Biocidin Botanicals™

The Science Behind Dentalcidin® Oral Care System

Gingivitis and periodontitis are the most common inflammatory illnesses globally, impacting nearly 50% of adults 30 years and older and 70% of adults 65 and older.[1]

What is causing this alarming rise?

Oral dysbiosis – an imbalance of microorganisms in the mouth – is partly to blame. And when not addressed, it can lead to more significant problems.

Oral dysbiosis arises from plaque, a microbial biofilm. Plaque serves as protection for microorganisms against adverse environmental factors such as host immune activity and antimicrobials. In the mouth, teeth provide an ideal, non-shedding surface for plaque production. Bugs set up camp there and continually repopulate the mouth.

Why is this a problem?

Even though our immune system cannot break down a biofilm, it tries valiantly to do so – resulting in chronic inflammation, and progression from gingivitis to periodontitis to alveolar bone loss.[2]

The problem doesn't end in the mouth.

Oral dysbiosis → Infections[3] → Predisposition to more than 120 systemic illnesses.[4]

Some of these include:

- Cognitive Decline[5]
- Neurological Health[6]
- G.I. Discomfort[7]
- Blood Sugar Dysregulation[6]
- Cardiovascular Issues[6]
- Autoimmunity[8]
- Rheumatoid Arthritis[9]
- Respiratory Health[6]
- Weight Management[10]

That's why when addressing oral health, microbes matter most. And why dental health professionals rely on our Dentalcidin® Oral Care System.

How do the toothpaste and oral rinse in the system work? They're powered by Biocidin® 18, our signature botanical blend that has multiple actions, including:

- Broad-spectrum activity against harmful microorganisms*
- Immunomodulatory effects*
- Dismantling biofilms (including plaque)*

[1] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7841426/
[2] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7841426/
[3] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4346134/
[4] https://www.google.com/url?q=https://www.deltadentalnj.com/blog/entry/2019/Dentists-Can-Identify-up-to-120-Diseases-in-Your-Mouth&sa=D&source=docs&ust=1659726865432277&usg=AOvVaw39kvwjtvqbgAxnx_vX2MUf
[5] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6468093/
[6] https://www.frontiersin.org/articles/10.3389/fpsyt.2021.814177/full
[7] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7375741/
[8] https://www.frontiersin.org/articles/10.3389/fimmu.2020.591255/full
[9] https://www.hopkinsrheumatology.org/2017/01/gum-disease-linked-to-rheumatoid-arthritis/
[10] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5813989/

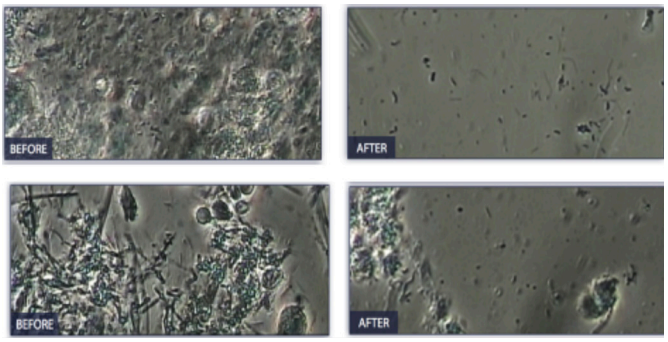
*These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease.

Commitment to Research

At Biocidin Botanicals™, we have participated in research in partnership with functional laboratories, practitioners, and universities for over 20 years. Following are examples of our research related to oral health.

Pilot Study - Dr. John Rothchild, DDS

Biologic Dentist Dr. John Rothchild completed a dental pilot study using phase-contrast microscopy with nine participants. All exhibited elevations in pathogenic microorganisms (gram-negative rods and spirochetes) in gingival crevicular fluid derived from the periodontal tissues. After one month of using liposomal Biocidin® LSF, seven out of the nine participants had a significant reduction or elimination of pathogens.



