

# CONTROLLING PERIODONTAL DISEASE IN COMPANION ANIMALS: Simply, Affordably and with Overwhelming Patient Compliance

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**Abstract:** Daily use of a molecular iodine pet drinking water additive was significantly more effective in reducing dental plaque and in inhibiting periodontal disease than was daily, veterinarian-supervised brushing of dog's teeth according to VOHC guidelines. Relative plaque reductions over a 28 day period ranged from a high of 47% for the molecular iodine water additive; 37% reduction for daily brushing; 24.8% reduction for every-other-day brushing and 9.9% plaque reduction for weekly brushing.

## Lessons learned in human dentistry during the pandemic:

Wishing does not make it so. At the early stages of the Covid pandemic, the American Dental Association (ADA) issued its "Interim Guidance" to clinicians throughout the U.S. with protocols for lowering disease transmission. A key ADA recommendation was for routine pre-procedural rinsing by patients with 1.5% hydrogen peroxide for intra-oral SARS CoV-2 virus reduction<sup>1</sup>. This

recommendation, although well-intentioned, came at the beginning of the pandemic and was never validated by actual testing on the SARS CoV-2 virus itself. *Boy, were they wrong!*

Subsequently, direct testing on SARS CoV-2 did become available and in October, 2020, an extensive literature review was published in the Journal of Hospital Infection. The article, authored by researchers at two dental schools and a medical school, reviewed 976 separate studies which evaluated the antiviral efficacy

Table 1

## Antiviral Efficacy against SARS-CoV-2 Institute for Antiviral Research - Utah State University

Oral rinse	Log Reduction		Observed Cytotoxicity
	30 seconds	60 seconds	
1.5% hydrogen peroxide	<1.0	<1.0	1/10, 1/100, 1/1000 dilutions
0.2% povidone iodine	2.0	3.0	none
0.12% chlorhexidine gluconate	<1.0	1.0	1/10, 1/100 dilutions
Iotech molecular iodine oral rinse ioRinse™ (100 ppm)	>3.6 Complete inactivation	>3.6 Complete inactivation	none

Source: Utah State University, Institute for Antiviral Research; August 3, 2020

of hydrogen peroxide. None of the studies showed support for hydrogen peroxide as an antiviral oral rinse. Indeed, their conclusion was “There is no scientific evidence supporting hydrogen peroxide mouthwash for control of SARS CoV-2, or any other viruses in saliva. Its indication in dental care protocols during the Covid-19 pandemic should be revised”<sup>2</sup>. Shortly afterwards, the Public Health Authorities and the Royal College of Dental Surgeons in Ontario, Canada issued an alert to all practicing dentists in Ontario to abandon the use of hydrogen peroxide as an antiviral mouthwash because mounting scientific evidence showed that it was ineffective<sup>3</sup>. The following month, the Canadian Dental Hygienists Association issued its own alert to dental hygienists throughout Canada to discontinue hydrogen peroxide rinsing, as well<sup>4</sup>.

only oral rinse to demonstrate complete inactivation of the virus was the molecular iodine rinse. It was fully effective within 30 seconds<sup>5</sup>.

