

ProbioMax[®] Oral

Probiotic for Oral Microbiome Support*



Available in 60 chewable tablets

Discussion

The oral cavity harbors the second-largest microbiome in the human body, comprising a diverse range of microorganisms. A healthy and diverse oral microbiome is critical for commensal–host homeostasis and is associated with periodontal health.^{1,2} Several factors, including poor oral hygiene, an unhealthy diet, tobacco and alcohol use, loss of beneficial microorganisms and microbial diversity, or increased pathogens, may cause oral microbiota dysbiosis.² This imbalance precedes the organization of microbes and toxins into dysbiotic microbial biofilms (dental plaque). These biofilms generate extracellular polysaccharides and aid in microbial aggregation and adhesion to oral surfaces, triggering host immune-inflammatory responses and jeopardizing periodontal tissues.^{1–3} Such changes in the oral environment can also increase opportunistic keystone pathogen activity like *Porphyromonas gingivalis*, which perpetuates dysbiosis and inflammation through further microbiome remodeling.*³

Oral microorganisms engage in dynamic interactions within the oral environment and with microbiota from other anatomical sites, such as the gut.² Humans swallow approximately 600 mL of saliva daily, which contains mouth-derived microorganisms.² Researchers postulate that pathogenic bacteria originating from the mouth reach the intestine, where they can disturb the intestinal microbiome, leading to changes in systemic immune function and cytokine production.^{2–5} This mouth–intestine connection emphasizes the importance of a healthy oral microbiome and environment.*

Probiotics can help address oral dysbiosis, dysbiotic biofilms, and their sequelae. They generally exert their effects by producing bactericidal bioactive peptides, acids that alter cellular pH, and other inhibitory substances. Probiotics can also compete with pathogens for nutrients and binding sites, including biofilm binding sites.^{2,6} Additionally, probiotics may enhance epithelial barrier function by influencing the host's signaling pathways and immune-inflammatory responses.² Probiotic *Bifidobacterium* strains are recognized for their ability to promote dental and gum health, modify periodontal biofilms, and regulate host immune-inflammatory responses.² It is important to

Clinical Applications

- » Supports Dental Health*
- » Promotes Gum Health*
- » Promotes Healthy Oral Microbiota*
- » Supports Healthy Oral Cytokine Activity*

ProbioMax[®] Oral is a chewable probiotic solution for a healthy smile. It features the HN019 strain of *Bifidobacterium animalis* subsp *lactis* (*B. lactis*) provided in a CSP™ Screw Cap Bottle with 3-Phase Activ-Polymer™ Technology for optimal freshness. The use of *B. lactis* HN019 to colonize the mouth naturally supports the oral environment, including teeth and gums, and is an excellent supplement to standard dental care.*

emphasize that outcomes depend on the strain, dose, delivery, and therapy duration.⁷ For these reasons, it is critical that probiotics for oral health reflect the clinical evidence.*

Bifidobacterium animalis subsp *lactis* (*B. lactis*) HN019

Bifidobacterium animalis subsp *lactis* (*B. lactis*) HN019 is a probiotic strain originally isolated from yogurt and later commercialized as an ingredient for dietary supplements and health foods. Research and testing indicate that *B. lactis* HN019 has excellent adherence to epithelial cells, a high tolerance for the stomach's low pH environment, and a resistance to bile salts.^{2,8} These characteristics make it an excellent oral probiotic for human health. Furthermore, the complete genome sequence of *B. lactis* HN019 was published in 2018.⁸ This level of identification allows for stringent control of product quality, safety, purity, and consistency.*⁸

Abundant research substantiates the benefits of *B. lactis* HN019 for human health, including research focused on its potential to support dental and gum health and improve oral microbiological and cytokine parameters.*^{2,9,10}

HN019 Evidence Overview

Researchers conducted a randomized, double-blind, placebo-controlled trial to evaluate the adjuvant effects of *B. lactis* HN019 on plaque-induced generalized gingivitis. Sixty subjects underwent professional supragingival scaling and polishing and were subsequently given probiotic lozenges containing 1 billion CFU of *B. lactis* HN019 or placebo twice daily for 8 weeks. The probiotic group displayed a major reduction in bleeding sites within 2 weeks. At the end of 8 weeks, bleeding upon probing and gingival index scores were significantly improved, and there were fewer subjects with generalized gingivitis. The probiotic group also had higher markers of immunocompetence and significantly lower levels of certain inflammatory mediators in the gingival crevicular fluid.^{*7} The researchers concluded that incorporating *B. lactis* HN019 into an oral health routine provides supplementary clinical and immunological advantages alongside mechanical debridement in generalized gingivitis.*⁷

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

ProbioMax® Oral Supplement Facts

Serving Size: 1 Chewable Tablet

	Amount Per Serving	%Daily Value
<i>Bifidobacterium lactis</i> HN019 ^{S1}	3 mg (1 Billion CFU ¹)	**
** Daily Value not established.		

