



The FutureWell Group, Inc.

Together, Better

FUTUREWELL SANI-POWDER DENTAL OFFICE OVERVIEW

Your teeth should not be the only thing that is sparkling clean at the dentist office.

Health starts with your smile and in the wake of COVID19, many people are asking themselves if it is safe to go to necessary appointments even after the pandemic calms down there are several other pathogens floating around in a Dental Office. Waiting to treat dental issues can result in serious infections in the entire body, pain, and loss of teeth.

Why use FUTUREWELL SANI-POWDER (HOCl)?

Chlorine is one of the most widely used disinfectants in the world. HOCl targets multiple pathogens & contaminants including bacteria, fungi, viruses, and molds. Chlorine is a strong oxidizer and used in a multitude of industries. HOCl is affordable, needs very little contact time to be effective, and is one of the forms of chlorine that is effective even in diluted solutions.

Hypochlorous acid (HOCl) is a weak acid that forms when chlorine dissolves in water, and itself partially dissociates, forming hypochlorite, ClO⁻. HClO and ClO⁻ are oxidizers, and the primary disinfection agents of chlorine solutions.[2] HClO cannot be isolated from these solutions due to rapid equilibration with its precursor. Sodium hypochlorite (NaClO) and calcium hypochlorite (Ca(ClO)₂), are bleaches, deodorants, and disinfectants.

Hypochlorous acid is found naturally in white blood cells of mammals, including the human body. It is non-toxic and has been used as a safe wound care solution for many years. When dissolved in water, hypochlorous acid water has found to have strong disinfection properties, combined with its non-toxicity characteristics, it has been identified as an ideal cleaning agent and sanitizer. It has been identified by the US Environmental Protection Agency as a disinfectant effective against COVID-19, backed by clinical studies. Because of its ability to penetrate pathogens' membranes it is also used as a commercial deodorizer.

HOCl has been shown to neutralize or kill a variety of viruses including coronaviruses in less than 1 minute. At a concentration of 200 ppm, HOCl is effective in decontaminating inert surfaces carrying noroviruses and other enteric viruses in a 1-minute contact time. Even when diluted 10-fold, HOCl solutions at 20 ppm were still effective in decontaminating environmental surfaces carrying viruses in a 10-minute contact time.

Individuals working in the dental and medical field using surgical and high-speed handpieces are at risk from aerosolization. Aerosols are defined as particles less than 50 µm in diameter. Particles of this size are small enough to stay airborne for an extended period before they settle on environmental surfaces or enter the respiratory tract. Additionally, a true aerosol or droplet nuclei may be present in the air of the operatory for up to 30 minutes after a procedure. Particles are classified based on size: Coarse particles measure 2.5 to 10 µm; fine particles, 0.1 µm to less than 2.5 µm; and ultrafine particles, less than 0.1 µm. The nose typically filters air

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particles larger than 10 μm . If a particle is smaller than 10 μm , it can enter the respiratory system. If smaller than 2.5 μm , it can enter the alveoli. A particle smaller than 0.1 μm , or an ultrafine particle, such as the COVID-19 virus, can enter the bloodstream or target the lungs.

The Sotiriou et al report showed that the concentrations of small particles (<0.5 μm) generated during dental drilling procedures were much higher than the concentrations of larger particles (>1 μm). Ultrasonic and sonic transmission during nonsurgical procedures had the highest incidence of particle transmission, followed by air polishing, air-water syringe, and high-speed handpiece aerosolization. One study found that ultrasonic instrumentation can transmit 100,000 microbes with aerosolization of up to 6 ft and, if improper air current is present, microbes can last anywhere from 35 minutes to 17 hours.

Hypochlorous acid can be used in aqueous solutions or in fogging. One major benefit to using hypochlorous acid in fogging is that you can effectively disinfect an entire room and all surfaces that are in the room. This includes porous and non-porous materials. Yes, even your electronics are safe! The only materials typically not fogged in a dental office are the ones that are sterilized.

What is Fogging/Humidifying?

