Homemade Medicine Remedies for Toothache Relief and Cavity Prevention

The Official Guidebook for Alleviating and Preventing Toothache and Root Canal Pain

Scott Rauvers

Preview Edition

This book is dedicated to those seeking an alternative to the DIC (Dentristy Industrial Complex).

Who want to avoid unnecessary root canals and unnecessary pain and Expenses

REVISED JULY 2026

ISBN- 9798286890415

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TRADITIONAL WISDOM
FOR ORAL HEALTH

A SPECIAL THANK YOU

Dear reader it is with great appreciation I applaud you for being a part of those positively transforming the world of natural dentistry. This book first began its inception in beautiful Portland Oregon over a decade ago. Since that time it has undergone numerous revisions over the years as more published studies on natural dentistry have surfaced. It is dedicated to those seeking how to tap into the power of nutritional wisdom to create healthy teeth and gums.

The sole purpose of this book is to empower those seeking alternatives to the dentist's drill and to help create a feeling of self-confidence and comfort, knowing you hold the power to prevent cavities, re-mineralize your teeth and create lasting strong and healthygums.

Use the wisdom in this book to: Avoid Unnecessary Root Canals, Learn to re-grow New Layers of Dentin on Exposed Enamel, Reverse Gum Disease, Heal Tooth Abscesses, Re-store your Hormones to Healthy Levels and visit a dentist only when absolutely necessary. This book can save you thousands of dollars and avoid wasted time on unnecessary dental procedures.

Scott is also the founder of The Institute For Solar Studies OnBehavior and Human Health, which studies noninvasive methods of healing, giving people alternatives to painful and sometimes unnecessary surgery. Scott's latest book released in the Spring of 2015 appropriately titled: The Complete Guide to Natural Toothache Remedies and Re-mineralization, gives readers painless alternatives to root camels, herbal methods to relieve toothache and herbal remedies and mouthwashes for sore, receding or infected gums. In

his latest book Scott includes his own experiences of how these non-invasive methods have helped him and the many readers of his website avoid visiting the dentist altogether. This book is a golden gem if you live or spend time in locations you don't have access to a dentist or want to visit them unless absolutelynecessary.

My Personal Experience

I personally have not needed to visit a dentist for the past 15 years for any reason at all. In this book I share not only the methods I have successfully used over the past decade, but all the very best tips and information anyone needs to avoid unnecessary root canals and the know-how of how to reverse cavities naturally. This book includes full scientific references of the most successful methods that reverse cavities, remineralize teeth, heal gum disease and reduce inflammation and best of all the best methods to maintain excellent oral health so cavities don't form in the first place.

Scott Rauvers

Introduction

Haven't you ever wished you could have all the very best Ayurvedic, European and Traditional Chinese herbal remedies and scientifically proven tooth and gum healing remedies all in a convenient book? You are holding in your hands the result of 5 years of research and writing, including feedback from readers of my website, the best natural remedies for healing toothache, gum disease and tooth abscesses. This dream is now a reality. You won't find any other book that covers such a broad range of healing methods including herbal mouth rinses and proven techniques to keep your teeth and gums free of pain and decay. Best of all you no longer have to believe what your authoritarian dentist tells you. Unlike some books that fail to cite references backing up their claims, this book lists full references and the original scientifically published papers behind each claim made, allowing you, the reader to look up and confirm the validity of the information in this book for yourself.

How Mercury Damages the Body
There are many people who have concerns about having mercury used as a part of their fillings. The mercury used in dental fillings is composed of dental amalgam.

What is Dental Amalgam?
Dental amalgam is composed of a 50/50 mixture of liquid mercury which is mixed with a powdered metal alloy of silver, copper and tin. When it is mixed, it starts to form a pliable putty-like substance that will eventually harden. In December 2010, the U.S. Food and Drug Administration warned against the use of

using amalgam in vulnerable populations (the very old, very young and the pregnant). Pediatric Neurologist Dr. Suresh Kotagal testified at the FDA hearing "there is no place for mercury in children." [1]

Developed Countries that have Banned the Use of Mercury Fillings

The European Union recently passed a resolution for all nations under the European Union to "start restricting or prohibiting the use of amalgams as dental fillings." [2] [3] In 1987 the Public Health Office of Germany recommended against using amalgam in pregnant women, children and people with kidney disease.

On July 1st, 1995 Sweden ceased allowing amalgam to be used in patients under the age of twenty and banned it altogether in 1997. In 1996, the Canadian Department of Health directed its dentists to cease using amalgam fillings altogether in children, pregnant women and peoplewith impaired kidney function [4]. Early exposure to even low doses of mercury in women who are pregnant and breastfeeding have shown it causes an increased risk in having children with a lower intelligence [5]. This is because amalgam crosses the placenta and accumulates in unborn babies.

Pregnant women with severe periodontitis are estimated to be between 1.5 to over 4 times more likely to experience preterm delivery (*Ya-Ling Lee et al. Feb 2022. Nature*),

Why You Can Enjoy Better Dental Health Using the Holistic Approach

FAST FACT
Healthy teeth and gums reduce one's chance of contracting pneumonia [6].

Conventional dental treatments avoid the holistic approach altogether because it is not standard curriculum for students studying dentistry. This gem of a book has already sorted through all the confusion and misinformation, choosing only the best tried and proven holistic methods that work. The end result is a simple reference that can be accessed at your convenience. This is a book you'll want to hand down to your grandkids generation after generation. The beauty of this book is all 3 mainstream holistic treatments, Ayurvedic, Traditional Chinese and European are all brought together in one convenient easy to use reference. This book includes the pioneering research done by Dr. Weston Price and Melvin Page, presenting the facts and methods proven to work, obtained from their research and scientific studies. Prevention of cavities and treatment is so much more less painful and much less expensive than waiting until extensive tooth decay causes unsightly damaged teeth. Bad eating habits and digestion increases your chance of cavities, from unwanted plaque build-up on your teeth. If you have adequate amounts of stomach acid to digest the food you are eating, your plaque build-up will be substantially reduced. Simple and quick protocols are presented in a clear straightforward manner for preventing cavities and re- mineralizing teeth. The beneficial side effects of using these proven holistic methods includes increased vitality and vibrancy due to restored hormone levels and the fresh intake of vitamins and minerals. You may be surprised to learn

that many of the most effective foods and spices that relieve toothache may already be in your kitchen cupboard. Clove for example is a powerful natural pain killer for toothache, and hydrogen peroxide mixed with water between 3% and 4% concentration is a powerful way to kill bad bacteria in the mouth that causes toothache.

Further Reading

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Antibacterial effect of taurolidine (2%) on established dental plaque biofilm. Arweiler NB, Auschill TM, Sculean A. Clin Oral Investig. 2012;16(2):499–504.

Why Your Dentist Won't Share These Secrets with You

Many of these methods to overly educated people seem unorthodox and "messy". The fact is the further technology in medicine advances, the more science will reach the conclusion that nature provides the core principal ingredients needed for healing. I highly respect the Dental industry as they are very professional and can do amazing things with teeth and gums. They are miracle workers at taking care of the short term problem. However, when it comes to long term dental health such as prevention, which includes the diet, I believe that many of them ignore this area altogether, as Dental School never taught them the long term prevention techniques and foods that prevent cavities or the proper foods and procedures that re- mineralize teeth. This information is then passed on down to their patients, making the insurance companies very happy. Also cavities are healed with machines and mechanical devices and some companies making these machines do a pretty good business from selling them to dentists.

Personally, I prefer the holistic organic methods any day. An interesting note, as you may have seen so far, or will see later in this book, is that foods and herbs that contribute to perfect dental health also have significant anti- aging and cancer prevention traits. Maltitol, for example, which re-mineralizes teeth, has been shown to be one of the most powerful foods for fly longevity experiments. Fruit Fly experiments showed 100 percent of the fruit flies surviving 18 days when fed Maltitol [7]. Longevity nutrition is hardly something clinically industrialized medicine today wants to promote. Re- calcification of severe cavities is not only possible, but becoming more commonplace as more and more of this knowledge is revealed. Awareness of these non-painful methods will continue to grow, as people become more aware that using unnecessary resources only continues to destroy our planet and its health.

A Special Message to Dentists

From my experience over the years of talking to you, the dentist, in person, I have found many of you open to the methods that I have mentioned in this book. However, when it comes to long term dental health, I believe that many of you are uneducated, as Dental School never taught you the long term prevention foods, techniques and methods that help prevent cavities, or can suppress a toothache or are even aware of the natural methods proven to re-mineralize cavities. I believe a lot of this confusion comes from the insurance companies, who are happy keeping your patients in the dark about alternative methods of dental health and prevention.

When You, the Reader Should See A Dentist

A continuing toothache is the sign of something much more serious. So you should get to a dentist as soon as possible. However before you do, use the tips and techniques shown in Chapter 11 titled "Actions to Take Immediately if you Have a Toothache" Chapter 16

PAGE 199 or "Traditional Chinese Medicine Methods to Take if you Have Toothache" ON PAGE 213 and you may just save a trip to the dentist. Pay particular attention to the section on abscesses as there are some great methods to help immediately reduce the pain from them.

A BriefHistory of Modern Dentistry

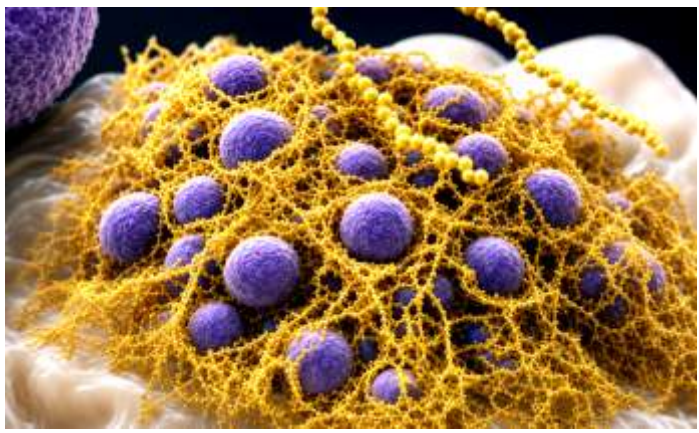
The first dentist was Hesy-Re from ancient Egypt. The time period between 1650 and 1800 saw French Physician, Pierre Fauchard emerge as "The Father of Modern Dentistry". Further efforts by Chapin Harris and Horace Hayden in 1840 saw the establishment of the very first dental school, The Baltimore College of Dental Surgery [(8)].

Welcome to the New World of Green Dentistry

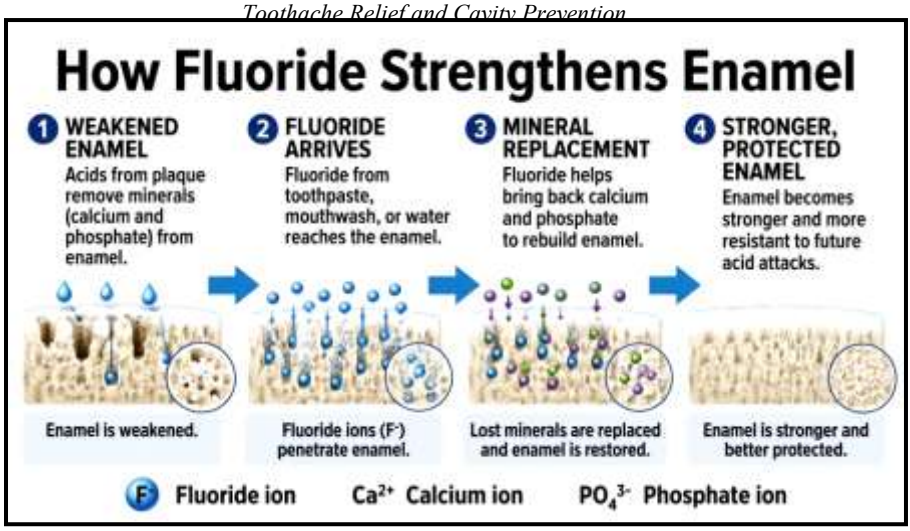
Many decades ago Dr. Winston Price healed numerous people of cavities using specific minerals and substances. Back then the mechanism responsible for such healing was unknown. As of 2019, numerous researchers have found the actual reasons why he was able to reverse cavities. This book includes those studies, giving an overall picture of how cavities can be reversed, prevented, including the avoidance of root canals. This publication includes scientific references and studies, all made into an easy-to-understand format so anyone can learn to avoid the dentist at all costs, and only visit the dentist if absolutely necessary. Many detailed studies and scientific breakthroughs regarding dental health have occurred just within the last three years, including an upcoming cavity vaccine. In this book you will find many plant extracts and substances that are good for the teeth and gums and in some cases may even reverse cavities. The important thing to remember that any substance exhibits a dose dependent reaction in the body. This is because the substance behaves according to a person's state of health, their

diet and whether the extract is fresh or old. Also some extracts are naturally more potent than others, so you may need to use less or more respectively. The best rule of thumb to follow is to "test" an extract as a mouthrise or as an oral cavity prevention agent for a number of times over a period of days and when you feel you have obtained the correct amount, then continue on using that dosage for as long as you feel comfortable. It is also important to note that the more potent a substance is, the less is needed and in some cases the span of time required to use it should be less.

What Exactly Causes Cavities?



