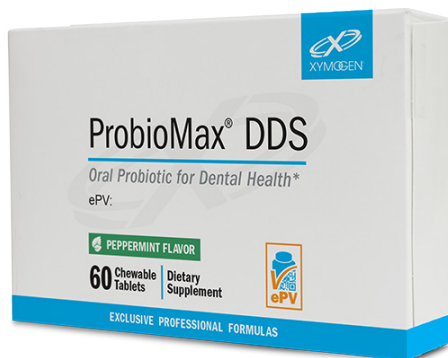


ProbioMax[®] DDS

Oral Probiotics for Dental Health*



Available in 60 tablets

Discussion

The oral cavity is home to a plethora of bacteria. Some of these microorganisms are the native and generally beneficial bacteria that promote the health of teeth and gums. *Streptococcus salivarius* (*S salivarius*) is among the most numerous of these “good” bacteria found in the mouths of healthy individuals.^[1,2] By promoting a healthy balance of bacteria in the mouth, the natural defenses of teeth and gums are supported. Moreover, promoting the growth of specific strains of these safe, natural defenders may be an important aspect of dental health, as some *S salivarius* are more beneficial than others.*

Strain DSM 14685 *S salivarius* DSM 14685 was originally isolated from a healthy adult during a specific search for a strain of *S salivarius* capable of offering targeted protection to teeth and gums.^[1,3,4] DSM 14685 is a highly beneficial strain that may be lacking in some individuals.* Data indicate that this particular strain has attributes that make it especially applicable to oral and dental health:

Adherence and Colonization In order for a probiotic to exert its benefits, it must be able to adhere to and persist in target tissues. Preliminary evidence suggests that DSM 14685 is able to colonize tissues of the mouth. Colonization by DSM 14685 “crowds out” less desirable bacteria that are competing for space and nutrients, and thereby helps promote an oral microbial balance that is associated with dental health.*^[1,4]

Bioactive Proteins One of the distinctive attributes of DSM 14685 that makes it an ideal strain for dental health is its production of specific bioactive proteins, namely salivarin A, salivarin 9, and salivarin M.^[1,2,5,6] These proteins provide targeted support for a balanced oral microbiota and contribute to the body’s natural defense of teeth and gums.*

Dextranase and Urease Production Extracellular polysaccharides produced by certain oral bacteria contribute to plaque biofilm—the sticky structure that keeps bacteria in close contact with dental tissue. A highly unique characteristic of DSM 14685 is its ability to produce dextranase, an enzyme that acts on plaque biofilm.^[7] In a randomized, double-blind, placebo-controlled trial performed in children (n=100, with 83 finishing), DSM 14685 supplementation at 3.6 billion CFU (colony-forming units) for three months resulted in a

Clinical Applications

- » Supports a Healthy Bacterial Population in the Mouth*
- » Supports Good Oral Hygiene and Healthy Teeth and Gums*
- » Supports the Natural Defense of the Teeth Against Plaque Accumulation*

*ProbioMax[®] DDS is a chewable probiotic designed to activate in the oral cavity for support of healthy teeth and gums. As you chew the peppermint-flavored tablet, it releases the safe and powerful strain of Streptococcus salivarius DSM 14685—a beneficial bacterium that normally occurs in a healthy oral cavity. S salivarius DSM 14685 then attaches to cells in the oral cavity and colonizes, positively affecting the bacterial population therein and naturally defending the teeth and gums. ProbioMax DDS can be used as a complementary addition to your daily oral and dental health regimen.**

significant difference in mean plaque scores when compared to the placebo group during the same treatment period.^[1] Additionally, for the subgroups with pretreatment plaque scores of 7 or greater (on a scale of 0-18[†]), 87.5% of the DSM 14685 group and 44% of the placebo group had plaque score reductions of 3 or more after treatment. It is also interesting to note that dextranase can destabilize plaque “scaffolding,” making it a less suitable material to which bacteria can cling. In addition to dextranase, DSM 14685 also produces urease, an enzyme that neutralizes acid and helps maintain a healthy pH in the mouth.^[1,8,9] Some oral microorganisms—*S mutans*, for instance—produce lactic acid from dietary carbohydrate metabolism. Over time, exposure to lactic acid can degrade tooth enamel and dentine.*

Dental Health Link to Systemic Health As scientific investigations continue to reveal, the connection between the oral microbiota and health may not be limited to teeth and gums.^[10] Some researchers propose that oral/dental health may be intimately linked to systemic health.^[1,11,12] In fact, maintaining good oral hygiene, supporting a healthy balance of oral microorganisms, and managing plaque accumulation—and therefore the reactionary release of cellular cytokines (e.g., IL-6, IL-8)—may prove to be important upstream factors that influence cardiovascular health, erectile function, glucose/insulin metabolism, and even joint health.*^[1,12-17]

For Best Results ProbioMax DDS tablets should be chewed slowly and thoroughly, ideally after the patient’s oral hygiene routines (e.g., brushing, flossing, rinsing). Waiting until the tablet is completely dissolved before swallowing and avoiding liquids for 30 minutes after consumption will help optimize adherence. The tablets do not contain cariogenic sugars or other ingredients that could negatively affect dental health. ProbioMax DDS is an advanced probiotic approach to managing oral hygiene and dental health that complements standard oral hygiene practices, such as brushing, flossing, and rinsing.*

[†]The scoring reflects an adapted Simplified OHI-S Index. Researchers scored six teeth, with a maximum score of 3 per tooth, and added those scores together. Thus, the total scale was 0-18. This 0-18 scale was used as the basis for the statistics.

