



THE ORIGINAL ORAL  
HEALTH SUPPLEMENT

# ORAGUARD<sup>®</sup>

## GUM HEALTH

Supports your patient in the treatment  
of periodontitis.

## ORAGUARD GUM HEALTH: ITS BENEFICIAL IMPACT

Periodontitis is a complex disease with multifactorial origins, involving three primary groups of factors: risk factors, microbial pathogens, and an exaggerated immune-inflammatory response from the host.

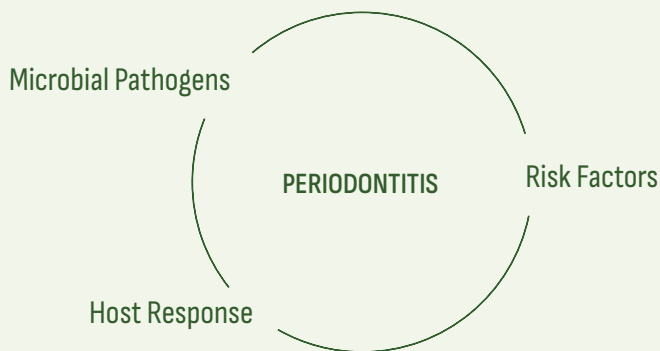
Dental professionals play a crucial role in combating periodontitis, primarily by addressing the first two factors. You spend considerable time educating your patients on oral hygiene and utilize techniques like motivational interviewing to discourage smoking or parafunctional habits.

Treatment efforts by professionals are predominantly directed at combating bacterial pathogens. Subgingival debridement is employed to decrease the microbial burden within periodontal pockets, facilitating a shift from a pathogenic to a more beneficial microbial composition within the biofilm.

Additionally, the use of disinfecting mouthwashes and, in certain cases, antibiotics, are common practices. Your approach in these areas is highly effective! However, managing the host's response presents a more challenging task, as it is considerably more difficult to modulate.

In recent years, the role of micronutrients in periodontal health has gained considerable attention within scientific research. It's increasingly recognized that specific nutrients could play a crucial role in enhancing the outcomes of periodontal treatments.

Studies indicate that 13-36% of patients undergoing periodontal treatment do not respond as well as expected, regardless of their oral hygiene practices<sup>1,2</sup>. These "poor responders" may require additional support to achieve optimal treatment outcomes, with micronutrient



deficiencies being a potential contributing factor<sup>3</sup>. Various factors encountered in dental practice can lead to these deficiencies, including:

- **Drug-induced effects**

*Certain medications impact micronutrient absorption. For instance, ACE inhibitors can reduce zinc absorption. Aspirin may lower vitamin C serum levels. Proton pump inhibitors can decrease the serum levels of vitamins B9, B12, C and iron. Metformin affects vitamins B9 and B12 and statins may reduce the bioavailability of coenzyme Q10 and vitamin D.*

- **Lifestyle factors**

*A poor diet can significantly affect micronutrient status<sup>5</sup>, and smoking (including passive smoking) can reduce the absorption of vitamins C, B12, and A<sup>6</sup>.*

- **Systemic illnesses**

*Conditions such as diabetes, liver disease, and thyroid disorders can affect micronutrient absorption and availability.<sup>3</sup>*

- **Increased requirements:**

*Situations like pregnancy, breastfeeding, and stress can elevate the body's needs for specific micronutrients.<sup>7</sup>*

We've utilized scientific research to develop an oral health supplement specifically formulated to meet the micronutrient requirements of periodontal patients. Our goal is to provide dental practitioners with an additional resource in the fight against periodontitis.

By prescribing Oraguard Gum Health, you offer your patients a cutting-edge, comprehensive supplement that supports a healthy immune system and includes a range of antioxidants and probiotics.

**Let us help you to effectively manage the host response component.**

## THE ACTIVE INGREDIENTS OF ORAGUARD GUM HEALTH

Oraguard Gum Health is formulated with a scientifically-backed blend of micronutrients and probiotics, designed to enhance the efficacy of periodontal treatments.