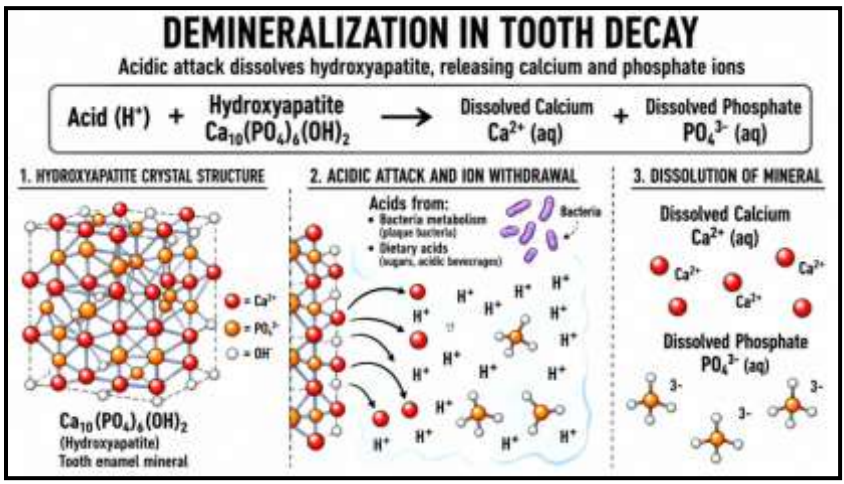
Unlike common belief a lack of brushing teeth and sugar rich diets DO NOT CAUSE cavities. The main culprit that causes cavities is diet. Cavities, commonly called caries in the dental profession, are caused by cariogenic bacteria such as Streptococcus mutansand Staphylococcus aureus (pictured in the following image). These bacteria convert dietary sugars into acids that rapidly dissolve the minerals our teeth. Killing these types of cariogenic bacteria is the most effective way to prevent tooth decay.



How Streptococcus mutans rots your teeth

Streptococcus mutans (S. mutans) is a Gram-positive bacterium that thrives in low-oxygen environments and is a major cause of dental decay. It produces lactic acid by fermenting carbohydrates, significantly lowering the mouth's pH and contributing to tooth decay. S. mutans also produces glucosyltransferase enzymes that help form a glucan layer on teeth, promoting adhesion and the development of a toxic biofilm. As this biofilm

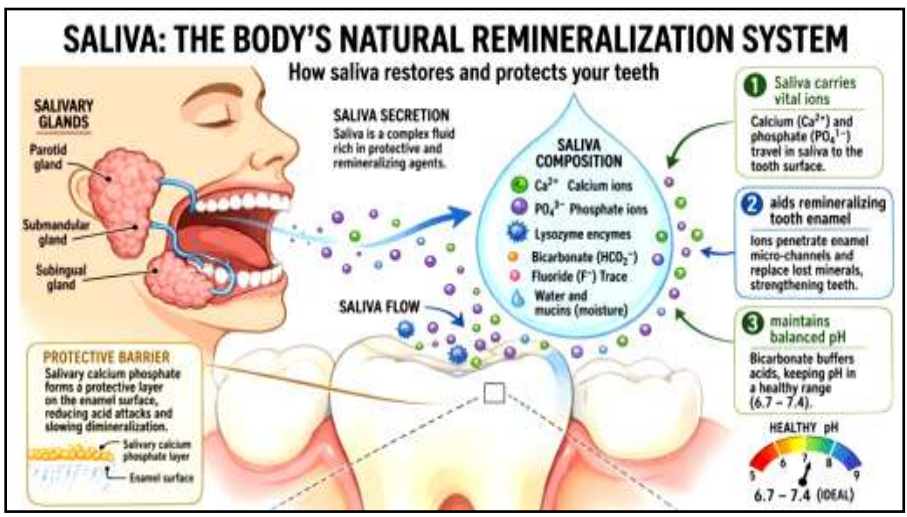
expands, the bacteria consume sugars, creating an acidic environment that leads to tooth demineralization and reductions in calcium, inorganic phosphorus, and fluoride, ultimately resulting in cavities.



A Remineralization Paste with a 95% success rate
Research has shown that fluoride is effect in preventing cavities between 22% and 29% of the time. However, this is changing with Credentis, a Switzerland-based organization, who has introduced a brush-on treatment for teeth that is used for treating cavities. The product is called Curodont Repair. In 2013 it secured a license for its peptide technology. The method utilizes self-organizing peptides (SAP) to create natural non-invasive biomimetic mineralization. The peptides are applied in a brush like fashion in a water-based solution on teeth, penetrating early cavities and creating an organic matrix that aids in mineralizing calcium and phosphate that already exist in a person's saliva.

A clinical evaluation revealed that three out of four cavities were stabilized or remineralized using this technique. According to Preston Center Pediatric Dentistry, Curodont boasts a 95% success rate and is 13

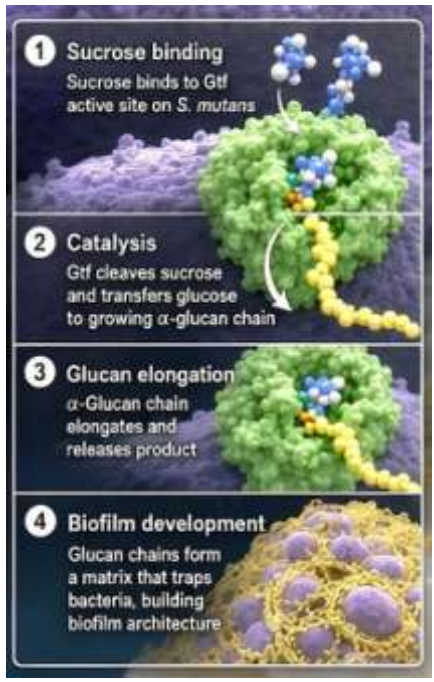
times more effective than fluoride varnish alone, making it a top choice for caries treatment [9]. In another research study, Chinese scientists combined S. mutans with proteins in order to create a vaccine that wards off bacteria responsible for cavities. The vaccine is similar in principle to developing a flu shot. Tests conducted on mice found that mice without cavities exhibited a 64.2% prevention rate in cavities. Mice with cavities exhibited an astounding 53.9% healing rate. The vaccine needs to be tested in humans to test for inflammatory responses, particularly in the liver, kidney, cardiovascular system and lungs [10]. In the last chapter of this book you can find the latest information about cavity vaccine research.



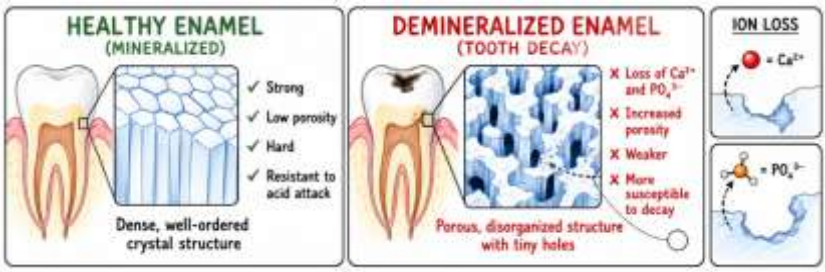
Chapter 1

A General Overview of Oral Health and Diet

How Cavities Begin forming in your Teeth

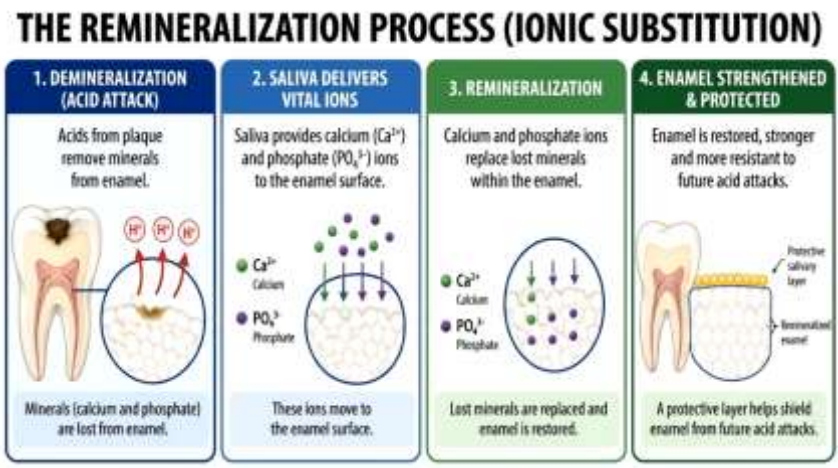


Dental caries result from a loss of enamel minerals exceeding their ability to replenish. This takes place when the bad bacteria overwhelm the good bacteria and when the bacteria in your dental plaque that metabolizes sugars, especially sucrose, begins producing acids that lower your saliva's pH levels. When your mouth's saliva pH drops below 5.5, tooth enamel demineralization begins taking place. The bad bacteria feed on sucrose, glucose, fructose, lactose, and maltose, with sucrose being the most harmful.

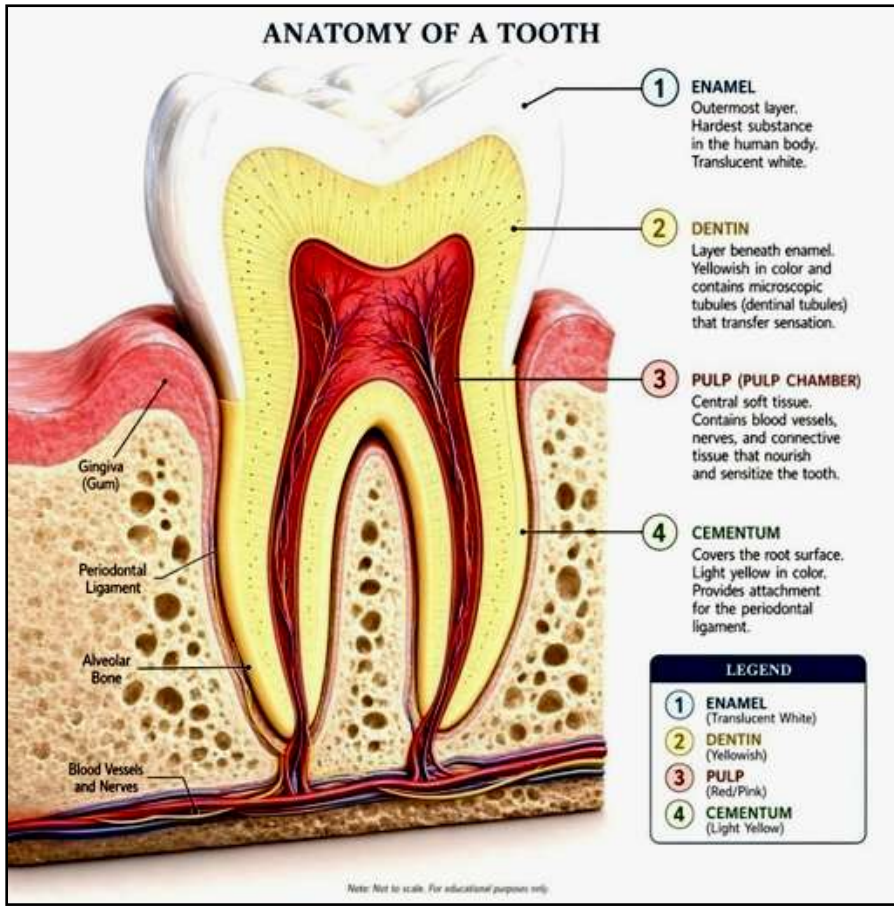


It is important to differentiate between the good natural sugars, found in whole foods, which have a minimal impact on caries due to their protective components, and added sugars, which are present in most processed foods found in the supermarket. These are linked to numerous health problems, such as dental caries as well as numerous chronic diseases. Starchy foods, while generally less cariogenic, can also contribute to caries risk, especially when they come in foods combined with sugars. The stickiness of the food also influences the risk of caries; foods that adhere to teeth can increase this risk significantly. As I show later in this book, when the weather becomes more damp, people are more likely to experience a toothache. Certain weather conditions also affect the stickiness of certain foods. Weather conditions, particularly humidity and temperature, play a significant role in the stickiness of food. High humidity increases stickiness by promoting moisture absorption, and rising warmer temperatures significantly enhance this effect, especially in sugary or fatty foods. Additionally, lower air pressure can influence stickiness during baking, allowing items to rise more easily.

How does Tooth Remineralization work?



Tooth remineralization is happening all the time in your teeth by the process of restoring minerals in tooth enamel and dentine, primarily using calcium and phosphate from saliva, along with external mineral sources such as hydroxyapatite. This takes place when saliva and small minerals form deposits in small spaces within the teeth. The process of remineralization is a natural way to repair teeth by restoring minerals through an ionic process to the crystal lattice of hydroxyapatite in teeth. This process happens at a near-neutral pH level in saliva where calcium and phosphate minerals are redeposited in the cavities, leading to the formation of new hydroxyapatite crystals.



Nano-hydroxyapatite is one effective method for preventing cavities, as it is a major component of our tooth enamel and helps with tooth remineralization. There are no reported side effects in the research studies when it was used to remineralize teeth. Remineralization can also happen by forming apatite crystals within the demineralized collagen fibers of teeth. However, excess apatite has been linked to Arthritis. There is now even Nano-hydroxyapatite toothpaste available. Multiple in-vitro and clinical studies demonstrate that nano-hydroxyapatite (nano-

HAP) remineralises early carious lesions comparably to fluoride by directly replenishing calcium and phosphate in demineralised enamel. It also occludes dentinal tubules, reducing sensitivity. (Tschoppe et al. 2011).

Nano-**hydroxyapatite assists in:**

- Cavity prevention: Remineralises enamel; fills micro-porosities created by acid attack. (Tschoppe et al. 2011)
- Toothache relief: Tubule occlusion reduces dentinal hypersensitivity; comparable efficacy to 5,000 ppm fluoride in sensitivity reduction. (Vano et al. 2014)

Various studies have demonstrated that certain materials can stimulate the growth of hydroxyapatite, which constitutes about 92% of tooth enamel. The remineralization process involves mainly calcium and phosphate from the saliva. Remineralization can also occur via externally sourced minerals such as hydroxyapatite. Hydroxyapatite in its microcrystalline form, is a

source of calcium that is better absorbed than other types of calcium supplements and because of this is being used to prevent Osteoporosis [(11)]. New remineralizing products, such as toothpaste with synthetic hydroxyapatite crystals, effectively support tooth remineralization by taking advantage of the crystals' structural properties. Additionally, calcium from snakehead fish bones can contribute to hydroxyapatite formation, further aiding the remineralization process. Hydroxyapatite is found naturally in Reg Algae, Limestone, phosphate rock and Coral.