It is a technique used to completely sanitize surfaces in which a disinfectant is put into a machine that aerosols it into tiny droplets. This aerosol process effectively spreads a disinfectant evenly across multiple surfaces. Fogging can disinfect rooms all at once; that way an individual does not have to risk exposure to contaminants by manually wiping down all surfaces with disinfectant and it can be dispersed continuously through our Ultrasonic Humidifier which keeps ENVIROCUR in the air for up to 3 hours while it is continuously killing most airborne pathogens & contaminants including: bacteria, fungi, viruses, and molds. With a maximum atomization of 250mL/h and particle size of 1-5 μm it gets into every nook and cranny.

Fogging/Humidifier machines come in all sizes from small, handheld instruments to larger industrial machines. (We sell most available models ask your representative for more information on the machines that we recommend based on your use.

Waterlines

Contamination in the dental unit waterlines has been an ongoing problem for more than 30 years. The sources of contamination are microcolonies containing proliferating bacteria, fungi, and protozoa called biofilm. Dental unit waterlines are 3–4 m flexible, narrow tube made of plastic material; the surface of the tube enhances the biofilm formation. During due course of usage for cooling the handpiece and flushing, the biofilm-coated untreated dental unit waterlines allow the microorganism to disperse through the water network. This poses a risk to the dentist, dental team, and patients due to pathogens spreading through aerosolization of dental water from the dental equipment. More than forty genera or species were identified from dental unit waterline biofilms. The predominant pathogenic organisms were Gram-negative organisms which produce endotoxins and can cause fever, mild inflammation to septic shock.

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To minimize the risk of infection in the dental environment, precautions such as rubber dam, high-volume suction, and anti-retraction valve were used. However, HOCl is the solution to overcome this issue by using to disinfect all the dental unit waterlines and the surfaces.

Mouth Rinse

If HOCl is used as a mouth rinse, one must assume that a portion of the rinse will be swallowed. The systemic and gastrointestinal effects of ingesting HOCl, from the perspective of its use in mouthwash, was evaluated in an animal study. Seventeen mice were given free access to HOCl water as drinking water. No abnormal findings were observed in terms of visual inspections of the oral cavity, histopathologic tests, or measurements of surface enamel roughness, showing no systemic effect.

HOCl significantly lowered the LPS concentration of *P. gingivalis* when compared with NaOCl and CHX. Thus, a HOCl antiseptic may be effective for cleaning biofilm-contaminated implant surfaces.

The gargling with slightly acidic hypochlorous acid (HOCl) was found to be effective in the halitosis test, O'Leary index measurement, and Snyder test, and especially, the phase contrast microscopy showed that Filamentous and Spirochetas, the bacteria that cause periodontal diseases, decreased remarkably. To prevent oral diseases, effective oral care can be achieved by managing dental plaque, decreasing the dental caries activity, and reducing the acid production ability of bacteria. The use of HOCl as a mouthwash rather than CHX, which is commonly used in dental practice but has side effects, will contribute to the prevention of oral diseases, and will inhibit the adhesion of dental plaque to the teeth.

Ophthalmology

HOCl is used in the treatment of blepharitis by reducing the bacterial load on the surface of the periocular skin. Twenty minutes after application of a saline hygiene solution containing HOCl at 100 ppm, a greater than 99% reduction in the staphylococcal load was achieved.

Biofilm

HOCl may be effective for cleaning biofilm-contaminated implant surfaces. HOCl significantly lowered the lipopolysaccharide concentration of *Porphyromonas gingivalis* when compared with sodium hypochlorite and chlorhexidine and was well tolerated by the oral tissues. HOCl significantly reduced bacteria on toothbrushes; it was effective as a mouthwash and for toothbrush disinfection.

Wound Care

In a clinical study on intraperitoneal wound care, patients underwent lavage of the peritoneal cavity with 100-ppm HOCl and washing of the wound with 200 ppm. No adverse effects were observed.

HOCl has been shown to be an effective agent in reducing wound bacterial counts in open wounds. In irrigation solution in an ultrasonic system, HOCl lowered the bacterial counts by 4 to

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6 logs. By the time of definitive closure, the bacterial counts were back up to 105 for the saline solution-irrigated control wounds but remained at 102 or lower for the HOCl-irrigated wounds. Postoperative closure failure occurred in more than 80% of patients in the saline solution group versus 25% of those in the HOCl group.