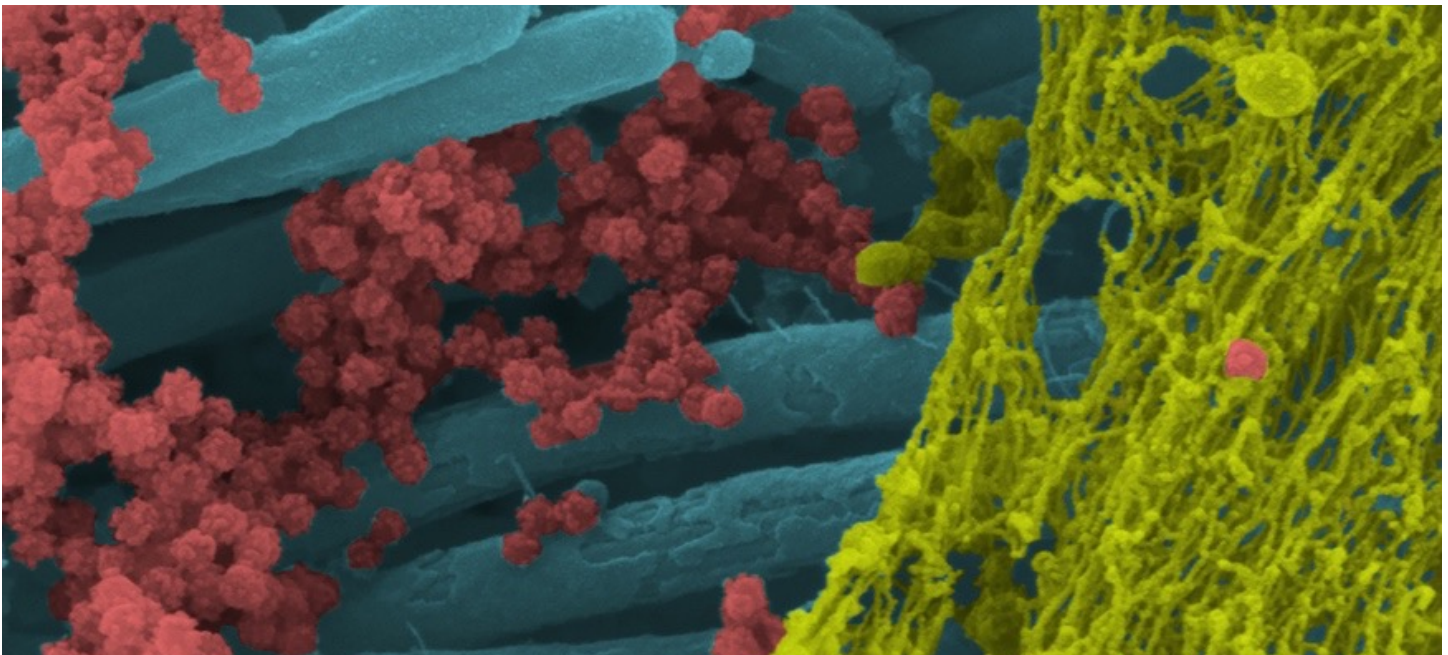
These findings were later validated by Clinicians Report, a highly respected, independent, dental clinical research organization with over 100,000 paid dentist-subscribers. In their April, 2021 newsletter, Clinicians Report confirmed that ioRinse, a patented molecular iodine oral rinse from ioTech International, was far more effective against SARS CoV-2 than any other rinse tested including hydrogen peroxide, chlorhexidine gluconate and povidone iodine. It was also the only rinse shown to be effective against SARS CoV-2 in the presence of saliva<sup>6</sup>.

The role of salivary proteins in neutralizing antiseptic oral rinses cannot be overstated. Many oral rinses show favorable kill times and broad spectrums of activity in an in vitro environment. But, when challenged with saliva, their efficacy is rapidly and dramatically lost. Figure 1 is an SEM image demonstrating the protective effect of mucous (and saliva) in the upper respiratory tract. In further independent testing, a molecular iodine oral rinse has also been shown to be fully effective against the Delta

### **So, if hydrogen peroxide is not effective against SARS CoV-2, then what is?**

In September, 2020, the Antiviral Research Institute of Utah State University tested four different professional oral rinses for their antiviral efficacy against SARS CoV-2 (See Table 1). The testing was conducted at two different time points (30 seconds and 60 seconds). The

**Figure 1**



**Note in Figure 1 SARS-CoV-2 viruses (red) dispersed amongst the cilia (blue) and protected by the mucous (yellow) which interferes with the kill potential of antiseptic rinses.**

**Table 2**

## **VOHC Clean Mouth Model Study Parameters**

### **2 Studies conducted. Each study:**

- Double Blinded
- Placebo-controlled
- Diet-controlled
- 20-25 dogs (mixed breeds)
- 28 days duration
- Plaque scored by trained Veterinarian
- Iodine dosed in nutritional range

variant of SARS CoV-2 in the presence of saliva<sup>7</sup>. 10% povidone iodine contains several different species of iodine, aggregating approximately 31,600 ppm of total iodine. Only one of these iodine species, molecular iodine (I<sub>2</sub>), is actually biocidal and it is present in only trace amounts (2-3 ppm)<sup>8</sup>. All of the other iodine species present contribute to toxicity and staining, but do not kill germs. I<sub>2</sub> is strongly and rapidly lethal to bacteria, viruses, fungi and even spores and it is unique in being one of the few antiseptic agents that does not allow bacterial resistance to develop<sup>9</sup>.