Top Nutrients & Foods for tooth Remineralization

Sea Moss / Irish Moss (Chondrus crispus)

Sea moss is exceptionally high in bioavailable trace minerals including calcium, magnesium, phosphorus, and iodine. In Caribbean and Irish folk traditions it has been used for mineral repletion, including support of dental and bone tissues. (MacArtain et al. 2007). Sea Moss can help with:

- Cavity prevention: Provides bioavailable calcium and phosphate that underpin enamel remineralisation. (MacArtain et al. 2007)

- Toothache relief: Iodine content contributes mild antiseptic properties; mineral repletion supports tissue repair. (Rupérez 2002).

- **Remineralization nutrients:** Calcium, phosphorus, vitamin D, K2, magnesium.

- **Supportive bone building foods:** Dairy, leafy greens, fatty fish, bone broth, nuts, seeds.

- **Saliva Activation:** Xylitol, green tea, neem, licorice, cacao.

- **Saliva optimization:** Hydration + chewing habits.

If all of these are in place, your enamel can remineralize small lesions naturally and stay cavity- resistant over the long-term.

Why an Alkaline pH leads to better Oral Health

Osteoblast activity is crucial for the mineralization process of bones and teeth. Higher pH levels, or alkaline conditions, support the proliferation and activity of osteoblasts, with research indicating optimal results at a pH of approximately 7.4–7.8, or even higher (up to 8.5), depending on the specific situation, although excessive alkaline conditions in the body over the long term are harmful.

A saliva pH of around 7.0 is the best pH for healthy teeth (Nina Novozhilova. Apr 2023). Alkaline environments trigger various essential processes in bone cells, such as increased collagen synthesis and mineralization (12). Enhanced alkalinity can be achieved either by keeping the saliva pH alkaline or by eating meals that help the body become more alkaline. Drinking spring water will also help make the body temporarily alkaline and using a baking soda mouth rinse or an alkaline toothpaste will increase saliva pH. Research has shown that alkaline toothpastes were extremely effective it treating gingivitis after use for 4 weeks [(13)].

Rosemary

I firmly believe that one of the main reasons I have not had to visit a dentist in over a decade is due to a few facts I want to share with you. First off I would always get toothaches whenever I ate white bread, Pasta or lots of Rice. I was able to remedy this by coating pasta before eating with a lot of flax seed. I have since eliminated white bread from my diet and eat rice no more than 2 days in a row every 5 days. Also I consume Rosemary at least twice a week in my diet and eat yogurt that is sugar free at least 4 times a week. Rosemary is one of the best herbs for tooth remineralization. I use rosemary when sprouting plant proteins such as lintels by adding a pinch of rosemary powder to the lintels and allowing them to soak for 8

hours; than rinse and cook the lintels. Rosemary slows down the digestion of proteins, allowing the body to absorb more plant protein. Studies have shown that rosemary greatly assists in the process of tooth remineralization by enhancing the hardness of enamel [(14)].

A research study found that a combination of ginger, honey, and rosemary effectively enhanced the remineralization process of teeth that had cavities (15). Other research has shown that the herbs Ashwaganda, Ginger or Maca exhibit tooth remineralization comparable to standard household toothpaste. The findings indicated that Maca, Ashwagandha, and Ginger had the highest release of calcium, phosphorus, and fluoride ions, respectively. PH results showed that the Ginger extract had the most alkaline pH, while the Ashwagandha extract had the most acidic pH. Morphological analysis suggested that Ashwagandha had a lower ability for remineralization compared to the other groups tested. Maca had a significantly higher Ca/P ratio compared to the other groups ($p < 0.001$), and Ginger showed a significantly higher recovery in surface microhardness compared to Ashwagandha ($p < 0.001$) [(16)].

Aloe Vera

Other studies found that mixing Aloe Vera with common household toothpaste results in a synergistic effect, aiding tooth remineralization [(17)].

Proline

Proline, an amino acid, is involved in tooth remineralization due to its ability to help bind calcium and phosphate onto tooth enamel, thereby strengthening it. Proline also repeats in proteins in tooth enamel to enhance its strength and durability by influencing the growth of enamel crystals. The sea algae Spirulina is a significant source of Proline, with a

nutritional analysis showing 27 mg/g of proline. Proline is also abundant in Bone Broth, which is also a significant source of collagen. However, when choosing Bone Broth, be sure to choose a source that is free of pesticides and heavy metals as these accumulate easily in bone.

Marine collagen

A combination of Marine collagen and grape seed extract have been found effective for tooth remineralization by enhancing tooth microhardness [(18)]. Marine collagen, obtained from marine creatures such as fish skin, scales, and bones, is a health supplement that is abundant in Type 1 collagen. It is commonly used in supplements to improve skin condition, enhance flexibility, diminish fine lines, and strengthen hair and nails.

Bone Meal

Bone meal contains calcium hydroxyapatite, which helps remineralize teeth. promote bone health, possibly assisting in the repair and maintenance of bone density. (19). Hydroxyapatite is more effectively absorbed than other types of calcium. Bone meal comes from young cows that are usually grass-fed; however, it is key to make sure that it is free of pesticides and heavy metals before you buy it.

Ozone therapy with hydroxyapatite gel

Remineralization Ozone therapy is noted for its significant remineralizing properties and its effectiveness in treating early caries due to its bactericidal function. It enhances the penetration of remineralizing agents by dilating dentinal tubules. However, when ozone is combined with hydroxyapatite gel, it yields significantly superior results, as ozone alone primarily affects only the outer enamel [(20)].

Scientific Studies of the Remineralization of Teeth

Gallic Acid

Studies have found that gallic acid remineralized tooth enamel [(21)]. According to phenol-explorer.eu, gallic acid is found in abundance in the following foods: Walnut Liquor, Chicory, Red Wine, Black Tea and Sage. Extremely high amounts are present in Sage and Clove.

It is interesting to also note that out of all foods, Tea contains the highest levels of natural fluoride. Therefore gallic acid has an affinity for fluoride.

Galla Chinensis

The Chinese herb Galla chinensis contains an abundance of gallic acid and studies have found it effective in remineralization of teeth [(22), (23) (24)].

Green and White tea

Pretreating demineralized dentin with white or green tea, particularly followed by Casein Phosphopeptide-Amorphous Calcium Phosphate (CPP-ACFP), enhances microhardness, improving remineralization. White tea (10%) shows superior results to green tea in stabilizing dentin collagen, creating better functional remineralization and preventing further dissolution of tooth minerals.

Tea extracts act as anti-collagenolytic agents due to high catechin content (e.g., epigallocatechin gallate - EGCG), which stabilizes the collagen matrix, allowing more minerals to deposit. While Casein Phosphopeptide-Amorphous Calcium Phosphate (CPP-ACFP) primarily stabilizes inorganic content (calcium and phosphate), the addition of tea helps stabilize the organic collagen matrix, leading to better overall remineralization [(25)].

Further Reading

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Great Tasting Sweets that are also good for Your Teeth

It can be easy to assume that foods that prevent / heal cavities have to taste bad or bland. This is a false belief. For example, warm sunshine creates vitamin D in our bodies, one of the best vitamins that ward off cavities and strengthen teeth. For example, Salmon's rich, savory flavor is high in vitamin D as are mushrooms and studies have found that dark chocolate plays a role in the prevention of cavities. Many of us were brought up to believe that sweet foods are bad for our teeth. This is true for some foods, however did you know that there are some foods that taste sweet and are good for your teeth? This short chapter is devoted to foods that not only taste good, but also keep the teeth free of

cavities, or in some cases reverse cavities and avoid a root canal altogether. I wish I had these when I had my root canal.

Ice Cream

A study using ice-cream to deliver probiotics to 40 adolescents (Bifidobacterium lactis Bb-12 and Lactobacillus acidophilus La-5) discovered a significant reduction in their salivary MS scores after consumption of the probiotic ice cream [(26)].

A Lollipop that Prevents Cavities

Licorice root (Glycyrrhizol A) is a sweet tasting herb that contains substances that exhibit strong antimicrobial activity against cariogenic bacteria. A research study created a method for producing a sugar-free lollipop containing licorice root, aiming to effectively kill cariogenic bacteria such as Streptococcus mutans. The study found that the licorice lollipops were not only sugar-free, but that their antimicrobial activity is stable in lollipop form. Two pilot human studies were conducted which found that brief applications of these lollipops (twice a day for 10 days total) led to a significant reduction of oral causing cariogenic bacteria in the oral cavity among most of the human subjects tested [(27)].

Dark Chocolate (Cocoa) for the Prevention of Cavities

The following information comes from a meta-data analysis study titled: Anti-cariogenic effects of polyphenols from plant stimulant beverages (cocoa, coffee, tea), which was conducted by Ferrazzano GF and published in May 2009.Recent studies have found that cocoa, coffee and tea are abundant in polyphenols which play a role in the prevention of cariogenic processes (cavity formation). This is due to their antibacterial action. The main substances responsible for the protection against cavities in dark chocolate are Cocoa polyphenol pentamers, which have been scientifically proven to significantly reduce acid production and biofilm formation produced by the cavity forming bacteria Streptococcus mutans and S. sanguinis.

Dark Chocolate reduces Cavities by 73 per cent
It is a common belief that chocolate causes cavities. However it depands upon **the type of chocolate**. Chocolate comes in 4 main varities.

Dark Chocolate
Made with Cocoa solids, cocoa butter, and sugar, combined without any dairy. The absence of milk is what gives it its edge—a roasted, sometimes almost tannic quality, with cacao percentages that can climb high enough to taste more mineral than sweet. This is the type of cholocate that is actually GOOD for your teeth.

Milk Chocolate
Make with milk powder or condensed milk joins the mixture, and the effect is immediate: softer, sweeter, with a creaminess that coats the mouth. This is the version that most people's chocolate memories are made of.

White Chocolate
Cocoa butter survives here, but cocoa solids do not, which is why it is ivory-colored and why purists sometimes refuse to call it chocolate at all. What remains is rich and very sweet, tasting primarily of milk and vanilla.

Ruby Chocolate
The youngest of the four, formally introduced in 2017. Its pink color is not a marketing trick—it occurs naturally through a specific handling of the ruby cocoa bean—and its flavor is genuinely strange for chocolate: sour-edged, fruity, closer to a fresh raspberry than anything roasted.

Dental Health and Dark Chocolate

Studies on hamsters in which 20% of their sugar containing control diet was replaced by sweetened chocolate, had a reduction in their caries by up to 35 per cent when fed milk chocolate and up to 73 per cent when they enjoyed dark chocolate [28].

Roasted Coffee for Strong and Healthy Teeth

Roasted Coffee and Green Tea contain the substances caffeine, chlorogenic acid and trigonelline which interfere with the cavity causing bacteria Streptococcus mutans' ability to cause cavities [29].

> Flavanols and oligomers isolated from cocoa may preferentially stimulate immunoglobulin A. We suggest that in the oral cavity this could result in a reduction in the risk for dental caries and periodontal disease.
>
> *(T.K. Mao et al. 2002)*

A Dark Chocolate Rich Diet for the Prevention of Periodontitis

Studies conducted by Tomofuji et al. examined the effects of a cocoa-enriched diet (10% of total food intake) on gingival oxidative stress upon rats that had periodontitis. His study concluded that a cocoa rich diet diminished periodontitis-induced oxidative stress, thus possibly suppressing the progression of periodontitis.

The study further observed that the rats did not exhibit gingival infection c ompared to the control group. The study recommended further studies to define the optimum dose of dark chocolate in the diet for healthy teeth and gums as well as new experiments to develop inflammatory processes to reduce chronic periodontitis in humans.

Furthermore, certain chocolates **may REDUCE the risk for Cavities** and Periodontal Disease. Studies by Mao et al. found that consuming some cocoas and chocolates could reduce the risk for dental caries and periodontal disease (T.K. Mao et al. 2002).

His teams hypothesis was that purified cocoa flavanol oligomers inhibit the bacteria responsible for cavities via immunomodulatory effects in the production of various cytokines as well as the abundance of procyanidins. Especially noted was the presence of the cytokine IgA which has been shown to exhibit protective effects in periodontal diseases. The study concluded that dark chocolate could be therapeutic for those suffering from periodontal disease.

Further Reading

The effect of cocoa ash on caries in the rat: comparison of ashed cocoa with a mineral mixture. Kinkel HJ et al. May 1960.

The role of cacao extract in reduction of the number of mutans streptococci colonies in the saliva of 12-14 year-old- children. Fajriani et al. Apr 2016.

Inhibition of hamster caries by cocoa. Caries inhibition of water and alcohol extracts of cocoa. Strålfors A. Mar 1966.

Effect on hamster caries by dialysed, detanned or carbon- treated water-extract of cocoa.Strålfors A. Jun 1966.

Dark Chocolate contains Less Sugar

The next time you are in the supermarket, pick up a bar of dark chocolate and look at the nutrition facts label of a 90% or more Cacao Chocolate Bar. You will find it has much less sugar then a standard chocolate bar, which can contain on average up to 15 grams of sugar. 90% dark chocolate contains on average between 2 and 8 grams of sugar.

Another study used lozenges to deliver probiotics (Lactobacillus brevis CD2) to 191 children. The subjects sucked on the lozenges at six week intervals. The study found a statistically significant reduction in cariogenic oral bacteria at the end of the study [(26)].

