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EFFECT AND IMPORTANCE OF MICROELEMENTS AND CARBOHYDRATES IN PERIODONTAL DISEASE

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Abstract:

Periodontal diseases are common in developed and developing countries and affect approximately 20-50% of the world's population. The high prevalence of periodontal disease in adolescents, adults and the elderly makes it a public health problem. A number of risk factors such as smoking, poor oral hygiene, diabetes, medications, age, genetics, and stress are associated with periodontal disease. Over the past few decades, increasing evidence has shown the effects of diet and nutrients on the oral cavity. This review aims to describe the role of diet, nutrients and micronutrients in periodontal disease based on current knowledge.Exposure to factors that contribute to periodontitis occurs over a long period of time, so it can be difficult to identify and evaluate the factors that contributed to its development at the time of diagnosis. Taking into account these processes, periodontal disease is polyetiological. It is a disease, the known causes of which are the violation of the diet and the lack of macroelements and microelements in the body, which is reflected in current research.

Keywords: periodontosis, nutrition, diet, micronutrients, oral hygiene

COST: The oral cavity is not sterile due to its anatomical location and function, but it is maintained on several surfaces (teeth, gums) by microorganisms organized in biofilms, a matrix of self-produced hydrated extracellular polymeric substances. , tongue and mucous membranes) are colonized. Periodontitis is an inflammatory disease of the supporting tissues of the tooth, caused by specific microorganisms, which leads to the progressive destruction of the periodontal ligament and alveolar bone. It affects 10-15% of the world's population, is the leading cause of tooth loss in adults, and is associated with systemic factors such as cardiovascular disease. oral cavity Disease prevention strategies should be incorporated into chronic systemic disease prevention initiatives to reduce disease burden in populations. . The etiology of primary periodontitis involves plaque biofilm associated with poor oral hygiene.However, in susceptible patients, an abnormal inflammatory response determines the destruction of most tissues.Periodontopathogenic bacteria release metabolites and enzymes that increase tissue damage, and at the same time, leukocytes and fibroblasts produce various inflammatory mediators, including cytokines, prostaglandins, reactive oxidizing species (ROS), proteolytic enzymes, and metalloproteinases.Inflammatory infiltrate from periodontal tissues leads to destruction of tissues and alveolar bone. Periodontal disease is a chronic disease of periodontal inflammation, the advanced form of which is characterized by loss of periodontal ligaments and destruction of surrounding alveolar bone.It is the leading cause of tooth loss and one of the biggest threats to oral health.About 800 types of bacteria have been identified in the oral cavity and a complex interplay of bacterial infection and an altered host response with behavioral factors such as smoking are thought to lead to periodontal disease.

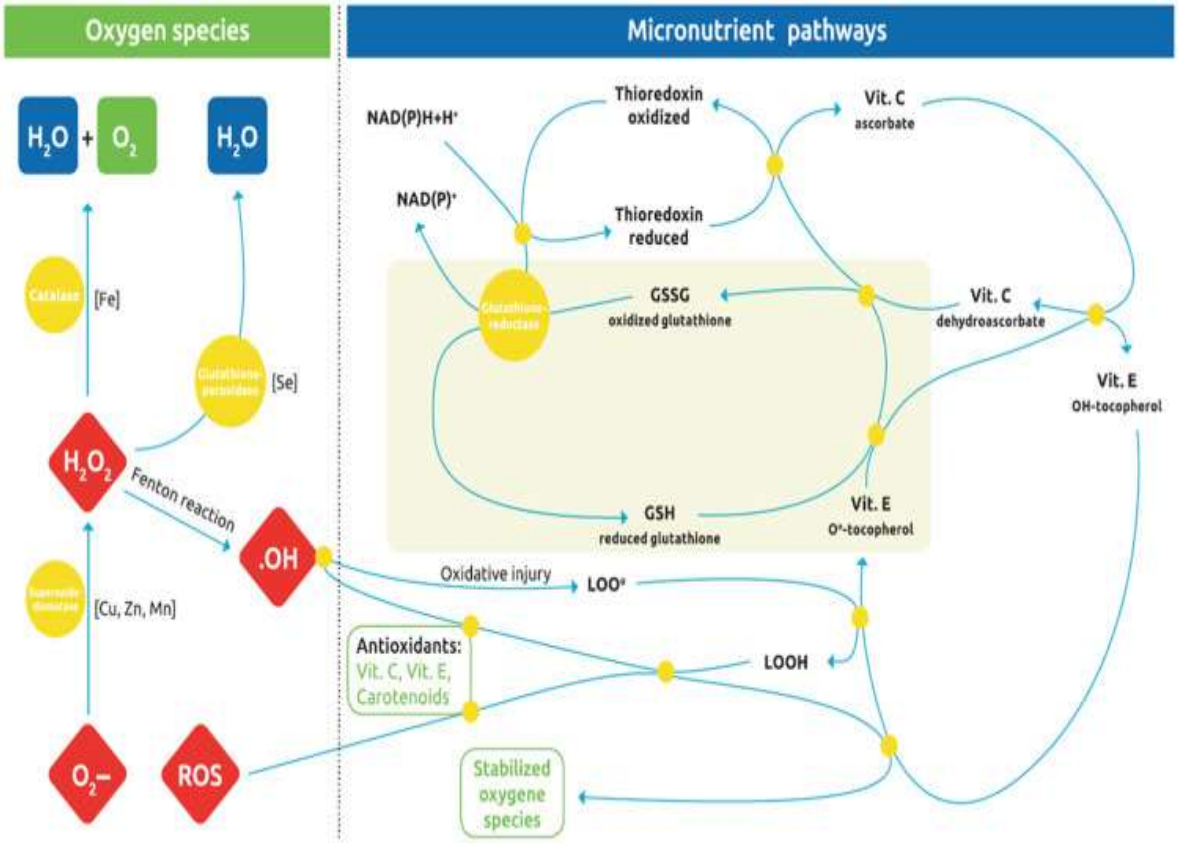
THE PURPOSE OF THE SEARCH. Implementation of strategies and measures for the prevention and control of periodontal disease. By regulating this process by improving the nutritional composition of the diet, the disease can be prevented in the early stages. In general, the incidence of disease is preventable.

