

This information is provided as a medical and scientific educational resource for the use of physicians and other licensed health-care practitioners ("Practitioners"). This information is intended for Practitioners to use as a basis for determining whether to recommend these products to their patients. All recommendations regarding protocols, dosing, prescribing, and/or usage instructions should be tailored to the individual needs of the patient considering their medical history and concomitant therapies. This information is not intended for use by consumers.

PerioPull™ is uniquely designed to help support oral and periodontal health. It features medium-chain triglycerides (MCTs) from coconut oil. PerioPull™ also contains geranylgeraniol (GG), bromelain, and coenzyme Q10 (CoQ10) to help support oral wellness.

In conjunction with a routine of normal brushing and flossing, PerioPull™ may help support oral hygiene and periodontal health when used as recommended. This formula is free of BPAs, parabens, synthetic colors, gluten, sulfates, and synthetic sweeteners.

Oil Pulling

Oil pulling is a traditional Ayurvedic practice that has been shown in recent research to help promote oral health.¹⁻³ It is a practice that involves the swishing of 1 teaspoon (approximately 5 mL) of oil in the mouth for a minimum of 5 minutes to support oral cleanliness and health.

Periodontal disease affects approximately 90% of individuals who are 65 years of age or older and more than 50% of young adults.⁴ The functional ingredients in PerioPull™ have been shown to help support overall periodontal health, antioxidative status, and a healthy response to inflammation.^{1,5} These ingredients may also help support cleanliness and long-lasting fresh breath.

Formula Highlights

- Features MCT oil to promote periodontal health and oral microbial balance
- Includes bromelain to help support oral cleanliness and dental health
- CoQ10 is added to help support gum health
- GG as GG-Gold® to support dental health
- Tocotrienols, as Delta-Gold®, support a normal inflammatory response
- Two pleasant-tasting, long-lasting, fresh breath flavor options: spearmint and lemon
- Gluten-free, dairy-free, and soy-free
- Non-GMO

Ingredient Highlights

MCT Oil

PerioPull™ contains the MCTs of caprylic, capric, and lauric triglycerides derived from coconut oil. MCTs have been shown to support oral health and a healthy inflammatory response.¹ They may also help promote oral hygiene and cleanliness.¹ MCTs have also been shown to support biofilm disruption and a healthy response to some microbes such as *Streptococcus mutans*.¹ *S. mutans* is the primary microbe associated with dental caries.²

A clinical trial consisting of two arms involved the swishing of either coconut oil or chlorhexidine daily for 30 days in 50 children ages 8 to 12 years.² A statistically significant decrease in *S. mutans* populations in plaque and saliva was observed at the study terminus when compared to baseline in both arms.² No statistically significant differences regarding potential efficacy in the presence of pathogenic microbes were observed between coconut oil and chlorhexidine.²

A pilot study assessed the potential efficacy of coconut oil pulling on markers related to gingivitis.³ The study involved 60 individuals ages 16 to 18 years who have plaque-induced gingivitis. Oil pulling daily for 30 days was added to their oral hygiene routine. Statistically significant improvements in plaque and gingival indices were noted on day 7 and continued throughout the study.³ The authors postulated that the significant reduction in gingivitis was attributed to the support of coconut oil for a healthy inflammatory response.³

A systematic review aggregated data from four randomized controlled clinical studies exploring the potential efficacy of oil pulling with coconut oil on oral health.¹ Studies lasted from 7 to 14 days and involved individuals from ages 6 to 52 years of age. Oil pulling occurred either 1 or 2 times per day. Outcomes measured included oral microbial levels, *S. mutans* salivary levels, and indices regarding gingival status, dental stains, and plaque.¹ A statistically significant difference in dental plaque index scores was observed in the oil pulling group as compared to the control group.¹ One study compared oil pulling with a chlorhexidine rinse and found increased teeth staining in the chlorhexidine group when compared with the oil pulling group. No adverse events were reported in this systematic review.¹

Benefits*

- Promotes gum health
- Supports healthy teeth
- Promotes oral microbial balance

Ingredients: Caprylic/capric/lauric triglycerides (coconut), *Bixa orellana* seed extract (GG-Gold®, DeltaGold®), flavor, bromelain, ubiquinone.