At the end of this book I shall cover a new dental vaccine that uses probiotics delivered as a toothpaste to prevent cavities.

Honey

Honey applied topically minimizes the severity of oral mucositis in patients that had oral cancer. Honey also expedites healing and reduces the occurrence of oral fungal infections as well as reduce the incidence of cavities due to its ability to inhibit colonization by S. mutans. Also studies have found that Manuka honey restricts the growth of S. mutans [(30)].

Chewing Gum for Healthy Teeth

Meswak Extract Chewing Gum

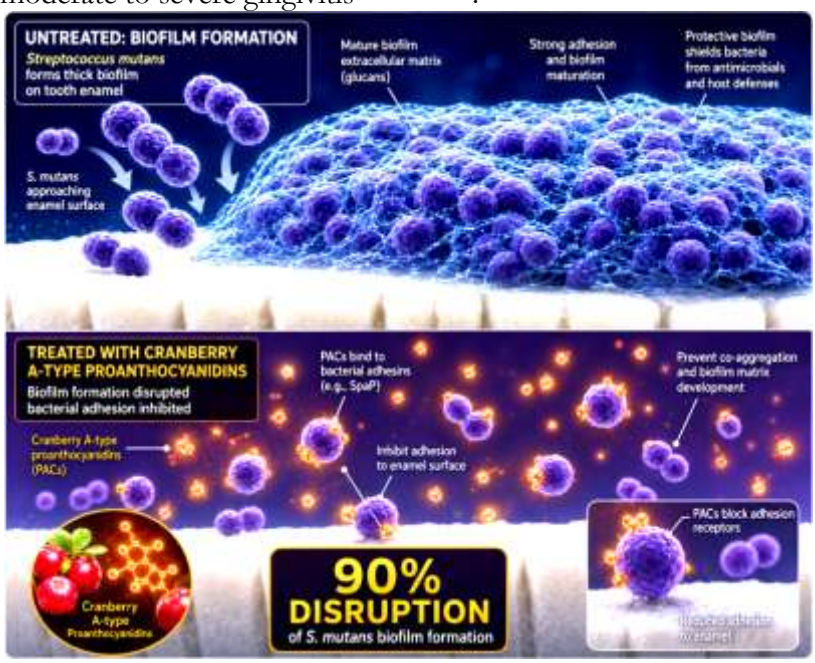
This chewing gum was found to promote periodontal health due to its ability to reverse plaque, bleeding and gingival in the gums (Hilal Ahmad et al. July 2014).

Persica Chewing Gum

This gum exhibits strong effects on gingival bleeding and gingival inflammation (Hilal Ahmad et al. July 2014).

Probiotic Chewing Gum

The probiotic Lactobacillus reuteri was administered via chewing gum two times daily for 2 weeks. After 2 weeks, the study discovered that plaque in the group taking the probiotic fell significantly. The study concluded that Lactobacillus reuteri was highly effective in reducing both plaque and gingivitis in patients with moderate to severe gingivitis [31], [32], [33].



Cranberry Packs a Powerful Natural Punch blow against the formation of Oral Biofilm

Out of all the many substances that reduce biofilm accumulation, the one that delivers the best bang for the buck is Cranberry (and in some cases Grape Seed Extract), because only a small amount is necessary. Studies by Kokubu and colleagues reported significant decreases in biofilm formation at concentrations of between 0.5 and 1.0 mg/mL of cranberry juice in a 1000 mL dilution of 70% ethanol [(34)].

The following paragraph is from the research study titled: Effect of flavonoids from grape seed and cranberry extracts on the microbiological activity of Streptococcus mutans: a systematic review of in vitro studies. Jeison Stiven Castellanos et al. June 2024. Research highlights the effectiveness of various plant extracts in reducing biofilm formation. Greene et al. found that 0.5 and 5 mg/mL cranberry extract decreased biofilm.

Singhal et al. reported that concentrations of 16.67 mg/dL and 20.83 mg/dL of cranberry led to a 50% and 70% reduction after 24 hours. Sumathi et al. noted that 50 mg/mL of cranberry extract inhibited biofilm by 95.2% within the same timeframe. Meanwhile, Daglia et al. demonstrated that 15 mL of grape seed extract in methanol reduced biofilm by 89%, while dealcoholized wine achieved a 79% reduction. Zhao et al. indicated that 4 mg/mL of grape seed extract could also impede biofilm formation. Net et al. found biofilm reductions at just 80 μg/mL with non-dialyzable cranberry plus acetone, while cranberry alone required 320 μg/mL for significant impact. Smullen et al. observed that grape seed extract decreases biofilm within 30 minutes. Yamanaka et al. identified inhibition at 100 μg/mL and 500 μg/mL with 25% KCl. Lastly, Nowaczyk et al. noted a 68% reduction in bacterial colonies using a concentration of 50 μg/2 mL of probiotic candy mixed with distilled water.

Cranberry was also found to prevent the formation of P. gingivalis and it also inhibited tooth demineralization (35). Out of the 420 studies gathered from various databases, 22 publications were ultimately chosen for review. The studies included in this review indicated that cranberry extract inhibits the growth of S. mutans at concentrations ranging from 0.5 mg/mL to 25 mg/mL, while Grape Seed Extract demonstrates a similar inhibitory effect within the range of 0.5 mg/mL to 250 mg/mL.

Furthermore, the extracts or their fractions exhibited reduced capacity for biofilm formation, lower biomass of polymicrobial biofilms, and maintained pH stability. They also showed sufficient antioxidant activity associated with their polyphenol content. In conclusion, the findings suggest that cranberry and grape seed extracts are effective in decreasing the virulence factors of the oral pathogen. The data indicates that proanthocyanidins are the active ingredients in cranberry and grape seed that effectively combat S. mutans. They are capable of inhibiting the formation of insoluble polysaccharides in the extracellular matrix and hindering the glycan-mediated adhesion, cohesion, and aggregation of proteins in S. mutans. This implies that these natural extracts may significantly contribute to the prevention of cariogenic bacterial colonization and lead to a reduction in their microbiological activity [(36)].

What is Gingivalis?

Gingivalis is a bacteria found in the oral cavity, where it is responsible for periodontal diseases. It is also found in the respiratory tract and colon.

Probiotic Cheese

Cheese and peanuts have been found to reduce the acid production after eating foods high in sucrose [(37)]. When a group of elderly people consumed cheese containing

probiotic strains designed to improve stomach health for 16 weeks, the number of high oral yeast counts decreased [38]. It appears that probiotics may be one of the most powerful methods to protect teeth against tooth decay.

Carob

Carob, commonly used as a chocolate substitute,contains an abundance of gallic acid (as do walnuts) which enhances tooth remineralization, reduces the effects caused by demineralization and synergizes with chitosan [39] [40].

Raisins

Raisins are beneficial to oral health due to their antimicrobial action against oral pathogens which are responsible for causing cavities and / or periodontal disease [30].

Curry Leaf

A research study found that a mouthrinse containing curry leaf can be considered as a safe and effective alternative to the commercial antiseptic mouth rinse product Chlorhexidine [41].

Olives

A research study examined the antimicrobial impact of an extract of olive and found that low doses of olive exhibited strong bactericidal effects at low concentrations against periodontal pathogens that cause gum disease (gingivitis and periodontitis). [42].

Olive Leaf Powder

Olive leaf has been shown to reduce gingivitis. Its activity was similar to the commercially purchased mouthwash chlorhexidine. It is important that you get a good quality supplier for Olive Leaf Powder as it is

prone to microbial contamination during processing and storage.

Further Reading
Efficacy of Olive Leaf Extract Mouthwash on Clinical and Inflammatory Parameters of Gingival Inflammation in Relation to Chlorhexidine in Acute Gingivitis Serum Patients. Liqa Sabah et al. June 2022.

Red Wine
Extracts of red wine were shown to reduce the severity of two key Gram-negative, anaerobic bacteria intimately associated with oral infections, particularly periodontal disease (gum disease). The study found that red wine inhibited antimicrobial action by creating an oral biofilm. Also studies by Muñoz-González and colleagues stated that the bactericidal effects of caffeic acid extracted from red wine and grape seed extract were effective against an opportunistic pathogen linked to periodontal disease, colorectal cancer (CRC), and adverse pregnancy outcomes. Caffeic and p-coumaric acids and provinols extract was found to inhibit biofilm formation of the same opportunistic pathogen shown earlier [(43) (44) (45) (46) (47)].

Further Reading
Remineralization of Artificial Caries in Primary Teeth by Grape Seed Extract: An In Vitro Study. Mahkameh Mirkarimi et al. Dec 2013.

Red wine and Probiotics
Reciprocal activity was found to take place between probiotics and polyphenols. This includes phenolic extracts of red wine combined with the probiotics Bifidobacterium and Lactobacillus. Also combinations of red wine with oenological-origin probiotic strains

were shown to exhibit inhibitory effects against E. coli adhesion [35].

Wintergreen (Gaultheria procumbens)

Wintergreen is part of the Ericaceae family of trees. Wintergreen is commonly used as a mouth rinse and makes an excellent antiseptic and exhibits strong astringency properties (tightens tissues). Cotton swabs soaked in wintergreen oil are used for the relief / remedy for gum inflammation and sore throats.

Studies by Nikoli et al. showed Wintergreen essential oil exhibits strong antimicrobial activity against a wide variety of Gram-positive and Gram-negative bacteria and fungi, and that it exhibits good antioxidant behavior [49].

A commercial mouthrinse that has been for sale for over 100 years consisting of thymol, eucalyptol, menthol and methyl salicylate (oil of wintergreen) was scientifically studied for its ability to reduce plaque. The study found that it reduced plaque up to 34% and gingivitis up to 35% [50].

Fast Fact

Combining certain extracts with naringin, quercetin, genistein and piperine can enhance the bioavailability of an extract, when drops of the extracts diluted in a glass of water are placed directly under the tongue and held for up to 15 seconds [48].

How Dark Chocolate Saves your Teeth

Over the last few decades chocolate has been seen as the enemy of teeth, with intake of chocolate being considered detrimental for tooth health. This negative effect is because high concentrations of sugar, as well as other compounds present in the chocolate are the prime mechanisms for the cavities in the chocolate.

Dark Chocolate for the Protection against Cavities

Research studies conducted by Ferrazzano et al. noted the protective effect of dark chocolate (cocoa) on dental caries. Dark Chocolate contains a dextransucrase enzyme which naturally inhibits the formation of plaque caused by sucrose / sugar. Dark chocolate also contains an abundance of phenolic substances, which exhibit anticaries effects.

A research study involving rats that were exposed to the cavity forming bacteria Streptococcus sobrinus, were fed a water-soluble extract of dark chocolate powder (cocoa). The study that the rats exhibited significantly less cavities.Other studies found that cocoa polyphenols inhibited the growth of S. sanguinis, but not Streptococcus mutans. However dark chocolate was able to inhibit acid production responsible for cavities from sucrose.

A Natural Dark Chocolate Mouth Wash

A recent study used ground husks of cocoa beans (which are abundant in polyphenols) to make a mouthwash. The study found that the mouthwash reduced mutans streptococci counts up to 20.9% and plaque decreased up to 49.6% [(51)].

The following information comes from a meta-data analysis study titled: Plant Polyphenols and Their Anti-Cariogenic Properties:A Review, which was conducted by Gianmaria F. Ferrazzano, et al and published in February of 2011.

Polyphenols and Dental Health

Research studies conducted by Smullen et al discovered that cocoa, red grape seeds and green tea extracts all contain an abundance of polyphenols which are effective against the adherence Streptococcus mutans.

Another study found that a cocoa polyphenol pentamer significantly reduced biofilm adherence that was produced by Streptococcus mutans and S. sanguinis. The cocoa polyphenol pentamer called cinnamtannin A3 is a powerful natural antioxidant found in cacao beans. It is highly regarded for its ability to support cellular and cardiovascular health.

Another in vivo study demonstrated that the cavity protection effect of chocolate with high cocoa levels was less than 40% of sucrose and was also lower than chocolate that had low cocoa levels.

Studies suggest that phenolic substances are one of the prime mechanisms responsible exhibiting protection against cavities, most likely due to their inhibition of synthesisof the water insoluble glucans.

Polyphenols for Protection against Cavities

An in-vitro study discovered that tea polyphenols showed no effect on the de/remineralisation enamel, however the cavity protection came from anti-microbial activity.

The Composition of Dark Chocolate Cocoa powder contains up to 50mg of polyphenols per gram. Flavanols in cocoa exist as monomers catechin and epicatechin and contain proanthocyanidins or condensed tannins [52].

Dr. Christopher's Herbal Tooth Powder

This Herbal Tooth Powder contains Peppermint Leaf, Licorice Root, Prickly Ash Bark, White Oak Bark, Cloves, Stevia, Propolis, Ginger Root and wildcrafted Shavegrass is used to keep the teeth strong and prevent cavities.

Xylitol
This is a natural sweetener, now widely available, that has been scientifically proven to prevent cavities [53], [54], [55].

Stevia
Another natural sweetener. Showed very potent antiplaque and anti-gingivitis properties reducing plaque up to 10% and a strong reduction in gingival scores [56] [57].

Excessive Stevia Intake and Brain Damage
A research study looking at a number of artificial sweeteners, including Stevia, found that Stevia is composed of stevioside and rebaudioside A. These substances are rich in the minerals cobalt, iron and manganese. In a study conducted on rats, Stevia showed a reduced reduction for rats when trying to navigate a water maze. The study concluded that the reason for the neuronal damage occurring may have been due to the mineral components of stevia. Further research on artificial sweeteners aspartame and sucralose found significant percentages of neuronal damage occurred, compared to the control group [58].