For a comprehensive understanding of the ingredients in Oraguard Gum Health, please refer to Table 1, which provides a detailed overview of the micronutrients included. Additionally, a compilation of pertinent studies on periodontitis, demonstrating the relevance and impact of these nutrients, can also be found. This information is geared towards supporting dental professionals in making informed decisions about integrating Oraguard Gum Health into their treatment protocols, thereby potentially improving patient outcomes.

P4 - 7: Table 1. What is in Oraguard Gum Health

### MICRONUTRIENT SUBSTANCE

Vitamin A

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Vitamin B9

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Vitamin B12

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Vitamin C

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Vitamin D

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Vitamin E

## CONTRIBUTES TO

## RELEVANT STUDIES RELATED TO PERIODONTITIS

- Normal iron metabolism
- Maintenance of normal mucous membranes
- Normal function of the immune system
- The process of cell specialisation

*Stahl et al. 1998<sup>8</sup>, Harpenau et al. 2011<sup>9</sup>, Chandra et al. 2012<sup>10</sup>, Ambati et al. 2017<sup>11</sup>, Estévez-Santiago et al. 2016<sup>12</sup>, Clinton 1998<sup>13</sup>, Cerna et al. 1990<sup>14</sup>, Gupta et al. 2015<sup>15</sup>, Reddy et al. 2015<sup>16</sup>, Wood et al. 2004<sup>17</sup>*

- Normal amino acid synthesis
- Normal blood formation
- Normal homocysteine metabolism
- Normal function of the immune system
- The process of cell division

*Pack & Thomson 1980<sup>18</sup>, Pack et al. 1984<sup>19</sup>, Erdemir & Bergstrom 2006<sup>20</sup>, Vogel et al. 1976<sup>21</sup>*

- Normal energy-yielding metabolism
- Normal homocysteine metabolism
- Normal red blood cell formation
- Normal function of the immune system
- The process of cell division

*Warad et al. 2014<sup>22</sup>, Neiva et al. 2005<sup>23</sup>, Zong et al. 2016<sup>24</sup>*

- Normal collagen formation for function of blood vessels, bone, cartilage and gums
- Normal energy-yielding metabolism
- Normal function of the immune system
- The protection of cells from oxidative stress
- Regeneration of the reduced form of vitamin E
- Increasing iron absorption

*Gokhale et al. 2013<sup>25</sup>, Abou Sulaimann et al. 2010<sup>26</sup>, Nishida et al. 2000<sup>27</sup>, Leggot et al. 1991<sup>28</sup>, Fageeh et al. 2021<sup>29</sup>, Jacob et al. 1987<sup>30</sup>, Staudte et al. 2005<sup>31</sup>, Sahni et al. 2008<sup>32</sup>, Amaliya et al. 2015<sup>33</sup>, Van der Velden et al. 2011<sup>34</sup>, Pussinen et al. 2003<sup>35</sup>, Chapple et al. 1996<sup>36</sup>, Amarassen et al. 2005<sup>37</sup>, De Jong et al. 2014<sup>38</sup>, Leggott et al. 1986<sup>38</sup>, Tada et al. 2019<sup>39</sup>, Kuzmano et al. 2012<sup>40</sup>*

- Normal absorption of calcium and phosphorus
- Normal blood calcium levels
- Maintenance of normal bones
- Maintenance of normal teeth
- Normal function of the immune system
- The process of cell division
- Normal function of the immune system

*Dietrich et al. 2004<sup>41</sup>, Hennig et al. 1999<sup>42</sup>, Jönsson et al. 2013<sup>43</sup>, Krall et al. 2001<sup>44</sup>, Dawson et al. 2014<sup>45</sup>, Hildebolt 2005<sup>46</sup>, Antonoglou et al. 2015<sup>47</sup>, Jabbar et al. 2011<sup>48</sup>, Zahn et al. 2014<sup>49</sup>, Laky et al. 2017<sup>50</sup>, Schulze-Späte et al. 2016<sup>51</sup>, Machado et al. 2020<sup>52</sup>, Millen et al. 2014<sup>53</sup>, Pavlesen et al. 2016<sup>54</sup>*