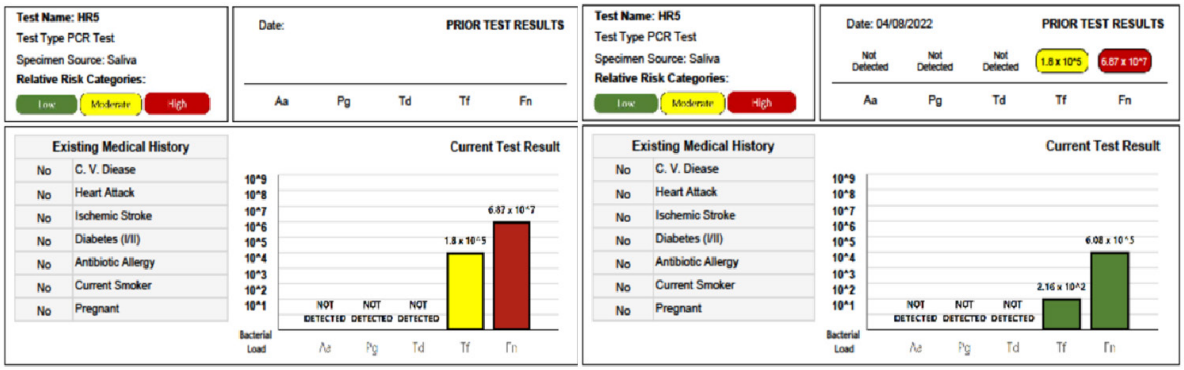
Before and after observation by phase-contrast micoscopy after 4 weeks use of Biocidin® LSF

Pocket-Probing Depth and Bleeding

Physical exams from multiple dentists and hygienists show a reduction in bleeding and periodontal pocket-probing depth with the use of Dentalcidin® toothpaste and Dentalcidin® LS oral rinse. One patient experienced an improvement in 88% of periodontal pockets and a 42.3% reduction in bleeding after four months of using the products.

Oral Pathogens and Biocidin® Products Case Study – Dr. Ariana Ebrahimian, DDS

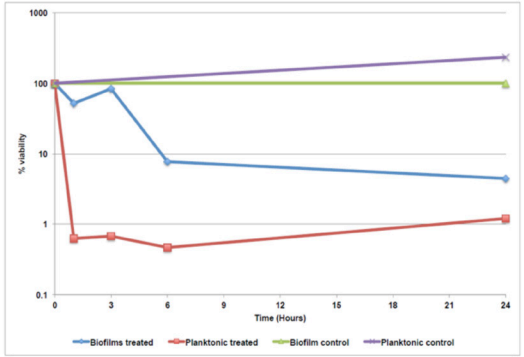
An oral microbial culture showed the presence of two of the five highest-risk bacteria: *Tannerrella forsythia* (Tf) and *Fusobacterium nucleatum* (Fn). These bacteria are the primary causes of periodontitis and gingivitis. They are also a major contributor to dental implant failure. These findings are consistent with oral dysbiosis. Use of Dentalcidin® toothpaste and Dentalcidin® LS oral rinse, along with diet and lifestyle counseling, resulted in a reduction to normal range of both pathogens, as well as improvement in physical exam findings of bleeding and inflammation.



Biofilm Research

University of Binghamton researcher Claudia Marques conducted a 2013 study on the effects of Biocidin® on *Candida albicans* and other microorganisms. The study showed "...90% of cells in both planktonic and biofilm populations of all microorganisms tested are killed with 25% Biocidin following 4 hrs of treatment."

Candida is one of the main culprits in oral biofilms. Dr. Marques is currently conducting further research on the activity of Dentalcidin® LS against *Porphyromonas gingivalis*, *Streptococcus mutans*, and *Candida albicans* as a triple species biofilm. It's anticipated the research will be completed in 2023.



C. albicans biofilms exposed to 25% Biocidin® for a period of 24 hours