Luo Han Kuo fruit extract (Siraitia grosvenori)
Another natural sweetener. Has shown inhibitory ability against oral bacterial species Porphyromonas gingivalis, Streptococcus mutans and yeast Candida albicans. This powder is 250 to 400 times sweeter than sugar. It also has medicinal properties that include healing throat infections, coughs, heat stroke, constipation and diabetes.

Allulose
This is one of the newest sweeteners, only having been on the market for a few years. It lmost tastes exactly like sugar, but without almost any calories. A 2025 study

noted that while allulose is not typically cariogenic, it may pose a minor risk for root decay, particularly for older adults with receding gums (John D. Ruby et al. 2025).

Jiaogulan (Gynostemma pentaphyllum)
This herb is very similar in structure to ginseng, but without the bitter after taste of ginseng. Jiaogulan was found to contain fifteen new compounds that had an intensity of sweetness 10–100 times higher than that of sucrose with Gypenoside being the sweetest. Gypenoside had the highest concentration of sweetnesss (Hong-Xia Zhang et al. Sept 2022).

Yogurt
The first studies of the use of probiotics for enhancing oral health were tested for the effectiveness against periodontal inflammation. Patients with various periodontal diseases, pregnancy gingivitis, gingivitis and periodontitis were locally treated with a culture supernatant of a L. acidophilus strain (found in abundance in yogurt and fermented milk). Significant recovery was reported for almost every patient [(31)].

Green and Black Tea
A research study found that both green and black tea inhibited the growth of Streptococcus mutans when used as a mouthwash with Black Tea showing the best results. When Chlorhexidine (0.2%) was added, it created a beneficial synergy with enhanced the results [(59) (60) (61) (62)].

Oolong Tea
This tea has a high number of monomeric polyphenols which showed a stronger inhibitory effect on the growth of the disease oral causing bacteria S. mutans compared to green tea and black tea [(63)].

Additional research studies conducted on oolong, green and black teas showed the tea polyphenols exerted an anti-cavity effects via their anti-microbial modes-of-action. Also the galloyl esters of epicatechin, epigallocatechin and gallocatechin, which are found in the teas, exhibit strong antibacterial activities. The study concluded that anti- cariogenic effects against bacteria that cause cavities (streptococci) by polyphenols from dark chocolate, coffee and tea should be studied further for the prevention of pathogenesis of dental cariesnti-cariogeniceffects of polyphenols from plant stimulant beverages (cocoa, coffee, tea). Ferrazzano GF et al. May 2009). In summary, there is an abundance of foods that help prevent / treat cavities. The secret is knowing which foods to take and that is what this book is all about, giving you the best foods to prevent / heal cavities and keep your teeth healthy and strong all lifelong.

Biofilms and Hydrophobicity

The term hydrophobic also goes by the name biofilm. This means that a substance that is applied to a surface greatly reduces the ability for bad bacteria to cling to it. One example is the Lotus Seed. For example, a 1,288 Lotus Seed (Nelumbo nucifera Gaertn.) from a lake bed at Pulantien, Liaoning Province, China was successfully germinated. It is the oldest directly dated seed ever reported, being one of the early crops of lotus cultivated by Buddhists. It not only germinated but is still growing strong (since March, 1994). Of six lotus fruits that were planted, over two-thirds germinated more than 1,000 years later [(64)]. This is because the exterior surface of the Lotus Seed contains a slippery, hydrophobic surface, that keeps bad bacteria away, thus preserving it for centuries.

The Lotus Seed has been proven to have a 1,300-year or more lifespan (that we currently know of), allowing it to sprout after over 1,000 years. This is due

to its exceptional ability to repel water, which is known as the lotus effect. The lotus effect is caused by nanoscopic particles which contain closely packed protuberances , which act as a self-cleaning mechanism upon its leaves. Hence over time these leaves have evolved as self-cleaning mechanisms. This method is also employed in the industrial paint, Lotusan [(65)].

Further Reading
Genome of the long-living sacred lotus (Nelumbo nucifera Gaertn). Ray Ming, et al. May 2013.

Hydrophobic Substances include Quercetin and Chicory with quercetin Synergists being Ampcillin, Cephradine, Ceftiaxone, Imidenem and Methicillin**.**

Red Wine with Grape Seed Extract
Red Wine with Grape Seed Extract reduces the ability of bad bacteria to cling to teeth [(66)] [(44)].

Plant Extracts that Exhibit Biofilm Activity
A Meta-Analyses study involving 1,848 articles found that plant extracts displaying anti-adhesive and anti-biofilm activity included: Coffea canephora (coffee), Camellia sinensis, Vitis vinifera, Pinus spp., Vaccinium macrocarpon, Caesalpinia ferrea Martius, Galla chinensis, Psidium cattleianum, representative Brazilian plants and manuka honey [(67)].

Further Reading
Grape Seed Extract Exerts Abhesive Effect Against Staphylococcus aureus: In vitro Study. Marwan S.M. Al-Nimer.et al. 2012.

Mechanism of Bacterial Inactivation by (+)-Limonene and Its Potential Use in Food Preservation Combined Processes. Laura Espina, et al. Feb 2013.

In Vitro Antimicrobial Activity and Effect on Biofilm Production of a White Grape Juice (Vitis vinifera) Extract. Angela Filocamo et al. Aug 2015.

Effect of Wine Wastes Extracts on the Viability and Biofilm Formation of Pseudomonas aeruginosa and Staphylococcus aureus Strains.Carolina María Viola et al. 2018.

Good Dental Hygiene Contributes to Longevity

Many substances that exhibit potent lifespan extension effects are also powerful cavity prevention substances. For example below is a short list of substances that not only help prevent cavities, but also have potent life-extension properties. I should note here that probiotics, which is currently being studied as an anti-cavity vaccine is also a powerful anti-aging substance. This was shown in a 2025 study titled: Deciphering the anti-aging potential of probiotics: A narrative review on gerobiotics published by Abrar Hussain and collegeus.

In worm longevity trials, the strain Lactobacillus paracasei JS-3 extended lifespan by 28.02% and Abrar also stated that data from 300 meta-analysis studies showed human trials evaluating disease prevention reported up to 79% effectiveness in curing or preventing age-related health issues using probiotics.

Thioflavin T

Thioflavin T, which is a potent inhibitor of amyloids that cause Alzheimer's (Grelle G et al. Dec 2011), has been shown to end lifespan up to 78%, across three strains of Caenorhabditis species by restoring protein homeostasis. This is due to the amyloid dye [68] [69] [70].

Some studies suggest Thioflavin T can target structures that inhibit biofilm formation (Xu Han and Christine K Payne Mar 2022).

Resveratrol and Black Tea Polyphenol Combination

Combining resveratrol (a compound in grapes and red wine) with black tea polyphenols (such as theaflavins and thearubigins) shows promise for enhancing oral health, primarily through synergistic antibacterial, anti-inflammatory, and antioxidant effects that target dental caries and periodontal disease as well as well as resveratrol's benefits in extending lifespan (D Kumar and SI Rizvi. Dec 2014), [(71).]

Peptides

These have shown promise in Oral Tissues Regeneration [(72)], reducing inflammation caused by Periodontitis [(73)] and for enamel remineralization [(74)].

A research study suggested that daily consumption of flavanols from dark chocolate may act as a preventive tool for the nutritional management of people with diabetes [(75)].

Chapter 2

Why Comunities are Banning Flouride

During the year 2025, Utah became the first U.S. state to ban water fluoridation, followed by a similar ban in Florida. Multiple cities and counties across the U.S. are also moving to stop adding fluoride to public water systems. The city of Portland, Oregon, does not fluoridate its water supply. Voters have rejected fluoridation proposals multiple times, most recently in 2013, making Portland the largest city in the United States without it.

Does Fluoridation of Water Prevent Cavities?
Let's look at the facts. For many decades, the ADA (American Dental Association) has issued warning statements to various cities across the United States that if they ended their water fluoridation programs, that the rate of their citizen's tooth decay will most likely increase. However, let's look at the facts.

Fluoridation Cessation Studies

CANADA:

Cavities decreased over time in a community that ended water fluoridation [(76)].

FINLAND

The city of Kuopio ceased water fluoridation and found no increase in cavities [(77)].

GERMANY

Authorities initially expected an overall increase in dental cavities in the residents following the cessation

of adding fluoride to the water in the cities of Chemnitz and Plauen. However over time studies showed a significant fall in cavities instead [(78)]. Germany originally began the banning of adding fluoride to drinking water in the 1970's.

CUBA

In 1997 Cuba stopped adding fluoride to its city's water. In March 1997, a study in La Salud, Province of Habana, Cuba aimed to investigate trends in dental caries following the cessation of water fluoridation in 1990. A total of 414 children aged 6-13 were assessed using diagnostic techniques from previous studies in 1973 and 1982. Notably, from 1973 to 1982, there was a significant decline in the average DMFT and DMFS values and an increase in caries- free children. Surprisingly, in 1997, despite the lack of fluoridation, caries prevalence remained low among younger children, with slight declines noted in older age groups. The percentage of caries-free 12-13-year-olds increased to 55.2%. [(79)].

USA

The National Toxicology Program released its own study and concluded, with confidence, that higher levels of fluoride exposure, such as drinking water containing more than 1.5 milligrams of fluoride per liter, are associated with lower IQ in children.

Utah: Signed into law in March 2025, the ban officially took effect on May 7, 2025, making it the first state to prohibit public water fluoridation.

Florida: Signed into law in May 2025, the legislation prohibiting water facilities from adding fluoride took effect on July 1, 2025.

Further Reading

National Toxicology Program. NTP Monograph on the State of the Science Concerning Fluoride Exposure and Neurodevelopment and Cognition: A Systematic Review. August 2024. U.S. Department of Health and Human Services.

The facts and data are showing that the banning of fluoride in public drinking water is starting to become a worldwide healthcare policy

Water fluoridation Lowers IQ Scores

This 2025 systematic review [81] and meta-analysis aimed to clarify this relationship through a dose-response approach, focusing on IQ scores across varying fluoride exposure levels.

Out of 1,996 records reviewed, 33 studies qualified, with 30 suitable for meta-analysis. The findings indicated an average IQ decrease of −4.68 when comparing the highest exposure to the lowest fluoride categories. Specifically, fluoride in drinking water showed a decline of −5.60. The analysis revealed a significant linear decrease in IQ with fluoride levels above 1 mg/L in drinking water, with a reduction of −3.05 IQ points per mg/L. The negative impact on IQ was most notable in studies with a high risk of bias.

Overall, the evidence suggests that even minimal fluoride exposure negatively impacts children's IQ [(80)].

In another research study reviewing 74 published research studies, researchers discovered significant negative correlations between fluoride exposure and children's IQ scores. This analysis showed that negative associations persisted for fluoride levels in water and urine, particularly at concentrations below 4 mg/L, 2 mg/L, and 1.5 mg/L.

These findings were consistent even in studies with low risk of bias, reinforcing concerns about fluoride exposure affecting cognitive development in children [(81)].

Why Living near Volcanoes results in Higher Fluoride Intake

People living in regions where volcanoes are active are susceptible to increased fluoride levels due to hydrogen fluoride—and ash deposits entering local water sources and soil, volcanic aquifers and atmospheric volcanic emissions. This may contribute to skeletal fluorosis.

Fluoride happens to be a cumulative toxin, meaning low doses ingested continuously over a long period of time build up to critical levels. Fluoride is naturally removed from the body via urine as well as being absorbed by the bones. When a person is young, especially if they are an infant, fluoride retention in their bones can be as much as 90% of the absorbed levels from the environment. However fluoride retention in the bones of an adult is only (50)% or less.

Studies by Mostafaei et al. discovered the rate of absorption of fluoride in bones is 3 times as much among people who drink tea, compared to non-tea drinkers. Some mineral waters as well as black tea contain an abundance of fluoride. Studies have found that populations that consume lots of black tea, that water fluoridation is not only unnecessary in those communities, but also possibly harmful [(82)]. Also normal

bottled water (not mineral water) has not been shown to prevent cavities [(83)]. Black tea is high in natural fluoride [(84)].

Further Reading
Fluoride content of bottled natural mineral waters in Spain and prevention of dental caries. Maraver F et al. Jan 2015.

Green tea: A boon for periodontal and general health. Anirban Chatterjee, et al. Apr 2012.

Seasonal Variations of fluoride Levels in the Body
To avoid one's risk of dental fluorosis, it can be good to know what time of year cavities occur more often. A study looking at fluoride levels in children throughout the year found that children aged between 0 and 12 months and 12 to 72 months showed varying results in how their bodies processed fluoride. Children that were younger than 12 months did not show seasonal variation. However as the children got older, the children aged between 12 and 72 years of age retained fluoride in the bodies more often during summer. Fluoride intake from beverages showed an increase with the monthly temperature [(85)].

Seasonal Variations of Cavities
Seasonal variation of tooth pain tooth pain occurs more often during the early morning with less pain occurring during the early afternoon.

Seasonally maximum pain peaks from October to November yearly with a minimum occurring during May [(86)].

In another study in Quebec researchers discovered that during the seasons of fall and winter people were more susceptible to dental pain, possibly due to the outdoor cooler temperatures [(87)].

Improvements in oral hygiene, the proper diet and better access to fluoride-containing toothpastes are the primary reason a reduction of cavities is present in communites without fluoridated drinking water

Seasonal Variation of Dental Cavities

A study looked at the number of times people in South America (Brazil, Colombia, Peru, and Venezuela) used the Internet to search for remedies for toothache between 2004 and 2017. The lowest number of Internet searchers occurred during the months of June, July and December [88]. In South America the warmer summer months occur between fall between December and February with winter months being June and August.