- Protection of cells from oxidative stress

*Cerná et al. 1984<sup>14</sup>, Panjamurthy et al. 2005<sup>55</sup>, Iwasaki et al. 2012<sup>56</sup>, Zong et al. 2015<sup>24</sup>, Slade et al. 1976<sup>57</sup>, Singh et al. 2014<sup>58</sup>, Brigelius-Flohé & Traber 1999<sup>59</sup>, Traber & Stevens<sup>60</sup>*

## OUR COMMITMENT TO INNOVATION

Our dedication is to continuously update the formulation of our supplements to align with the latest scientific findings.

This ensures that when you prescribe our products, you are offering your patients a solution that is both comprehensive and reflective of the most current research. It's our way of ensuring you can provide the best possible care with confidence in the effectiveness and relevance of the treatment options you recommend.

P4 - 7: Table 1. What is in Oraguard Gum Health

### MICRONUTRIENT SUBSTANCE

Co-enzyme Q10

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Omega-3 fatty acids

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Magnesium

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Selenium

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Zinc

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Lactobacillus reuteri

## CONTRIBUTES TO

## RELEVANT STUDIES RELATED TO PERIODONTITIS

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- Protection of cells from oxidative stress  
*Sale et al. 2014<sup>61</sup>, Hansen et al. 1976<sup>62</sup>, Hans et al. 2012<sup>63</sup>, Sharma et al. 2016<sup>64</sup>, Littaru et al. 1971<sup>65</sup>, Manthena et al. 2015<sup>66</sup>, Pranam et al. 2020<sup>67</sup>, Merle et al. 2023<sup>68</sup>, Rasoolzadeh et al. 2022<sup>69</sup>*
- 
- Maintenance of normal blood triglyceride levels
  - Maintenance of normal blood pressure
  - Normal function of the heart
- 
- Electrolyte balance
  - Normal protein synthesis
  - Maintenance of normal bones
  - Maintenance of normal teeth
  - The process of cell division  
*Thomas et al. 2013<sup>71</sup>, Meisel et al. 2005<sup>72</sup>, Yoshihara et al. 2011<sup>73</sup>*
- 
- Normal function of the immune system
  - Normal thyroid function
  - Protection of cells from oxidative stress  
*Freeland et al. 1976<sup>74</sup>*
- 
- Protection of cells from oxidative stress
  - The process of cell division
  - Normal DNA synthesis
  - Normal acid-base metabolism
  - Normal metabolism of carbohydrates, fatty acids, vitamin A
  - Normal protein synthesis
  - Maintenance of normal bones
  - Normal function of the immune system  
*Freeland et al. 1976<sup>74</sup>, Pushparani et al. 2016<sup>75</sup>, Pushparani et al. 2014<sup>76</sup>, Frithiof et al. 1980<sup>77</sup>*
- 
- Probiotic bacteria leading to immunomodulation  
*Teughels et al. 2013<sup>78</sup>, Ochôa et al. 2023<sup>79</sup>*



## PRESCRIBING THE RIGHT MICRONUTRIENTS FOR YOUR PATIENT

Previously, prescribing an effective combination of micronutrients was a complex process, involving multiple prescriptions and requiring patients to manage a variety of different supplements. This was not only cumbersome for dental professionals but also for patients. However, this is no longer the case.

With the development of Oraguard Gum Health, we offer a streamlined solution for supplementing essential micronutrients. On our website, [www.oraguard.com](http://www.oraguard.com), you can order flyers. These leaflets contain ready-to-use prescriptions for Oraguard Gum Health, which you can give to your patients if you determine they could benefit from our product. Each prescription includes a QR code that leads your patients to our website where they can easily order Oraguard Gum Health. The product is delivered to their home. This simplifies the process for both the professional and the patient.