ProbioMax® DDS Supplement Facts

Serving Size: 1 Tablet

	Amount Per Serving	%Daily Value
<i>Streptococcus salivarius</i> DSM 14685	10 mg† (1 Billion CFU*)	**
** Daily Value not established.		

Other Ingredients: Xylitol, ascorbyl palmitate, natural peppermint flavor (no MSG), and silica.

†Formulated with 20 mg (2 Billion CFU) at time of manufacture

*Colony-Forming Units

DIRECTIONS: After your bedtime oral hygiene routine, chew one tablet slowly and completely before swallowing, or as directed by your healthcare professional.

Consult your healthcare practitioner prior to use. Individuals taking medication should discuss potential interactions with their healthcare practitioner. Do not use if foil is punctured.

DOES NOT CONTAIN: Wheat, gluten, soy, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.**STORAGE:** No refrigeration necessary. Store in a cool, dry place out of reach of children.

*Formulated with 20 mg (2 Billion CFU) at time of manufacture

*Colony-Forming Units

References

- Burton JP, Drummond BK, Chilcott CN, et al. The influence of the probiotic *Streptococcus salivarius* M18 on indices of dental health in children: a randomised double-blind placebo-controlled trial. *J Med Microbiol.* 2013 Feb 28. [Epub ahead of print] [PMID: 23449874]
- Wescombe PA, Hale JD, Heng NC, et al. Developing oral probiotics from *Streptococcus salivarius*. *Future Microbiol.* 2012 Dec;7(12):1355-71. [PMID: 23231486]
- Heng NC, Haji-Ishak NS, Kalyan A, et al. Genome sequence of the bacteriocin-producing oral probiotic *Streptococcus salivarius* strain M18. *J Bacteriol.* 2011 Nov;193(22):6402-03. [PMID: 22038965]
- Chilcott C, Wescombe P. *Streptococcus salivarius* M18 colonisation – dose response: a preliminary report. Dunedin, New Zealand: BLIS Technologies Ltd; 2010. [On file]
- Wescombe PA, Heng NC, Burton JP, et al. Streptococcal bacteriocins and the case for *Streptococcus salivarius* as model oral probiotics. *Future Microbiol.* 2009 Sep;4(7):819-35. [PMID: 19722837]
- Wescombe PA, Upton M, Renault P, et al. Salivaricin 9, a new lantibiotic produced by *Streptococcus salivarius*. *Microbiology.* 2011 May;157(Pt 5):1290-99. [PMID: 21310787]
- Burton JP, Wescombe PA, Cadieux PA, et al. Beneficial microbes for the oral cavity: time to harness the oral streptococci? *Benef Microbes.* 2011 Jun;2(2):93-101. [PMID: 21840808]
- Chen YY, Clancy KA, Burne RA. *Streptococcus salivarius* urease: genetic and biochemical characterization and expression in a dental plaque streptococcus. *Infect Immun.* 1996 Feb;64(2):585-92. [PMID: 8550211]
- Chen YY, Weaver CA, Burne RA. Dual functions of *Streptococcus salivarius* urease. *J Bacteriol.* 2000 Aug;182(16):4667-69. [PMID: 10913107]
- Zarco MF, Vess TJ, Ginsburg GS. The oral microbiome in health and disease and the potential impact on personalized dental medicine. *Oral Dis.* 2012 Mar;18(2):109-20. [PMID: 21902769]
- Li X, Koltveit KM, Tronstad L, et al. Systemic diseases caused by oral infection. *Clin Microbiol Rev.* 2000 Oct;13(4):547-58. [PMID: 11023956]
- Adam E, Jindal M, Seney S, et al. *Streptococcus salivarius* K12 and M18 probiotics reduce periodontal pathogen-induced inflammation [IADR abstract 2296]. *J Dent Res.* 2011;(90, Spec Iss A). http://iadr.confex.com/iadr/2011sandiego/preliminaryprogram/abstract_150126.htm. Poster presented at: 89th General Session & Exhibition of the International Association for Dental Research (IADR); March 16-19, 2011; San Diego, CA, USA.
- Lockhart PB, Brennan MT, Thornhill M, et al. Poor oral hygiene as a risk factor for infective endocarditis-related bacteremia. *J Am Dent Assoc.* 2009 Oct;140(10):1238-44. [PMID: 19797553]
- Oğuz F, Eltas A, Beytur A, et al. Is there a relationship between chronic periodontitis and erectile dysfunction? *J Sex Med.* 2013 Mar;10(3):838-43. [PMID: 23211042]
- Bostanci N, Oztürk VÖ, Emingil G, et al. Elevated oral and systemic levels of soluble triggering receptor expressed on myeloid cells-1 (sTREM-1) in periodontitis. *J Dent Res.* 2013 Feb;92(2):161-65. [PMID: 23242230]
- Témoin S, Chakaki A, Askari A, et al. Identification of oral bacterial DNA in synovial fluid of patients with arthritis with native and failed prosthetic joints. *J Clin Rheumatol.* 2012 Apr;18(3):117-21. [PMID: 22426587]
- Oppermann RV, Weidlich P, Muszkopf ML. Periodontal disease and systemic complications. *Braz Oral Res.* 2012;26 Suppl 1:39-47. [PMID: 23318743]

Additional references available upon request

All XYMOGEN® Formulas Meet or Exceed cGMP Quality Standards.

*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.