Seasonal Variability of Gingivitis

A research study in Kenya examining volunteers aged between 5 and 46 years of age found that gingivitis occurred in 58.5 per cent below 11 years and 32.9 per cent between 21 and 40 years of age. 72 per cent of the volunteers exhibited symptoms from March to April and again between September and December (close to the equinoxes). Could this mean that bad bacteria is more prevalent around the equinoxes? [89].

Another study conducted in Cape Town South Africa conducted between 15 March 1992 to 15 March

1998 that examined the prevalence of gingivitis in patients. The study found that out of 19,944 patients that were admitted for periodontal treatment 58% were males and 73% were between 5 to 12 years of age. 55.4% of patients were admitted during summer, 27.7% during fall and 8.4% during winter and spring [(90)].

People most vulnerable to Plaque Buildup

The demineralization of dental enamel initially presents through surface-level decalcification, which results in porous, chalky white spot lesions (WSLs). These lesions are early indicators of caries before they evolve into more severe cavities.

A research study reviewed numerous enamel remineralization techniques, drawing from 17 selected studies obtained from a comprehensive literature review via PubMed, Scopus, and Web of Science.The research data revealed that people undergoing orthodontic treatments were particularly vulnerable to WSLs due to increased plaque accumulation from braces and other devices, highlighting the necessity for thorough oral hygiene education [(20)].

Seasonal Variations of Plaque

A study involving 80 schoolchildren aged between 12 and 15 years was conducted. The PH levels of their saliva was higher in summer, compared to winter and plaque accumulation tended to be higher in winter compared to summer. Gingivitis was also more common during winter. The study hypothesized the reason for higher plaque and gingivitis levels during winter may have been due to sweet foods in stores market and school cafeterias during winter and that these substances tend to become more sticky, solid and more retentive during cooler weather, which allows the substances to strongly adhere to the tooth surface for longer durations during cooler temperatures, lowering pH levels in the salvia.

A study published by MC Mazengo et al (1994) and colleagues discovered that gingivitis was more common among urban subjects due to their diet(s) containing more sucrose and less fiber-rich foods. The study also observed that children in the city had healthier teeth. The study stated this may be due to improved oral hygiene among urban children compared to rural children. This finding was also published by Blay D, Astrom AN, Haugejorden O (2000) [91].

Seasonal Variation of Toothache

An analysis of toothache reports in Kanpur District India, which is located in the Northern Hemisphere, discovered that toothaches peaked during March and May [92].

Extracts of Ginkgo biloba have been shown to significantly mitigate the neurotoxic damage caused by fluoride [93]. The absorption of Ginkgo into the body can be better absorbed with sesame extract or turmeric oil. (Tatsuya Moriyama et al. Sept 2019)

Chapter 3

The Pioneering Work of Dr. Melvin Page

Dr. Page studied Dr. Weston Price's research on the dental health of remote tribes. He began his research at Hackley Hospital and Mercy Hospital in Muskegon. His studies involved over twothousand blood chemistries. His concluded that cavities would not form when the calcium tophosphorus ratio was 10 to 4 in the blood.

The Department of Dental Research of the United StatesAir Force confirmed this finding 42 years later. Dr. Page also discovered that the ideal blood sugar level of 85, plus or minus 5 (on the Sclavo test) was optimal for dental health and that refined carbohydrates and white sugar increased serum calcium (Calcium drawn from the bones). It was these findings that led Dr. Page to develop what's today known as the "The Page Food Plan". This plan created a diet that restored anupset body chemistry and is based on the glycemic index. This is due to the fact that tooth decay occurs far less often, or in some cases not at all, when a precise ratio of calcium to phosphorus is present inthe blood. When this condition persists for a period of months, tooth decay develops. The ratios are as follows –

Calcium to Phosphorus Ratio - 10 to 4
Blood Sugar - 80-90

The calcium to phosphorus ratio means there is 2.5 times more calcium than phosphorus. Foods that have close to the ideal calcium ratio of 10 to 4 include: Butterbur (Fuki), Papayas, Oranges and Chinese Cabbage. The herbs Dill Weed, Basil and Arugul. These greens have some of the highest Ca:P ratios in the

vegetable kingdom: Collard Greens, Turnip Greens, Beet Greens, Dandelion Greens and Mustard Spinach (Tendergreens).

While hitting the 10:4 ratio on paper is great, keep an eye on oxalates (oxalic acid) in certain greens. Beet greens and dandelion greens contain oxalates, which can bind to calcium and reduce how much of it your body actually absorbs. Collards, turnip greens, and Chinese cabbage are very low in oxalates, meaning your body will absorb a much higher percentage of that calcium.

Collard greens regularly hits or exceeds the 10:4 sweet spot

The Cause of Calculus Deposits

Research by Dr. Page found that calculus deposits (tartar - a form of hardened dental plaque) above a gum line were indicative of a high blood calcium level and that irritated gums and existing calculusbelow thegum line near the root of the tooth, occurred if a person's blood phosphorus levels were too in the relationship to blood calcium (low blood calcium).

Calcium-rich foods

- Dairy: milk, cheese, yogurt.
- Leafy greens: kale, collard greens, spinach
- Sardines, salmon with bones
- Calcium is the main mineral in enamel and dentin. Cheese also increases saliva flow and reduces acidity.

Phosphorus-rich foods

• Works with calcium to rebuild hydroxyapatite (the crystal structure of teeth).

• Meat, fish, eggs, nuts, beans

Vitamin D Sources

• Sunlight exposure

• Fatty fish, cod liver oil, egg yolks

• Helps your body absorb calcium and phosphorus efficiently.

• Vitamin K2 (directs calcium to teeth and bones)

• Grass-fed butter, ghee

• Natto (fermented soybeans, very high in K2)

• Pasture-raised egg yolks, liver

• Prevents calcium from going into soft tissues and redirects it to hard tissues like teeth.

Magnesium

• Essential for strong enamel crystal structure.

• Pumpkin seeds, almonds, cacao, leafy greens

Collagen & Gelatin (for dentin remineralization)

• Bone broth, chicken skin, collagen peptides. Provides amino acids for dentin and periodontal health.

Herbs & Natural Substances with Dental Benefits

• Antimicrobial, reduces Streptococcus mutans (cavity-causing bacteria).

• Green Tea (Catechins). Provides fluoride naturally in small amounts.

• Licorice Root (Glycyrrhizin. Shown in studies to reduce cavity-causing bacteria and protect enamel.

• Neem. Traditional Ayurvedic herb for oral health. Antibacterial, plaque-reducing, cavity-preventive.

• Clove Oil. Antimicrobial + pain relief. Supports gum and dentin health.

• Xylitol (from birch or corn). Natural sugar alcohol that starves cavity-causing bacteria. Also stimulates saliva flow which promotes tooth remineralization.

• Cocoa (raw cacao, not sugary chocolate). Contains theobromine, which has been shown to strengthen enamel and work similarly to fluoride.

Saliva Support (critical for remineralization)

• Drink plenty of water (preferably fluoridated or mineral-rich spring water).

• Chew fibrous foods or xylitol gum to stimulate saliva.

• Avoid smoking, excessive alcohol, and constant snacking (they reduce saliva quality).

Gingivitis. Its causes and Natural Treatment

Dr. Page found gingivitis was present in patients who had high phosphorus and low calcium counts. This could be remedied by reducing phosphorous to its correct proportions. Hence gingivitis is aprecursor to

periodontal disease due to an imbalance in blood chemistry.

When performing oil pulling, it is key to use Cold Pressed Sunflower Oil, and organic if possible for the very best results

A research study set out to see how effective oil pulling therapy actually is. The study involved 20 adolescent youths with plaque-induced gingivitis, participants were divided into two groups: one practicing oil pulling with flaxseed oil and the other using chlorhexidine mouthwash. Both groups underwent assessments of plaque and gingival indices at the start and after 30 days. Results showed a significant decrease in both indices for each group, indicating that oil pulling with flaxseed oil is an effective supplementary treatment for managing gingivitis. [(94)].

How to use Flaxseed for Oil Pulling

Flaxseed, known for its high levels of essential minerals such as calcium, magnesium, phosphorus, and potassium, also contains antibacterial lignans that could help combat cariogenic bacteria like Streptococcus mutans, making it a promising natural remedy for many tooth related disorders [(95)].

A research study set out to evaluate how effective oil pulling was mixed with flaxseed oil and how effective it was at removing plaque-induced gingivitis. The study also aimed to see how well it performed against the mouthwash chlorhexidine. Long-term use of chlorhexidine can lead to altered taste sensation and difficult-to-remove brown staining on the teeth, as well as potential effects on mucous membranes and the

tongue. In contrast, flaxseed oil offers advantages such as no staining and a lower risk of allergy. The only drawback of oil pulling therapy is its longer duration compared to chlorhexidine. The authors in the study concluded that oil pulling therapy was as equally effective as chlorhexidine mouthwash against plaque-induced gingivitis [(94)].

The meaning of Types 1 and 2 Gum Disease

Type 1 - Blood calcium is too low in relation to blood phosphorous.

Type 2 - Both phosphorous and blood calcium levels are low. These can be corrected by replenishing the body with the proper minerals and vitamins.

Indian Gooseberry for Strong, Healthy Gums

Amla, or Indian gooseberry, is highly regarded in Ayurveda for promoting oral health. It strengthens gums, helps reduce cavities, and combats bad breath. Its antibacterial properties contribute to preventing tooth decay effectively. In Ayurveda, amla is recognized for promoting oral health and can be used as a mouth rinse in decoction form. Taking one to two grams daily in capsules can support long- term gum health, as it aids in the healing of connective tissues. Additionally, herbs like bilberry and hawthorn reinforce gum tissue by stabilizing collagen, while liquorice root has anti-cavity properties and reduces plaque. Ayurveda views teeth as part of the body's bone structure, so herbs that strengthen bone tissue, such as yellow dock, alfalfa, cinnamon, and turmeric, contribute to dental health.

Chapter 4

Periodontitis. The Facts and Measures for Prevention

Periodontal Disease can contribute to Health Problems

Looking after one's periodontal health can not only allow the body to become more healthy, but also reduce the risk of many diseases. The following section comes from a meta-data analysis study titled: Prevalence of periodontal disease, its association with systemic diseases and prevention which was conducted by Muhammad Ashraf Nazir and published in April of 2017.

How Periodontal Disease can contribute to Cardiovascular Disease

Research shows that people suffering from severe Periodontal Disease have been found to have a 19% increase in the risk of cardiovascular disease. As the person near 65 years of age, the risk increases to 44%.

People with Type 2 diabetes who suffer from severe periodontitis are more than 3.2 times likely to die compared to people with no or mild forms of periodontitis. Hence this is why studies have found that Periodontal therapy improved glycemic control in type 2 diabetic subjects.

Maternal Infections

A research study found that people suffering from Periodontitis were found to give birth to babies with lower birth weights, preterm births and preeclampsia.

Smoking and Oral Health
Studies found that smokers are 3 times more likely to have severe forms of Periodontal Disease, compared to non-smokers.

Stress
Because excessive long term stress reduces the flow of salivary secretions in the mouth, it enhances dental plaque formation. Studies conducted by Rai et al. found that stress and salivary flow were directly related to tooth loss.

Depression
People who are depressed have been shown to respond poorly to treatment of Periodontitis. Also academically stressed individuals have poorer oral hygiene habits which results in inflammation of gingiva.

Genes
Studies have found that hereditary factors can play a role in determining if one is more likely to suffer from periodontitis. Rheumatoid arthritis (RA) Periodontal disease has been shown to be prevalent among those suffering from rheumatoid arthritis.

Obstructive Pulmonary Disease
People suffering from Obstructive Pulmonary Disease have been shown to be more likely to have periodontitis. A research study by Chung et al. involving 5,878 Korean adults discovered significantly higher concentrations of periodontitis among those suffering from Obstructive Pulmonary Disease compared with healthy individuals. In another large scale study involving approximately 22,332 patients with Obstructive Pulmonary Disease the same finding was drawn.

Pneumonia
Researchers suggest that periodontal and oral microorganisms may be implicated in bacterial pneumonia.

Chronic kidney disease (CKD)
Individuals who have been diagnosed with Chronic kidney disease are on average 30-60% more likely to develop moderate periodontitis.

Vitamin C Deficiency
Research by Nishida et al. who studied 12,419 adults found a link between a low intake of Vitamin C and an increased risk of periodontal disease. He also observed that a dose- response relationship existed between vitamin C and how severe periodontal disease becomes.

Closing Summary
A diet rich in vegetables, fruits and low in fat and sugars can help one avoid not just periodontal disease, but in general good health as well. Vitamins E and C have powerful antioxidant properties that help to reduce reactive oxygen radicals (ROS) which take place during the inflammatory stages of early peridontal disease. A diet low in calories has been found to diminish the tissue damage in periodontal disease and reduce inflammation.

Also using a good mouth rinse such as Chlorhexidine which has been scientifically proven to reduce dental plaque up to 55% and lower gingival inflammation up to 45% can be of tremendous benefit as well. Hence using mouth-rinses that exhibit antiplaque and anti-gingivitis properties, both natural and commercial can greatly help reduce one's chance of suffering from severe Periodontitis. Chlorhexidine is also used to treat gingivitis and has been shwon to exhibit synergy when combined with triclosan and cetylpyridinium (Anna Biernasiuk et al. May 2023).

Periodontal studies conducted on beagle dogs found that the prevalence of periodontitis increases with increased age [97]. In a separate study beagle dogs that were given subgingival doxycycline exhibited in substantial improvement in their periodontal health [98].

Further Reading

Surgical versus non-surgical treatment and recurrent periodontal disease in beagle dogs. Aukhil I et al. Feb 1998.