Materials and styles

We know that the essence of any disease lies in the dependence of eating disorders. In order for the teeth to be strong, they must be provided with substances that stimulate their activity. It is very important to have microelements in the food, their deficiency can lead to chronic dental diseases and even tooth loss. Diet, particularly fermentable carbohydrates, can affect oral biofilm composition and lead to the onset of oral diseases such as dental caries and periodontitis. However, recent studies have also shown the effect of sugar on gingival inflammation, which is etiologically linked to blood sugar. may be associated with local and systemic effects such as constriction. Instead, a diet that included eating unripe vegetables was observed to be beneficial for periodontal health. Chewing raw vegetables is known to stimulate oral self-detoxification, resulting in less plaque on the tooth surface, reducing periodontal inflammation and caries development, and promoting periodontal and dental health.

INSPECTION RESULTS AND CONCLUSIONS

"Micronutrients" includes vitamins, minerals and trace elements. They are required by the body in amounts less than 100 mg per day and are believed to have an effect on periodontal disease. Vitamins A, D, E, and K are fat-soluble, while B vitamins and C are hydrophilic and water-soluble. Deficiency of trace elements can be caused by drugs (antacids, antibiotics, antihypertensives, chelating agents, corticosteroids, diuretics, laxatives, NSAIDs), malabsorption or diarrhea, lifestyle factors (diets, poor nutrition, chronic alcohol or nicotine abuse and re- consumption of processed foods) may be the cause.), systemic diseases (diabetes mellitus, thyroid and parathyroid disease) and increased demands (pregnancy, breastfeeding, growth, physical/mental stress). Nutrient absorption and utilization are influenced by physiological and nutritional factors that may change throughout life. On the other hand, positive effects on periodontal health have been found in various vitamins



Complex oxidation-reduction pathways through which oxidative stress is neutralized by various antioxidant micronutrients through redox reactions. Glutathione is a chain-breaking antioxidant species that ultimately produces the non-radical GSSG (oxidized glutathione) and is also a key regulator of cellular redox status and inflammatory gene transcription factors. Reproduced from Dommisch H, Kuzmanova D, Jönsson D, et al. Effects of micronutrient deficiencies on periodontal disease and periodontal therapy. Periodontol. © 2018 John Wiley & Sons A/S. John Wiley & Sons Ltd. published by

Russell et al conducted a dietary survey of more than 21,000 people in Alaska, Ethiopia, Ecuador, South Vietnam, Chile, Colombia, Thailand, and Lebanon that found vitamin A deficiency in populations with high scores for periodontal disease. showed. In a recent study, Dodington et al showed that a higher dietary intake of beta-carotene (≥7.07 mg/day) was associated with a significant reduction in the incidence of lesions greater than 3 mm in depth at nonsurgical follow-up. due to low periodontal treatment. It was also associated with a greater reduction in pocket depth in nonsmoking adults than in nonsmoking adults with chronic periodontitis. The role of vitamin A in periodontal therapy has not yet been fully explored. This may be due to epistatic toxicity associated with vitamin A excess. It is for this reason that studies on monovitamin supplements have not been conducted.

A study by Zong et al found that people with low serum vitamin B12 levels are at increased risk of developing periodontal lesions. This highlights the importance of vitamin B12 supplementation for vegetarians and even vegans. Neiva et al showed that taking a cocktail of B vitamins (vitamin B12, folate, thiamine HCl, riboflavin, niacinamide, D-calcium pantothenate, pyridoxine HCl and D-biotin) has a positive effect on the healing of periodontal wounds in patients with chronic periodontitis. performed periodontal surgery. In fact, supplementation with B-complex vitamins improved clinical outcomes compared to placebo-treated patients. Double-blind, placebo-controlled study A study conducted on patients with gingivitis and periodontitis investigated the effects of folic acid mouthwashes. It was found that patients who used the mouthwash for 4 weeks had less bleeding and less reddening of the gums than patients who washed with a placebo during the same period.