A major breakthrough in antimicrobial chemistry was made in 2018 in the development of patented, stable, aqueous solutions containing high levels of molecular iodine<sup>10</sup>. These formulations contain only trace amounts of other non-biocidal iodine species present in povidone iodine at levels of more than 31,000 ppm. High level molecular iodine solutions are far more efficacious, safer-to-use, contain less total iodine and are non-staining, compared to povidone iodine.

### **Molecular iodine for periodontal care:**

Molecular iodine oral rinses are ideal for periodontal care and have been adopted by thousands of periodontists and dentists, who rely on molecular iodine for in-office use and

for daily at-home rinsing and subgingival irrigation by patients. Molecular iodine products for either ingestion or topical use have excellent safety profiles, in part, due to iodine being an essential nutrient, required by mammals for optimal health.

Two, double-blind, placebo-controlled, clinical studies were conducted using molecular iodine as a drinking water additive to control dental plaque formation and to inhibit periodontal disease. The drinking water of dogs was dosed once daily with a nutritional quantity of molecular iodine. 25 kenneled dogs, on controlled diets, participated in each 28 day clinical study. The iodinated drinking water was well tolerated and eliminated all oral malodor evident in the study dogs. Table 2 shows the study parameters and Figure 3 shows typical plaque visualization results obtained in the studies.

Plaque reductions averaging 44% were observed over 28 days in the molecular iodine-treated dogs compared to the placebo-treated dogs. These results are significantly better than the results obtained by daily veterinarian-supervised brushing of dog's teeth<sup>11</sup> (See Table 3). The test results were so significant that the molecular iodine water additive tested was awarded the VOHC Seal of Acceptance for Plaque Control.



Figure 2

# VOHC Study – Plaque Staining



Placebo



Molecular Iodine Treated

Plaque visualized with disclosing solution.  
Representative data at Day 28 of study

**ioVet™ Oral** by ioTech International is a patented, molecular iodine pet water additive (See Figure 3). It is an important adjunct to in-office veterinary care and, when used daily at home, will help companion animals to fresher breath, healthier mouths and teeth that will last a lifetime.



Figure 3

## References:

1. Interim Guidance For Minimizing Risk of COVID-19 Transmission, American Dental Association; April 2020
2. Journal of Hospital Infection, Ortega K.L., et al; October, 2020 #106 657-662
3. Open operator dental setting infection control practices and risk of transmission during aerosol-generating dental procedures, Public Health Canada; November 26, 2020
4. COVID-19 Update for CDHA Members, Canadian Dental Hygienists Association December 3, 2020
5. Comparative Analysis of Antiviral Efficacy of Four Different Mouthwashes against Severe Acute Respiratory Syndrome Coronavirus 2: In Vitro Study, Moskowitz H, Mendenhall M. Int J Experiment Dent Sci 2020; 9(1) 1-3
6. Clinicians Report, April, 2021; Volume 14, Issue 3, Pages 1-3
7. BioScience Laboratories, Bozeman, Mt., Antiviral Efficacy Testing; September, 2021
8. Relationship between Virucidal Efficacy and Free Iodine Concentration of Povidone-Iodine in Buffer Solution, Wada H, Nojima Y, Ogawa S, et al BioControl Science, 2016;21(1):7-21
9. International Journal of Clinical Practice Volume 69, Issue II, November 2015; Pages 1247-1256
10. Stable Compositions of Uncomplexed Iodine and Methods of Use, U.S. Patent #10092006
11. Effect of Frequency of Brushing Teeth on Plaque and Calculus Accumulation and Gingivitis in Dogs, Harvey C, Serfilippi L, Barnvos, D Journal Veterinary Dentistry; Vol. 32 No. 1 Spring 2015