## HOW TO TAKE ORAGUARD GUM HEALTH: IT IS SIMPLE !

**Step 1:** Consume one Oraguard Gum Health tablet daily with 200 ml of water.

**Step 2:** Take 10 ml of our Oraguard Gum Health syrup, with a delightful orange flavor, every day.

To achieve optimal results, we recommend following the **Oraguard Gum Health regimen for 90 days**, starting on the first day of subgingival cleaning, in accordance with the protocol used in most relevant studies. However, we also offer a 45-day supply option to accommodate different treatment needs.

## FEATURED READING: MICRONUTRIENTS AND PERIODONTITIS

For a comprehensive understanding of the scientific research on the impact of micronutrient supplementation on periodontitis and its treatments, we highly recommend exploring the following article:

*Dommisch et al. 2018 - Effect of micronutrient malnutrition on periodontal disease and periodontal therapy<sup>3</sup>*



## YOUR FEEDBACK IS VALUABLE TO US

At Oraguard, our mission is to support dental professionals in delivering top-notch care to their patients. We highly value your opinions and experiences with our products and services. Your feedback is crucial to us, and we welcome your thoughts and suggestions. Please share your insights by emailing us at [feedback@oraguard.com](mailto:feedback@oraguard.com).

Your input helps us to continually improve and ensure we meet your needs and expectations.



*For information about our product and access to the webshop, please visit:*  
[WWW.ORAGUARD.COM](http://WWW.ORAGUARD.COM)

## REFERENTIES

1. Preshaw, P., Holliday, R., Law, H. & Heasman, P. Outcomes of non-surgical periodontal treatment by dental hygienists in training: impact of site- and patient-level factors. *Int. J. Dent. Hyg.* **11**, 273–279 (2013).
2. Holmlund, A. & Lind, L. RESPONDERS TO PERIODONTAL DISEASE TREATMENT HAVE LOWER RISK FOR FUTURE CARDIOVASCULAR DISEASE THAN NON-RESPONDERS. *J. Am. Coll. Cardiol.* **65**, A1420–A1420 (2015).
3. Dommisch, H., Kuzmanova, D., Jönsson, D., Grant, M. & Chapple, I. Effect of micronutrient malnutrition on periodontal disease and periodontal therapy. *Periodontol.* 2000 **78**, 129–153 (2018).
4. Samaras, D. et al. Effects of widely used drugs on micronutrients: A story rarely told. *Nutrition* **29**, 605–610 (2013).
5. McKay, J., Ho, S., Jane, M. & Pal, S. Overweight & obese Australian adults and micronutrient deficiency. *BMC Nutr.* **6**, 12 (2020).
6. ALBERG, A. J. et al. Household exposure to passive cigarette smoking and serum micronutrient concentrations. *Am. J. Clin. Nutr.* **72**, 1576–1582 (2000).
7. Gröber, U., Schmidt, J. & Kisters, K. Important drug-micronutrient interactions: A selection for clinical practice. *Crit. Rev. Food Sci. Nutr.* **60**, 257–275 (2020).
8. Stahl, W. et al. Carotenoid mixtures protect multilamellar liposomes against oxidative damage: synergistic effects of lycopene and lutein. *FEBS Lett.* **427**, 305–308 (1998).
9. Harpenau, L. A., Cheema, A. T., Zingale, J. A., Chambers, D. W. & Lundergan, W. P. Effects of nutritional supplementation on periodontal parameters, carotenoid antioxidant levels, and serum C-reactive protein. *J. Calif. Dent. Assoc.* **39**, 309–312, 314–318 (2011).
10. Chandra, R. V. et al. Efficacy of lycopene as a locally delivered gel in the treatment of chronic periodontitis: smokers vs nonsmokers. *Quintessence Int. Berl. Ger.* 1985 **43**, 401–411 (2012).
11. Ambati, M. et al. Evaluation of oxidative stress in chronic periodontitis patients following systemic antioxidant supplementation: A clinical and biochemical study. *J. Nat. Sci. Biol. Med.* **8**, 99–103 (2017).
12. Estévez-Santiago, R., Olmedilla-Alonso, B., Beltrán-de-Miguel, B. & Cuadrado-Vives, C. Lutein and zeaxanthin supplied by red/orange foods and fruits are more closely associated with macular pigment optical density than those from green vegetables in Spanish subjects. *Nutr. Res. N. Y. N* **36**, 1210–1221 (2016).
13. Clinton, S. K. Lycopene: chemistry, biology, and implications for human health and disease. *Nutr. Rev.* **56**, 35–51 (1998).
14. Cerná, H. et al. Periodontium and vitamin E and A in pregnancy. *Acta Univ. Palacki. Olomuc. Fac. Med.* **125**, 173–179 (1990).
15. Gupta, S., Jawanda, M. K., Arora, V., Mehta, N. & Yadav, V. Role of Lycopene in Preventing Oral Diseases as a Nonsurgical Aid of Treatment. *Int. J. Prev. Med.* **6**, 70 (2015).
16. Reddy, P. V. N., Ambati, M. & Koduganti, R. Systemic lycopene as an adjunct to scaling and root planing in chronic periodontitis patients with type 2 diabetes mellitus. *J. Int. Soc. Prev. Community Dent.* **5**,