Hand Sanitizing

Hand antiseptics are alcohol based or non-alcohol based containing antibiotic compounds. Chlorine-based sanitizers, at a concentration of 50 to 100 ppm, are effective against bacteria and viruses. HOCl specifically used for hand sanitizers is effective at 100- to 200-ppm strengths.

Surface Application

A study looked at disinfecting outpatient surgical centers using HOCl. After cleaning, the rooms in the HOCl cleaning and disinfection study arm had significantly lower bacterial counts than the rooms that underwent standard cleaning and disinfection.

https://en.wikipedia.org/wiki/Hypochlorous_acid

[https://www.joms.org/article/S0278-2391\(20\)30672-8/fulltext](https://www.joms.org/article/S0278-2391(20)30672-8/fulltext)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4979282/>

<https://pubmed.ncbi.nlm.nih.gov/27447617/>

<https://medikurin.com/articles/hypochlorous-acid-clinically-tested-and-epa-approved/>

<https://medikurin.com/articles/hypochlorous-acid-hocl-vs-bleach-whats-the-difference/>

Comparison of the preventive effects of slightly acidic HOCl mouthwash and CHX mouthwash for oral diseases. (See report)

PARTIAL KILL STUDY RESULTS

Pathogen	Category	Claims	Organic Soil Load	Contact Time	ppm FAC
<i>Staphylococcus aureus</i> (ATCC 6538)	Bacteria	Hospital Disinfectant	5%	10 min.	500
<i>Pseudomonas aeruginosa</i> (ATCC 15442)	Bacteria	Hospital Disinfectant	5%	10 min.	500
<i>Salmonella enterica</i> (ATCC 10708)	Bacteria	Hospital Disinfectant	5%	10 min.	500
Methicillin-Resistant <i>Staphylococcus aureus</i> (MRSA) (ATCC 33591)	Bacteria	Disinfectant	5%	10 min.	250
<i>Listeria monocytogenes</i> (ATCC 7644)	Bacteria	Disinfectant	5%	10 min.	205
Vancomycin Resistant <i>Enterococcus faecalis</i> (ATCC 51229)	Bacteria	Disinfectant	5%	10 min.	205
<i>Klebsiella pneumoniae</i> New Delhi Metallo-Beta Lactamase (NDM-1) Carbapenem Resistant, Clinical isolate reference number 10002	Bacteria	Disinfectant	5%	10 min.	205
<i>Escheria coli</i> (ATCC 11229)	Bacteria	Disinfectant	5%	10 min.	205
<i>Clostridium difficile</i> – spore form (ATCC 43598)	Bacteria	C. difficile HSD	0%	10 min.	410
Human Immunodeficiency Virus Type 1 (HIV-1), strain IIIB (clade B); ZeptoMetrix	Virus, enveloped	Virucidal, Bloodborne Pathogen	5%	10 min.	410
Swine Flu Virus (H1N1) A/Swine/1976/31 (ATCC VR-99)	Virus, enveloped	Virucidal	5%	10 min.	500
<i>Mycobacterium bovis</i> , BCG (Tuberculosis)	Mycobacterium	Tuberculocidal: CDC Intermediate-Level Disinfectant; OSHA Bloodborne Pathogen Standard	5%	10 min.	410
<i>Candida albicans</i> (ATCC 10231)	Yeast	Yeast	5%	10 min.	410
Standard Test Method for Efficacy of Sanitizers, Inanimate Non-Food Contact Surfaces (Dilutable) <i>Enterobacter aerogenes</i> (ATCC 13048), <i>Staphylococcus aureus</i> (ATCC 6538) 200 ppm	Bacteria	Sanitizer, Non-Food Contact	5%	2 min.	205
AOAC Available Chlorine in Disinfectants (Food Contact Sanitizer) <i>Salmonella enterica</i> (ATCC 6539), <i>Staphylococcus aureus</i> (ATCC 6538) (50, 100, 200 ppm)	Bacteria	Food Contact Sanitizer; Hand Sanitizer	0%	60 sec.	205

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