Using Salacia reticulate for treating Periodontitis

Salacia reticulata, a plant used traditionally in India and Sri Lanka, contains mangiferin. Mangiferin, which is found in abundance in mangoes, has been studied for its potential dental health benefits, including reducing tooth pain. Research suggests it may help manage periodontitis through its antioxidant and anti-inflammatory properties, leading to less inflammation and better healing. Additionally, some studies indicate mangiferin's antibacterial qualities could assist in

treating bacterial infections associated with toothaches [99]. I personally have gotten the best results using an extract of Salacia reticulata by adding a few drops to warm water and rinsing the mouth.

Salacia reticulata can also be taken as a hot tea. In another study involving 20 healthy patients that exhibited gingivitis were split into two groups with one group taking 8 mg lycopene/day for 2 weeks, with the other group acting as a placebo. The study found that lycopene exhibited statistically significant reductions in the microorganisms responsible for causing gingivitis. The study concluded that lycopene shows great promise as a treatment modality in persons suffering from signs of gingivitis and that there exists the possibility of obtaining a synergistic effect by combining oral prophylaxis with lycopene [100].

Other studies found that people who have periodontal disease excrete excess amounts of calcium in their urine. The study also found that people with low serum calcium levels tend to have significantly higher chances of developing periodontal disease [101].

Blackberry Extrac

A study found that an extract of blackberry exhibited anti- inflammatory and antiviral properties and suggested it as a promising target for the prevention or complementary therapy of people suffering from periodontal infections [102].

Lemongrass treats Chronic Periodontitis

Just 0.25% Lemongrass oil used as a mouthrinse was to be found to be an excellent herbal alternative for the treatment of chronic periodontitis [103].

Speaking from personal experience, I have used an aromatherapy spray for over decade that is water diluted with Lemongrass Essential Oil and when I have sprayed it around my home I find that it really helps keep my gums strong and healthy.

A research study found that patients with Chronic Periodontitis had higher levels of Candida albicans in their mouths (104). Berberine has been found to inhibit the growth of Candida albi due to its powerful anti-biofilm activity [(105)] and when Berberine is combined with an antibiotic, it exhibits powerful synergism, further destroying Candida albicans [(106)].

Eliminating the bad bacteria C. albicans High numbers of the bad bacteria Candida albicans have been found in the dental plaque and cavities of children that had early childhood cavities [(107)]. A study looking at the essential oils from Baccharis dracunculifolia, Aloysia gratissima, Coriandrum sativum, Cyperus articulatus and Lippia sidoides showed strong antimicrobial activity. The report looked at the morphology of S. mutans biofilms involving these plants. The plants A. gratissima and L. sidoides exhibited a significant reduction in the biovolume of extracellular polysaccharides and bacteria. The study concluded that essential oils from these plants may have created porosity in the biofilm and disrupted biofilm integrity of the disease causing bacteria. The study also found that an essential oil made from C. sativum drastically reduced C. albicans levels [(108)].

Further Reading

Effects of Lactobacillus salivarius WB21 combined with green tea catechins on dental caries, periodontitis, and oral malodor. Takuya Higuchi et al. Feb 2019.

Effects of oil drops containing Lactobacillus salivarius WB21 on periodontal health and oral microbiota producing volatile sulfur compounds. Nao Taniguchi et al. Feb 2012.

Auranofin
This substance prevents / treats the bacteria responsible for causing gum disease (Christine Roder and Melanie J Thomson. Feb 2015).

Auranofin synergizes with Idebenone (a Coenzyme Q10 analogue), which is used as a substitute for Auranofin (Zachary L. Newman et al. Mar 2011). Low levels of CQ10 can put one at risk of Periodontal Disease (Shima Ghasemi et al. Mar 2022).

Hydrogen Water Heals Periodontitis
Hydrogen Water is a recent substance that has gained many favorable reviews in scientific journals. A study found that a group that drank hydrogen water exhibited increased antioxidant levels after four weeks and that it may be beneficial for improving periodontitis [(109)].

Plant Extracts that Prevent Periodontitis
The Hidden Power of the Little Known Plant Scutellaria Baicalensis
Baicalein, which is found in abundance in the plant Scutellaria baicalensis (Huang Chin) has been used to treat periodontal disease [(110)]. The reason for Scutellaria baicalensis inhibits periodontal disease is because it is a natural probiotic. As shown in this book probiotics help inhibit disease oral causing bacteria. An in-depth research study found that an extract of Salacia Reticulata regulated intestinal immunity due to its ability to alter the intestinal flora in rats [(111)].

Studies of the Effects of Salacia Reticulata on Humans Another study decided to take a look at an extract of Salacia Reticulata and its effects upon humans. The study enrolled a group of healthy males aged between 50 and 60 years with mildly reduced immunity, and after giving them Salacia Reticulata, found that it induced changes in their intestinal

microbiota, improved their T-cell proliferation index as well as other immunological indices which decline with age. It also elevated expression levels of their immune-relevant genes. As far as gut micro flora was concerned, the study came to the following conclusions after taking Salacia Reticulata:

- Bifidobacterium stomach microflora exhibited an increase of 36.2% (a substantial increase)
- Lactobacillales stomach microflora exhibited an increase of 11.7% (a substantial increase)
- A decrease of the gram positive bacteria Clostridium. (Clostridium is a bad bacteria responsible for age related diseases such as botulism and diarrhea in the human body)

The study came to the conclusion that Salacia Reticulata positively changes the gene expression of a person's peripheral blood cells and the proportion of intestinal microbiota, shifting it towards a younger phenotype. In simple summary, it enhanced the body's immune system which grows weaker as one ages. This makes sense because the majority of the body's immune system is located in the gut [(112)]. This is a significant breakthrough study because Bifidobacteria decreases with age [(113)].

References

Improvement in Human Immune Function with Changes in Intestinal Microbiota by Salacia reticulata Extract Ingestion: A Randomized Placebo-Controlled Trial. Yuriko Oda et al. Dec 2015.

Scutellaria baicalensis ameliorates the destruction of periodontal ligament via inhibition of inflammatory cytokine expression. Kim MH. et al. Feb 2018).

A Bioinformatic Approach for the Discovery of Anti-aging. Effects of Baicalein from Scutellaria baicalensis.Gao L et al. Mar 2016.

Plumbagin for Protection against Periodontitis

Chloroformic extracts of the aerial parts from Drosera peltata Smith were shown to be effective against bacteria that causes oral infections such as dental caries and periodontitis (114). Drosera peltata Smith happens to be abundant in plumbagin [(115)], which has been shown to kill antibiotic resistant bacteria [(116)].

Additional plant sources of Plumbagin

D. Tricolor, which contains plumbagin was shown to prevent acid production of Streptococcus mutans [(117)], Extracts of D. Tricolor, have also been shown to inhibit E.coli and S.aureus [(118)].

Plumbagin is also found in the roots of Plumbago rosea L. [(119), (120)]. Plumbagin is also found in Plumbago indica (syn. P. rosea), with the common names Indian leadwort, scarlet leadwort or whorled plantain. It is a flowering plant from the Plumbaginaceae family It is native to Indonesia, Southeast Asia, the Philippines and Yunnan in southern China [(121)].

Further Reading

Medicinal plants for gingivitis: a review of clinical trials. Hannaneh Safiaghdam. et al. Oct 2018.

Vitamin C and Cavities

As early as the 1920's, dentists knew that bacteria alone didn't cause cavities. It was the minerals in the food that played a key role in tooth decay. Percy Howe, a dentist

who lived in the 1920's, took cavity causing bacteria in rats and grew them. Next he fed this bacteria to new rats to see if the bacteria produced cavities. He found no cavities would develop until vitamin C was removed from their diets. Howe's study was published in the ADA's journal in 1923 (Ashley J Malin et al. May 2024).

This study has since been confirmed in a study on guinea pigs who cannot synthesize their own vitamin C. The study found that a reduction in calcium (as well as an increase in magnesium) would occur when their diet was deficient in both calcium and vitamin C (Nutrient Requirements of Laboratory Animals: Fourth Revised Edition, 1995).

Metal Chelation Theory and Cavities

Another study undertaken in 1972 by Dr. Albert Schatz showed that chelating agents ((molecules that bond to minerals) and enzyme agents caused tooth decay [(122)].

Other research by Dr. Ralph Steinman and Dr. John Leonora theorized that the hypothalamus (which regulates the body's nervous system through the pituitary gland) caused the parotid gland (a gland in the jaw) to become stimulated. This would than cause the release of a mineral rich fluid which re-mineralized and cleaned the teeth. If the body consumed cavity causing agents, the hypothalamus would then reduce the amount of this fluid.

Hence, a healthy and strong parotid gland is important for optimal dental health. Two of the most common reasons calcium is pulled from the teeth is from exhaustive exercise and a diet filled with sugar. This causes a fluctuation in the phosphorous / calcium balance in the bloodstream (S Ljunghall et al. Dec 1984).

Further Reading

Page, Melvin E. Degeneration, Regeneration. St. Petersburg, FL: Biochemical Research Foundation, 1949. Page 43.

Overtime Hours and Increased Tooth Decay

A research study conducted by the Tokyo Dental College, in Japan, titled: Relationship between amount of overtime work and untreated decayed teeth in male financial workers found excessive overtime work contributes to tooth decay. Out of a total of 951 office workers in the study they found that –

- 13 percent of men with no overtime reported tooth decay
- 19 percent of men working more than 45 hours reported tooth decay
- 27 to 31 percent of men working 45 to 80 extra hours per
- month reported tooth decay
- Workers who exhibited maximum overtime hours stated
- they were "too busy with work" when exhibiting decaying teeth.

Chapter 5

My Personal Story

This book was originally designed to be kept short, simple and factual, with its very first edition over a decade ago being approximately 130 pages. However from years of research, and numerous revised editions over the past decade it has come to exceed 400 pages due to more in-depth research and more published papers having been released during the last few 5 years. The fact is the majority of dental visits for people with serious toothache don't require a root canal. Like some of you reading this, when I was younger I had healthy teeth, but as I approached a later age, I started to have teeth and gum problems. I wanted to share with readers what worked for me, as well as some of the best proven herbal toothache remedies that have helped thousands over the years, including the ancient time tested herbal remedies used for centuries.

As more and more people are learning new and non- invasive ways to look after their teeth, Dentists are becoming more and more scared due to the shrinking lack of "customers" and are trying to find new and clever ways to keep people "in the chair". This is why you see more dental orthodontists starting to crop up. The fact is only your fear will keep you in the dentist's chair, because thousands of people each month are discovering that there are techniques available to avoid getting fillings, and methods to help to re- calcify their teeth and avoid unnecessary root canals.

For example in April 2014, health guru Dr. Mercola wrote an excellent article titled "**Why and How to Say No to an Unnecessary Root Canal Procedure**". As of 2025, when you put in the Internet

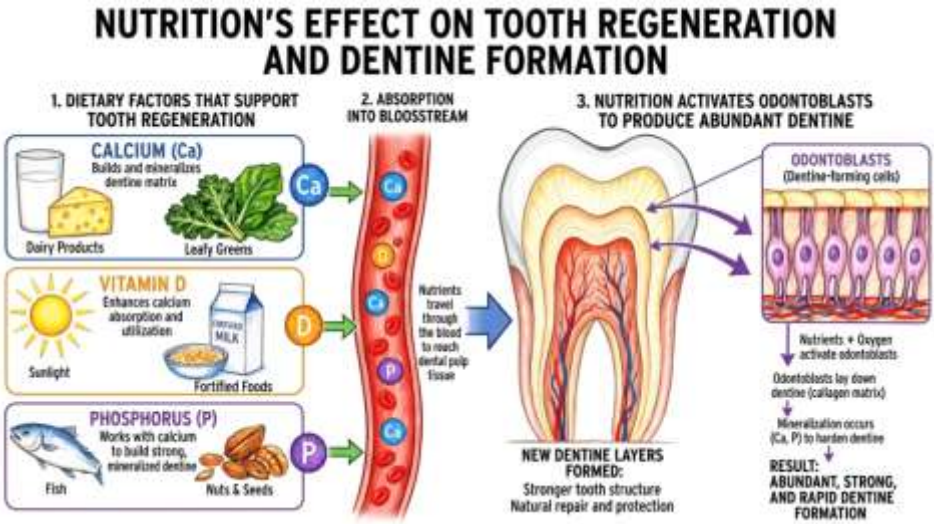
search term: "Why and How to Say No to an Unnecessary Root Canal Procedure Dr. Mercola" there are now numerous experts showing that this can now be avoided.

In Dr. Mercol's original article many years ago he explained the clear lack of awareness people have about alternatives to root canals. Let's continue with my own story. I grew up in Australia, one of the best countries with excellent dental hygiene, with our school receiving half yearly visits from a travelling dentist who would keep our teeth clean and healthy, as well as give us fluoridation treatments. I never had any major cavity problems, until middle age. It was at this time I had my first root canal. This cost me an out of pocket expense of approximately $3,000. I had also had on and off cavities filled for the 7 years prior to this, including one filling that was improperly filled in and cracked my tooth 9 years later while I was eating. However, it was only after the Internet arrived and the information matured enough, with feedback from others and good books on the topic, that I discovered that I could have excellent dental health, without root canals or painful gums and teeth.

So after using many of the techniques and refining them further, I discovered that not only did they work, but I was able to eat about 5 to 8 bars of chocolate a week without any tooth problems. After speaking in person with numerous dentists over the years and sharing these secrets with them, I have learned that there may be small "holes" in the teeth, but they will not cause excessive cavities if the right procedures and methods are taken. I have had a chipped tooth for over 15 years now that had the left part of my right gum exposed.

By using these methods I am about to share in this book, I have never ever had any reoccurring decay, pain or cavities appear using them. I have used these

maintenance and teeth rebuilding methods described in this book for the past 10 years without any problems.