S25-31 (2015).

17. Wood, N. & Johnson, R. B. The relationship between tomato intake and congestive heart failure risk in periodontitis subjects. *J. Clin. Periodontol.* **31**, 574–580 (2004).
18. Pack, A. R. & Thomson, M. E. Effects of topical and systemic folic acid supplementation on gingivitis in pregnancy. *J. Clin. Periodontol.* **7**, 402–414 (1980).
19. Pack, A. R. Folate mouthwash: effects on established gingivitis in periodontal patients. *J. Clin. Periodontol.* **11**, 619–628 (1984).
20. Erdemir, E. O. & Bergstrom, J. Relationship between smoking and folic acid, vitamin B12 and some haematological variables in patients with chronic periodontal disease. *J. Clin. Periodontol.* **33**, 878–884 (2006).
21. Vogel, R. I., Fink, R. A., Schneider, L. C., Frank, O. & Baker, H. The effect of folic acid on gingival health. *J. Periodontol.* **47**, 667–668 (1976).
22. Warad, S. et al. Determining the Effect of Gutkha on Serum Levels of Vitamin B12 and Folic Acid as Compared to Smoking among Chronic Periodontitis Subjects: A Cross-Sectional Study. *J. Clin. Diagn. Res. JCDR* **8**, ZC85–89 (2014).
23. Neiva, R. F., Al-Shammari, K., Nociti, F. H., Soehren, S. & Wang, H.-L. Effects of vitamin-B complex supplementation on periodontal wound healing. *J. Periodontol.* **76**, 1084–1091 (2005).
24. Zong, G. et al. Serum vitamin B12 is inversely associated with periodontal progression and risk of tooth loss: a prospective cohort study. *J. Clin. Periodontol.* **43**, 2–9 (2016).
25. Gokhale, N. H., Acharya, A. B., Patil, V. S., Trivedi, D. J. & Thakur, S. L. A short-term evaluation of the relationship between plasma ascorbic acid levels and periodontal disease in systemically healthy and type 2 diabetes mellitus subjects. *J. Diet. Suppl.* **10**, 93–104 (2013).
26. Abou Sulaiman, A. E. & Shehadeh, R. M. H. Assessment of total antioxidant capacity and the use of vitamin C in the treatment of non-smokers with chronic periodontitis. *J. Periodontol.* **81**, 1547–1554 (2010).
27. Nishida, M. et al. Dietary vitamin C and the risk for periodontal disease. *J. Periodontol.* **71**, 1215–1223 (2000).
28. Leggott, P. J. et al. Effects of ascorbic acid depletion and supplementation on periodontal health and subgingival microflora in humans. *J. Dent. Res.* **70**, 1531–1536 (1991).
29. Fageeh, H. N. et al. Efficacy of vitamin C supplementation as an adjunct in the non-surgical management of periodontitis: a systematic review. *Syst. Rev.* **10**, 5 (2021).
30. Jacob, R. A. et al. Experimental vitamin C depletion and supplementation in young men. Nutrient interactions and dental health effects. *Ann. N. Y. Acad. Sci.* **498**, 333–346 (1987).
31. Staudte, H., Sigusch, B. W. & Glockmann, E. Grapefruit consumption improves vitamin C status in periodontitis patients. *Br. Dent. J.* **199**, 213–217, discussion 210 (2005).
32. Sahni, S. et al. High vitamin C intake is associated with lower 4-year bone loss in elderly men.