Other Ingredients: Xylitol, mannitol, hydroxypropyl cellulose, stearic acid, citric acid, magnesium stearate, natural flavors (no MSG), silica, malic acid, and stevia leaf extract.

DIRECTIONS: Take one chewable tablet twice daily (after waking up and before bedtime), or use as directed by your healthcare professional.

Consult your healthcare professional before use. Individuals taking medication should discuss potential interactions with their healthcare professional. Do not use if tamper seal is damaged.

STORAGE: Keep tightly closed in a cool, dry place out of reach of children.

FORMULATED TO EXCLUDE: Wheat, gluten, yeast, soy, animal and dairy products, fish, shellfish, peanuts, tree nuts, egg, sesame, ingredients derived from genetically modified organisms (GMOs), artificial colors, and artificial sweeteners.

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¹ Colony-Forming Unit

Another randomized, placebo-controlled trial in subjects (N = 41) with generalized chronic periodontitis assessed the effects of *B. lactis* HN019—containing probiotic lozenges as an adjuvant to scaling and root planning (SRP). The test (SRP + probiotic) and control (SRP + placebo) groups received microbiological, immunological, and clinical monitoring at baseline, 30 days, and 90 days. In the test group, participants who consumed probiotic lozenges containing 1 billion CFUs of *B. lactis* HN019 twice daily for 30 days showed significant improvements in probing pocket depth, connective tissue attachment gain, periodontal pathogen numbers, and proinflammatory cytokine levels compared with the control group. Furthermore, the test group had higher numbers of commensal bacteria and *B. lactis* HN019 DNA copies on subgingival biofilm. Researchers also found that significantly fewer subjects in the test group needed additional periodontal treatment on more than 3 sites at 90 days.*⁶

A similarly designed study evaluated the effects of *B. lactis* HN019 on clinical periodontal parameters, gingival tissue immunocompetence, immunological parameters, and adhesion to epithelial cells in generalized chronic periodontitis subjects. Thirty subjects were randomly assigned to receive SRP followed by probiotic lozenges providing 1 billion CFU of *B. lactis* HN019 or placebo twice daily for 30 days. The probiotic group showed significant improvements in plaque index (30 days) and gingival bleeding (90 days). Gingival biopsies and in vitro assays allowed for the determination that *B. lactis* HN019 adhered to buccal epithelial cells, reduced the adhesion of *P. gingivalis*, and increased antimicrobial peptides (beta defensin-3) and immunocompetence markers (eg, toll-like receptor 4, regulatory T cells). Researchers did not observe a difference in salivary immunoglobulin A.*¹¹

In conjunction with maintaining good oral hygiene and regular dental care, **ProbioMax Oral** can provide added support for healthy teeth, gums, and oral environment, which in turn supports overall well-being.*

References

- Scannapieco FA, Dongari-Bagtzoglou A. *J Periodontol.* 2021;92(8):1071-1078. doi:10.1002/JPER.21-0120
- Araujo LDC, Furlaneto FAC, da Silva LAB, et al. *Int J Mol Sci.* 2022;23(16):9334. doi:10.3390/ijms23169334
- Sudhakara P, Gupta A, Bhardwaj A, et al. 2018;6(2):10. doi:10.3390/dj6020010
- Olsen I, Yamazaki K. *J Oral Microbiol.* 2019;11(1):1586422. doi:10.1080/20002297.2019.1586422
- Huang X, Huang X, Huang Y, et al. *J Transl Med.* 2023;21(1):211. doi:10.1186/s12967-023-03995-x
- Invernici MM, Salvador SL, Silva PHF, et al. *J Clin Periodontol.* 2018;45(10):1198-1210. doi:10.1111/jcpe.12995
- de Almeida Silva Levi YL, Ribeiro MC, Silva PHF, et al. *Clin Oral Investig.* 2023;27(1):387-398. doi:10.1007/s00784-022-04744-y
- Cheng J, Laitila A, Ouwehand AC. *Front Nutr.* 2021;8:790561. doi:10.3389/fnut.2021.790561
- Ricoldi MST, Furlaneto FAC, Oliveira LFF, et al. *PLoS One.* 2017;12(6):e0179946. doi:10.1371/journal.pone.0179946
- Oliveira LF, Salvador SL, Silva PH, et al. *J Periodontol.* 2017;88(2):197-208. doi:10.1902/jop.2016.160217
- Invernici MM, Furlaneto FAC, Salvador SL, et al. *PLoS One.* 2020;15(9):e0238425. doi:10.1371/journal.pone.0238425



All XYMOGEN® Formulas Meet or Exceed cGMP Quality Standards.

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