jaar			
Geslacht: Vrouw				Geslacht: Vrouw			

## WORKING MECHANISM OF CHLORINE DIOXIDE AGAINST VIRUSES

As a rule, most viruses behave similarly and once they bind to the appropriate host type - bacteria or cell, depending on the case - the nucleic acid component of the virus being injected takes over after the protein synthesis processes of the infected cell. Certain segments of the viral nucleic acid are responsible for the replication of the genetic material in the capsid. In the presence of these nucleic acids, the ClO<sub>2</sub> molecule becomes unstable and dissociates, releasing the resulting oxygen into the environment, which in turn helps to oxygenate the surrounding tissue by increasing mitochondrial activity and thus the immune system response. *[6#ClO<sub>2</sub> is a size selective biocide]*

The nucleic acids, DNA-RNA, consist of a chain of puric and pyrimidine bases, see: guanine (G), cytosine (C), adenine (A) and thymine (T). It is the sequence of these four units along the chain that makes one segment different from another. The guanine base, which is found in both RNA and DNA, is very sensitive to oxidation, forming 8-oxoguanine as a byproduct of it. Therefore, when the ClO<sub>2</sub> molecule comes into contact with guanine and oxidizes it and leads to the formation of 8-oxoguanine, thus blocking the replication of the viral nucleic acid by base pairing. Although replication of the protein capsid can continue; the formation of the fully functional virus is blocked by oxidation thanks to ClO<sub>2</sub>.

The ClO<sub>2</sub> molecule presents characteristics that make it an ideal candidate for treatment in the clinical setting, as it is a product with a high power of selective oxidation and a great capacity to reduce acidosis, increasing oxygen in tissues and mitochondria, thus facilitating the rapid recovery of patients with lung diseases as shown in the data above..

## POSSIBLE PRECAUTIONS AND CONTRAINDICATIONS

Chlorine dioxide reacts with antioxidants and various acids, so the use of **vitamin C** or ascorbic acid during treatment is **not recommended**, as it cancels out the effectiveness of chlorine dioxide in eliminating pathogens (the antioxidant effect of one prevents the selective oxidation of the other). Therefore, it is not recommended to take antioxidants during the days of treatment.

It has been shown that stomach acid does not affect their effectiveness. In the cases of patients with Warfarin treatment, they should constantly check the values to avoid cases of overdose, since it has been proven that chlorine dioxide improves blood flow.

Although chlorine dioxide is very soluble in water, it has the advantage that it does not hydrolyze, so it does not generate toxic carcinogenic THMs (trihalomethanes) like chlorine. It also does not cause genetic mutations or malformations.

A protocol has been developed whereby a solution of this compound can be taken orally and intravenously.

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