*J. Nutr.* **138**, 1931–1938 (2008).

33. Amaliya, A. et al. Java project on periodontal diseases: periodontal bone loss in relation to environmental and systemic conditions. *J. Clin. Periodontol.* **42**, 325–332 (2015).

34. Van der Velden, U., Kuzmanova, D. & Chapple, I. L. C. Micronutritional approaches to periodontal therapy. *J. Clin. Periodontol.* **38 Suppl 11**, 142–158 (2011).

35. Pussinen, P. J., Laatikainen, T., Alfthan, G., Asikainen, S. & Jousilahti, P. Periodontitis is associated with a low concentration of vitamin C in plasma. *Clin. Diagn. Lab. Immunol.* **10**, 897–902 (2003).

36. Chapple, I. L. Role of free radicals and antioxidants in the pathogenesis of the inflammatory periodontal diseases. *Clin. Mol. Pathol.* **49**, M247–255 (1996).

37. Amarasena, N., Ogawa, H., Yoshihara, A., Hanada, N. & Miyazaki, H. Serum vitamin C-periodontal relationship in community-dwelling elderly Japanese. *J. Clin. Periodontol.* **32**, 93–97 (2005).

38. de Jong, T. M. H. et al. SLC23A1 polymorphism rs6596473 in the vitamin C transporter SVCT1 is associated with aggressive periodontitis. *J. Clin. Periodontol.* **41**, 531–540 (2014).

39. Tada, A. & Miura, H. The Relationship between Vitamin C and Periodontal Diseases: A Systematic Review. *Int. J. Environ. Res. Public Health* **16**, 2472 (2019).

40. Kuzmanova, D. et al. Vitamin C in plasma and leucocytes in relation to periodontitis. *J. Clin. Periodontol.* **39**, 905–912 (2012).

41. Dietrich, T., Joshipura, K. J., Dawson-Hughes, B. & Bischoff-Ferrari, H. A. Association between serum concentrations of 25-hydroxyvitamin D3 and periodontal disease in the US population. *Am. J. Clin. Nutr.* **80**, 108–113 (2004).

42. Hennig, B. J., Parkhill, J. M., Chapple, I. L., Heasman, P. A. & Taylor, J. J. Association of a vitamin D receptor gene polymorphism with localized early-onset periodontal diseases. *J. Periodontol.* **70**, 1032–1038 (1999).

43. Jönsson, D., Aggarwal, P., Nilsson, B.-O. & Demmer, R. T. Beneficial effects of hormone replacement therapy on periodontitis are vitamin D associated. *J. Periodontol.* **84**, 1048–1057 (2013).

44. Krall, E. A., Wehler, C., Garcia, R. I., Harris, S. S. & Dawson-Hughes, B. Calcium and vitamin D supplements reduce tooth loss in the elderly. *Am. J. Med.* **111**, 452–456 (2001).

45. Dawson, D. R., Branch-Mays, G., Gonzalez, O. A. & Ebersole, J. L. Dietary modulation of the inflammatory cascade. *Periodontol.* **2000 64**, 161–197 (2014).

46. Hildebolt, C. F. Effect of vitamin D and calcium on periodontitis. *J. Periodontol.* **76**, 1576–1587 (2005).

47. Antonoglou, G. N. et al. Low serum level of 1,25(OH)<sub>2</sub> D is associated with chronic periodontitis. *J. Periodontol. Res.* **50**, 274–280 (2015).

48. Jabbar, S. et al. Plasma vitamin D and cytokines in periodontal disease and postmenopausal osteoporosis. *J. Periodontol. Res.* **46**, 97–104 (2011).