Bromelain

Bromelain is a group of enzymes derived from pineapple (*Ananas comosus*) fruit and stems. It has been shown to support immune function and a healthy inflammatory response.⁵ It contains thiol endopeptidases, glucosidase, phosphatase, cellulase, peroxidase, and protease inhibitors.⁵

A laboratory study investigated the effects of bromelain on human dental pulp cells in the presence of lipopolysaccharide.⁵ Bromelain was shown to help decrease interleukin (IL)- β , IL-6, IL-8, intercellular adhesion molecules-1 (ICAM-1), and vascular cell adhesion molecules-1 (VCAM-1). Both ICAM-1 and VCAM-1 have been shown to promote the inflammatory response in dental pulp.⁵ Significant decreases in phosphorylation levels of extracellular signal-related kinases and p38 mitogen-activated kinases were also observed.⁵ Bromelain may also help inhibit the nuclear factor-kappa B pathway.⁵

A randomized controlled trial explored the potential efficacy of supplementation with bromelain on inflammation and edema after wisdom tooth extraction.⁶ The study involved 75 individuals between the ages of 15 and 40 years. Treatment consisted of two periods of daily supplementation with bromelain for 9 days starting the day before surgery. Three dosage levels were evaluated: 1,000 Fédération Internationale Pharmaceutique (FIP) units, 3,000 FIP, and 4,500 FIP. Postoperative swelling was shown to have greater improvement in all treatment groups when compared to a placebo.⁶

Bromelain may also help support oral hygiene and healthy tooth coloration. A study assessed the potential whitening effects of bromelain when it is applied in vitro three times daily once per week for 4 weeks on bovine dental discs.⁷ It was reported that the color change caused by bromelain was greater than the human perceptibility threshold. Bromelain whitening gels showed similar improvement in whiteness index as compared to a whitening gel containing carbamide peroxide.⁷

Bromelain may also support a healthy response to bacteria in the oral cavity. Laboratory studies indicate that it may help inhibit the growth of *Pseudomonas gingivalis*.⁸

CoQ10

This formula contains CoQ10, otherwise known as ubiquinone, which may help support gum health and may promote a healthy response to oxidative stress.⁴ CoQ10 has been shown in studies to support gum health in response to age-related changes.⁴

CoQ10 supports cellular health through membrane stabilization, free radical scavenging, and stabilization of calcium-dependent channels.⁴ It also plays a critical role in cellular respiration and adenosine triphosphate generation.⁴ Certain deficiencies in CoQ10 have been linked to periodontal disease.⁴ Increased concentrations of CoQ10 have been reported in studies to help suppress periodontal inflammation in the presence of diseased gingiva.⁴

A 4-week, randomized, controlled clinical trial assessed the efficacy of the application of a gel containing CoQ10 on individuals with periodontal disease. Objective parameters were collected at weeks 2 and 4. Study results showed a significant improvement at week 4 in plaque index, gingival index, and gingival bleeding.⁹

GG as GG-Gold®

GG is a precursor to the endogenous synthesis of CoQ10 and plays a pivotal role in many biological processes, including protein synthesis and cellular functioning.¹⁰⁻¹² It helps promote CoQ10 production and may help support the body's response to age-related decline in CoQ10 synthesis. It may also help optimize healthy mitochondrial function.¹⁰⁻¹²

Laboratory studies indicated that GG may help support bone health, including dental bone, osteocyte function, and help promote jaw integrity.^{13,14} GG was shown in cellular studies to promote a healthy response to pain, mediated through the vanilloid, glutamate, and 5-HT₃ receptors.^{15,16} This may help support oral sensitivity. It was also shown to downregulate markers of inflammatory response such as IL-6 and NF- κ B.¹⁷

Tocotrienols as Delta-Gold®

Periodontal pathogens have been shown to activate inflammatory responses such as the nuclear factor-kappa B (NF- κ B) pathway and certain pro-inflammatory cytokines, including tumor necrosis factor-alpha (TNF- α).¹⁸ Delta- and gamma-tocotrienols are forms of vitamin E that have been shown in research to possess distinct properties that support antioxidative status and a healthy inflammatory response.¹⁹ Tocotrienols have been shown to help suppress IL-6, TNF- α , C-reactive protein, and malondialdehyde, and inhibit the NF- κ B pathway.¹⁹

Recommended Use: After normal brushing routine, swish 1 teaspoon (approximately 5 mL) of oil in mouth for a minimum of 5 minutes or as directed by your health-care practitioner. Spit out the oil, and for maximum benefits, do not rinse to allow for longer contact of the ingredients to the teeth and gums.

Shake Well. Do not ingest. This product should be used in addition to a normal brushing and flossing routine.

Warning: If accidentally swallowed, upset stomach may occur.

For a list of references cited in this document, please visit:

<https://www.designsforhealth.com/api/library-assets/literature-reference---periopull-lemon-mint-tech-sheet-references>

Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Healthcare practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage.

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To contact Designs for Health, please call us at (860) 623-6314, or visit us on the web at www.designsforhealth.com.