Cross-sectional studies have shown lower serum vitamin C values and lower vitamin C intake in patients with periodontal disease than in controls. Two clinical studies have shown that increasing the intake of fruits containing vitamin C (grapefruit, peppers, kiwi, etc.) can reduce gingival and periodontal inflammation. In contrast, adding 2 g of synthetic vitamin C in addition to surgical periodontal therapy after 1 month in a placebo-controlled study showed no benefit. People with vitamin C deficiency have been found to have more binding loss than people with normal serum levels. Regardless of oral hygiene, vitamin C deficiency causes gingival bleeding. In fact, it is known that during inflammation, histamine is responsible for regulating regional blood flow, as a result of which redness, swelling and swelling appear. Vitamin C has antihistamine properties, so adequate vitamin C may contribute to healthy gingival homeostasis despite the presence of bacteria.

In recent years, the role of vitamin D in periodontal diseases has been widely studied. It is known that vitamin D plays an important role in calcium absorption and bone metabolism. It also plays an active role in regulating the immune system and therefore has significant anti-inflammatory properties. In a case-control study, Laky et al showed that patients with periodontal disease had higher levels of vitamin D deficiency (<50 nmol/L) than healthy participants. In a study by Dietrich et al., the authors found that alveolar bone loss was greater in both men and women over 50 years of age in men with the highest quartile of serum 25-hydroxyvitamin D than in those with the lowest quartile. has a more protective effect. To determine the effect of serum vitamin D on gingival inflammation, markers of periodontal inflammation were compared to the highest quartile of 25-hydroxy vitamin D versus the lowest quartile. Interestingly, subjects in the top quartile of vitamin D had 20% less. show bleeding on examination. Vitamin D values were found to be inversely associated with clinical attachment loss and tooth loss in three cross-sectional studies. However, there are conflicting study results and a lack of interventional randomized controlled trials. symptoms were compared to the lowest quartile versus the highest quartile of 25-hydroxyvitamin D. Interestingly, subjects in the top quartile of vitamin D had 20% less. show bleeding on examination. Vitamin D values were found to be inversely associated with clinical attachment loss and tooth loss in three cross-sectional studies. However, there are conflicting study results and a lack of interventional randomized controlled trials. symptoms were compared to the lowest quartile versus the highest quartile of 25-hydroxyvitamin D. Interestingly, subjects in the top quartile of vitamin D had 20% less. show bleeding on examination. Vitamin D values were found to be inversely associated with clinical attachment loss and tooth loss in three cross-sectional studies. However, there are conflicting study results and a lack of interventional randomized controlled trials. Vitamin D values were found to be inversely associated with clinical attachment loss and tooth loss in three cross-sectional studies. However, there are conflicting study results and a lack of interventional randomized controlled trials. Vitamin D values were found to be inversely associated with clinical attachment loss and tooth loss in three cross-sectional studies. However, there are conflicting study results and a lack of interventional randomized controlled trials.

Table 1 Najeeb S, Zafar MS, Khurshid Z, Zohaib S, Almas K. The Role of Nutrition in Periodontal Health: An Update. Nutrients. 2016;30;8(9):530

Nourishing	**Nutritional source(s).**	**Importance in periodontal health**
Vitamin A	Cod liver oil, carrots, peppers, liver, sweet potatoes, broccoli, leafy vegetables	Not sure. Research shows that periodontal health is significantly improved with supplementation.
B vitamins	B1 - liver, corn, pork, potatoes, eggs B2 - bananas, dairy products, green beans B3 - eggs, fish, meat, mushrooms, nuts B5 - avocado, nuts wheat, broccoli B7 - raw eggs, liver, leafy vegetables, peanuts B9 - Cereals, leafy vegetables B12 - Animal products	Supplements can speed up healing after surgery.
Vitamin C	Citrus fruits, vegetables, liver	Gingival bleeding and inflammation are characteristic symptoms of scurvy. Supplements can improve the results of periodontal therapy.
Vitamin D	Fish eggs, mushrooms, liver, milk	A lack of body can lead to a delay in postoperative healing. Topical application

		may accelerate postoperative healing/osseointegration
Vitamin E	Green vegetables, egg yolk	Deficiency can cause gingival bleeding. If supplements are used as supplements, they have no known effect on periodontal therapy.

CONCLUSION

Eating fruits and vegetables containing trace elements is a positive source for preventing periodontal disease and keeping teeth in a stable condition. Evidence shows that a healthy and balanced diet has anti-inflammatory and protective effects on periodontal health. Therefore, patients with periodontal disease should be encouraged to adopt a healthy lifestyle and diet.

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