49. Zhan, Y. et al. Prospective Study of Serum

25-hydroxy Vitamin D and Tooth Loss. *J. Dent. Res.* **93**, 639–644 (2014).

50. Laky, M. et al. Serum levels of 25-hydroxyvitamin D are associated with periodontal disease. *Clin. Oral Investig.* **21**, 1553–1558 (2017).

51. Schulze-Späte, U. et al. Systemic vitamin D supplementation and local bone formation after maxillary sinus augmentation - a randomized, double-blind, placebo-controlled clinical investigation. *Clin. Oral Implants Res.* **27**, 701–706 (2016).

52. Machado, V., Lobo, S., Proença, L., Mendes, J. J. & Botelho, J. Vitamin D and Periodontitis: A Systematic Review and Meta-Analysis. *Nutrients* **12**, 2177 (2020).

53. Millen, A. E. et al. Vitamin D status and 5-year changes in periodontal disease measures among postmenopausal women: the Buffalo OsteoPerio Study. *J. Periodontol.* **85**, 1321–1332 (2014).

54. Pavlesen, S. et al. Vitamin D Status and Tooth Loss in Postmenopausal Females: The Buffalo Osteoporosis and Periodontal Disease (OsteoPerio) Study. *J. Periodontol.* **87**, 852–863 (2016).

55. Panjamurthy, K., Manoharan, S. & Ramachandran, C. R. Lipid peroxidation and antioxidant status in patients with periodontitis. *Cell. Mol. Biol. Lett.* **10**, 255–264 (2005).

56. Iwasaki, M., Manz, M. C., Taylor, G. W., Yoshihara, A. & Miyazaki, H. Relations of serum ascorbic acid and  $\alpha$ -tocopherol to periodontal disease. *J. Dent. Res.* **91**, 167–172 (2012).

57. Slade, E. W., Bartuska, D., Rose, L. F. & Cohen, D. W. Vitamin E and periodontal disease. *J. Periodontol.* **47**, 352–354 (1976).

58. Singh, N., Chander Narula, S., Kumar

Sharma, R., Tewari, S. & Kumar Sehgal, P. Vitamin E supplementation, superoxide dismutase status, and outcome of scaling and root planing in patients with chronic periodontitis: a randomized clinical trial. *J. Periodontol.* **85**, 242–249 (2014).

59. Brigelius-Flohé, R. & Traber, M. G. Vitamin E: function and metabolism. *FASEB J. Off. Publ. Fed. Am. Soc. Exp. Biol.* **13**, 1145–1155 (1999).

60. Traber, M. G. & Stevens, J. F. Vitamins C and E: beneficial effects from a mechanistic perspective. *Free Radic. Biol. Med.* **51**, 1000–1013 (2011).

61. Sale, S. T. et al. A comparative evaluation of topical and intrasulcular application of coenzyme Q10 (Perio QTM) gel in chronic periodontitis patients: A clinical study. *J. Indian Soc. Periodontol.* **18**, 461–465 (2014).

62. Hansen, I. L., Iwamoto, Y., Kishi, T., Folkers, K. & Thompson, L. E. Bioenergetics in clinical medicine. IX. Gingival and leucocytic deficiencies of coenzyme Q10 in patients with periodontal disease. *Res. Commun. Chem. Pathol. Pharmacol.* **14**, 729–738 (1976).

63. Hans, M., Prakash, S. & Gupta, S. Clinical evaluation of topical application of perio-Q gel (Coenzyme Q(10)) in chronic periodontitis patients. *J. Indian Soc. Periodontol.* **16**, 193–199 (2012).

64. Sharma, V., Gupta, R., Dahiya, P. & Kumar, M. Comparative evaluation of coenzyme Q10-based gel and 0.8% hyaluronic acid gel in treatment of chronic periodontitis. *J. Indian Soc. Periodontol.* **20**, 374–380 (2016).

65. Littarru, G. P., Nakamura, R., Ho, L., Folkers, K. & Kuzell, W. C. Deficiency of coenzyme Q10 in gingival tissue from patients with periodontal disease. *Proc. Natl. Acad. Sci. U. S. A.* **68**, 2332–2335 (1971).

66. Manthena, S., Rao, M. V. R., Penubolu, L. P., Putcha, M. & Harsha, A. V. N. S. Effectiveness of CoQ10 Oral Supplements as an Adjunct to Scaling and Root Planing in Improving Periodontal Health. *J. Clin. Diagn. Res. JCDR* **9**, ZC26-28 (2015).
67. Pranam, S., Palwankar, P., Pandey, R. & Goyal, A. Evaluation of Efficacy of Coenzyme Q10 as an Adjunct to Nonsurgical Periodontal Therapy and Its Effect on Crevicular Superoxide Dismutase in Patients with Chronic Periodontitis. *Eur. J. Dent.* **14**, 551–557 (2020).
68. Merle, C. L., Lenzen, C., Schmalz, G. & Ziebolz, D. Systematic Review on Protocols of Coenzyme Q10 Supplementation in Non-Surgical Periodontitis Therapy. *Nutrients* **15**, 1585 (2023).
69. Rasoolzadeh, E. A., Shidfar, F., Rasoolzadeh, R. A. & Hezaveh, Z. S. THE EFFECT OF COENZYME Q10 ON PERIODONTITIS: A SYSTEMATIC REVIEW AND META-ANALYSIS OF CLINICAL TRIALS. *J. Evid.-Based Dent. Pract.* **22**, 101710 (2022).
70. Castro Dos Santos, N. C. et al. Does the use of omega-3 fatty acids as an adjunct to non-surgical periodontal therapy provide additional benefits in the treatment of periodontitis? A systematic review and meta-analysis. *J. Periodontol Res.* **57**, 435–447 (2022).
71. Thomas, B., Ramesh, A., Suresh, S. & Prasad, B. R. A comparative evaluation of antioxidant enzymes and selenium in the serum of periodontitis patients with diabetes mellitus type 2. *Contemp. Clin. Dent.* **4**, 176–180 (2013).
72. Meisel, P. et al. Magnesium deficiency is associated with periodontal disease. *J. Dent. Res.* **84**, 937–941 (2005).
73. Yoshihara, A., Iwasaki, M. & Miyazaki, H. Mineral content of calcium and magnesium in the serum and longitudinal periodontal progression in Japanese elderly smokers. *J. Clin. Periodontol.* **38**, 992–997 (2011).
74. Freeland, J. H., Cousins, R. J. & Schwartz, R. Relationship of mineral status and intake to periodontal disease. *Am. J. Clin. Nutr.* **29**, 745–749 (1976).
75. Pushparani, D. S. Serum Zinc and Glucuronidase Enzyme Level in Type 2 Diabetes Mellitus with Periodontitis. *Curr. Diabetes Rev.* **12**, 449–453 (2016).
76. Pushparani, D. S., Anandan, S. N. & Theagarayan, P. Serum zinc and magnesium concentrations in type 2 diabetes mellitus with periodontitis. *J. Indian Soc. Periodontol.* **18**, 187–193 (2014).
77. Frithiof, L. et al. The relationship between marginal bone loss and serum zinc levels. *Acta Med. Scand.* **207**, 67–70 (1980).
78. Teughels, W. et al. Clinical and microbiological effects of *Lactobacillus reuteri* probiotics in the treatment of chronic periodontitis: a randomized placebo-controlled study. *J. Clin. Periodontol.* **40**, 1025–1035 (2013).
79. Ochôa, C. et al. Influence of the Probiotic *L. reuteri* on Periodontal Clinical Parameters after Nonsurgical Treatment: A Systematic Review. *Microorganisms* **11**, 1449 (2023).
80. VanRavenstein, M. et al. The effect of omega-3 fatty acids on active periodontal therapy: A systematic review and meta-analysis. *J Clin Periodontol.* 2022 Oct; 49(10): 1024–1037.

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