Natural Tooth Repair Studies Performed by Dr. Weston Price

Dr. Weston A. Price, a Cleveland dentist, (Born: September 6, 1870, Canada. Died: January 23, 1948), demonstrated in the 1900's that native tribes who ate their traditional diet had
almost zero cavities. And many of them were almost 100 percent free of tooth decay. These people did not use toothbrushes, floss or toothpaste. However when the tribal populations were introduced to sugar and foods high in white flour, their perfect teeth rapidly deteriorated.

This proves an important link that nutrition is linked to the health of your teeth. Dr. Weston A. Price's book titled: Nutrition and Physical Degeneration, is still a popular classic today, almost 100 years after its publication. The book begins with research showing that the South African Bantu, when first visited by Dr.

Price, had a low prevalence of tooth decay. This was because their diet was high in unrefined carbohydrate foods. Their decay rate increased rapidly as modern foods such as white flour and refined sugar was introduced into their diets. Dr. Weston Price also documented the dramatic protective effect of cod liver oil (Vitamins A and D) and butter oil (Vitamins A and K2) against tooth decay. He used a combination of high-vitamin cod liver oil and high-vitamin butter oil to heal cavities, reduce oral bacteria counts, and cure numerous other afflictions in his patients. Dr. Price used extracts from grass-fed butter in combination with high vitamin cod liver oil to prevent and reverse dental cavities in many of his dental patients. Butter contains numerous beneficial microbes that keep the teeth and gums healthy. Cod Liver Oil, Raw Organic Butter, Canola Oil and Sunflower Oil are fatty acid oils with long chains. Butter has large amounts of butyric acid, and is a potent antimicrobial and antifungal substance. Butter also contains conjugated linoleic acid (CLA) which gives excellent protection against cancer.

Why Vegetarians get more Cavities

I know this from personal firsthand experience because I have been a vegetarian for more than 20 years. Dr. Price wrote in his book Nutrition and Physical Degeneration that vegetarian cultures had tooth decay at higher rates than those who ate meat. This was concluded after spending 10 years travelling around the world studying tooth decay in different cultures. Because Dr. Price concluded that vegetarians are more prone to cavities, I found this to be true. As a matter of fact, I had my first root canal done a few years after becoming vegetarian, as well as experiencing more toothaches than usual. However, after adding a carnosine supplement to my diet, I have noticed that all toothaches ceased, and I was able to eat large amounts of chocolate, still without any cavities or toothaches. I

attribute this to the carnosine. Meat happens to be high in the substance carnosine, especially the meat of chicken breast. A beneficial side effect of consuming carnosine is added energy. So by taking carnosine I am able to get all the benefits of meat without the problems or negative karma associated with heavy meat consumption.

Further Reading

Assessment of the influence of vegetarian diet on the occurrence of erosive and abrasive cavities in hard tooth
tissues. Herman K et al. Nov 2011.

Oral Candidal Carriage in Subjects with Pure Vegetarian and Mixed Dietary Habits Shankargouda Patil, et al. July 2017

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08.

What is Vitamin K2?

Vitamin K2 is the substance that makes the vitamin A and vitamin D dependent proteins come to life. While vitamins A and D act as signaling molecules, telling cells to make certain proteins, Vitamin K2 activates these proteins by conferring upon them the physical ability to bind calcium. In some cases these proteins directly coordinate the movement or organization of calcium themselves. In other cases, the calcium acts as a glue to hold the protein in a certain shape. In all such cases, the proteins are only functional once they have been activated by vitamin K.These proteins move calcium around your body. Vitamin K also works with vitamin D to prevent bone loss and build new bone. To be absorbed properly, Vitamin K must be consumed with a fat such as Omega 3 or Omega 6 oils. Flaxseed is especially high in this. It is key that vitamin K2 is taken with vitamin D to activate these proteins. If they are not completely activated, the calcium will not be completely distributed. This can also cause arteries to harden. Vitamin K2 is found in the highest levels in the Korean food Natto. Natto is a type of fermented soybean often served on rice. When you eat it, it 'stretches' like spaghetti, so you have to wrap it around your fork. The best forms of K2 are found almost exclusively in fermented foods.

Vitamin K2 Synergists

Cod Liver Oil (fermented Cod Liver Oil works best) & Butter Oil (100% grass-fed, unsalted cultured butter is the best) and Vitamins A and D. Vitamin K2 is best absorbed into the body with Cod Liver Oil and Organic Butter. It can also be taken with Coconut Oil & Palm Oil. The close cousin to K2, Vitamin K, also can be used for dental health. It works with vitamin D to prevent bone loss and build new bone. Alfalfa is also high in Vitamin K. A good all-purpose food that naturally contains high amounts of Vitamin K is

Chlorophyll

Chlorophyll is rich in vitamin K and it oxygenates human cells by helping to build red blood cells. Chlorophyll has been effective in halting tooth decay and gum infections, probably due to its high oxygen content. Chlorophyll is also used for treating inflammation, helping renew tissues and activating enzymes in the body to help produce Vitamin K. Themolecular symbol of Vitamin D is shown at right. Chlorophyll can be found in the following foods: Spinach, Chard, Kale, Collard, Mustard, Alfalfa and Sea Vegetables. The highest levels are found in Spirulina, Chlorella and Blue Green Algae. Hydrogen Peroxide also contains high amounts of oxygen.

Top 10 Foods Highest in Vitamin K2 (Menaquinone)

#	Food	K2 per 100 g	Notes / form
1	Natto (fermented soybeans)	**~1,000 mcg (MK-7)**	The most significant dietary source of vitamin K2, at roughly 1,000 mcg per 100 g.
2	Black bean natto	**~796 mcg (MK-7)**	Not far behind soybean natto, at 796 mcg per 100 g.
3	Goose liver paste (foie gras)	**~369 mcg (MK-4)**	Goose liver provides approximately 369 mcg per 100 g.
4	Hard cheeses (Gouda, Edam, Jarlsberg, Swiss)	**~73–103 mcg**	Hard cheeses like Gouda, Edam and Swiss contain 76–103 mcg per 100 g.
5	Soft cheeses (Brie, Camembert, Munster)	**~28–56 mcg**	Soft cheeses such as Brie and Camembert range from 28 to 56 mcg per 100 g.
6	Salami / cured meats	**~28 mcg**	Salami has about 28 mcg of vitamin K2 per 100 g.

#	Food	K2 per 100 g	Notes / form
7	Egg yolk	**~15–32 mcg (MK-4)**	Egg yolks provide 15–32 mcg of vitamin K2 per 100 g.
8	Chicken liver	**~14 mcg (MK-4)**	Chicken liver provides 14.1 mcg per 100 g.
9	Beef liver	**~11 mcg (MK-4)**	A 100-gram serving of beef liver has more than 11 mcg of vitamin K2.
10	Chicken (dark meat)	**~10 mcg**	Has 10 mcg per 100 g serving — five to ten times that of beef or pork.

Foods Highest in Both Vitamin K2 and Vitamin D

Food	Vitamin K2 (per 100 g)	Vitamin D	Why it qualifies
Egg yolk *(chicken)*	**≈ 31–34 µg** mostly MK-4	≈ 5–7 µg / 100 g 1.1 µg per large egg	The single best food carrying meaningful amounts of both; D sits in the yolk.
Hard / aged cheese *Gouda, Edam,*	**≈ 76 µg** MK-8 & MK-9 rich	≈ 0.9 µg / 100 g 0.4 µg per 1.5 oz	Very high K2 from bacterial fermentation; modest but real D. Fuller-fat = more

Food	Vitamin K2 (per 100 g)	Vitamin D	Why it qualifies
Jarlsberg			K2.
Soft cheese *Brie, Munster, blue*	**≈ 56 µg** MK-8 & MK-9 rich	≈ 0.5–0.9 µg / 100 g	Second only to hard cheese for K2 among dairy; small D contribution.
Cod liver oil	**contains MK-4** (varies by brand)	**≈ 250 µg / 100 g** 34 µg per tbsp	The D powerhouse; also supplies K2. One tablespoon = ~170% of the D Daily Value.
Fatty fish *salmon, mackerel, herring, eel*	**≈ 0.4–0.5 µg** MK-4 (low)	**≈ 17–19 µg / 100 g** salmon 14 µg / 3 oz	Among the richest natural D sources; K2 is present but small.
Trout (rainbow) *farmed, cooked*	trace MK-4	**≈ 19 µg / 100 g** 16.2 µg / 3 oz	Highest-D finfish in the NIH table; K2 minimal.
Liver *beef / pork / chicken*	**≈ 1–14 µg** MK-4 (chicken highest)	≈ 1.2 µg / 100 g 1.0 µg / 3 oz (beef)	A genuine dual source: MK-4 plus small amounts of D and D metabolites.
Butter *grass-fed higher*	**≈ 15 µg** MK-4	trace	Reliable MK-4 source; only a trace of D.
Natto *fermented soybeans*	**≈ 1000 µg** MK-7 (the richest)	negligible	The undisputed K2 king — but effectively no vitamin D, so not a true dual food.

Chapter 6

Manganese. The often Overlooked Mineral for Strone Healthy Teeth

The mineral manganese is not often mentioned in the dental literature, because so little is needed by the body. The secret of manganese is that its effects are maximized when it is used / administered in very small amounts. It acts like a catalyst, allowing the other tooth rebuilding minerals to activate their tooth healing powers

Dental research by Dr. Steinman found the6 key minerals for tooth health are Manganese, Calcium, Phosphorus, Magnesium, Copper and Iron. These 6 key minerals enhance cellular metabolism and energy-

production and are key components for teeth that need rebuilding. Manganese absorption is reduced by excess iron [(123)]. So in a tooth regeneration regime, avoid excess iron in the diet. Also if you want to thoroughly enhance the absorption of the 6 key minerals, take them with Ormus, as it greatly enhances the bioavailability of these minerals. I have found very good results taking just under ½ teaspoon of Himalayan salt in about 1/3rd cup of warm water with 2 to 3 drops of Ormus added. This is because Himalayan salt contains numerous key minerals and the Ormus enhances the body's absorption of these micro-minerals. This also makes an excellent mouth rinse to relieve sore gums or teeth or to strengthen the teeth in general.

Camosten

Camosten is a dietary supplement distributed by Santegra. It is specially designed for bone, joint, and muscle health. The powder is designed to be mixed with water or juice, making it highly bioavailable. It uses citrate so it is easier on the stomach and is quickly assimilated by the body compared to other supplement forms (wwwsantegra.com). It combines calcium with Magnesium, Manganese and Vitamin D3. Below is the supplement facts label.

	Amount Per Serving	% Daily Value
Calories	10	
Total Carbohydrate	3 g	1 % *
Dietary fiber	0 g	0 % *
Sugars	0 g	†
Vitamin D3 (cholecalciferol)	80 IU	20 %
Calcium (as calcium citrate and dicalcium phosphate)	500 mg	50 %
Magnesium (as magnesium citrate)	200 mg	50 %
Manganese (as manganese gluconate)	0.2 mg	10 %

* – Percent Daily Values are based on 2,000 calorie diet.
† – Daily value not established.

Other ingredients: maltodextrin, natural flavors, malic acid, citric acid, silicon dioxide.

Calcium Bioavailability

A research study looked at the effects of orange juice on calcium bioavailability from a combination of citric acid, malic acid and calcium (5 parts calcium) and its effects on iron. The study found that calcium was retained at 42.8% from those who drank orange juice and 33.0% from those who drank water. The study found Orange juice significantly improved the absorption of calcium into the body (Mehansho H et al. February 1989).

The study also found that iron absorption from the orange juice was 36.7% and iron from water was absorbed at 12.3%. Also the ascorbic acid in the orange juice did not improve iron retention. The same study also found that citric acid significantly enhanced the absorption of iron. Reference Calcium bioavailability and iron-calcium interaction in orange juice. In a 2013 research study titled: Calcium Ionization Characteristics and In vitro Bioavailability Derived from Natural Calcium Source, published by Se-Young Jang and Yong-Jin Jeong in April the researchers made the following discoveries:

- **Sources Tested:** Researchers tested four natural sources of calcium: shellfish shells, oyster shells, starfish, and eggshells. They wanted to see how easily these sources release calcium ions (dissolved calcium) and how well the body can absorb them.
- **Adding More Source Material:** As more of each material was added to a liquid solution, the amount of dissolved and usable calcium went up steadily. This pattern continued until the mixture reached an 8% concentration. Beyond 8%, all four sources performed the same and reached a limit.
- **Stable Ionization:** Across all four sources, about 90% of the calcium successfully turned into its usable, dissolved form (ionized calcium).

This 90% rate stayed remarkably steady regardless of the source used, the concentration, or the temperature of the liquid.

- **Time Matters:** Temperature didn't change how fast the calcium dissolved, but time did. Calcium levels kept rising in the liquid for up to 18 hours before finally flattening out.
- **Superior Absorption:** Bivalve shell (BS)—which includes the shellfish and oyster shells—was the clear winner for absorption. It had a laboratory absorption rate (bioavailability) of 67.3%, which is about **twice as high** as standard commercial calcium supplements.
- **Versatility in Food and Drinks:** When this natural ionized calcium was added to everyday beverages—regular milk, soy milk, and orange juice—it was absorbed more than **twice as well** as standard calcium carbonate (the common ingredient in many calcium pills).

Conclusion: Natural ionized calcium is highly absorbable by the body and can easily be added to common foods and drinks to help people get more calcium. Iron is crucial for strong and cavity free teeth because it is a trace element in tooth hydroxyapatite, the mineral that makes up tooth enamel which creates a protective, acid-resistant layer that helps prevent cavities (Junfu Shen et al. June 2025). If you eat foods with an abundance of calcium and iron in them, they interact with one another in the stomach binding together to form unabsorbable complexes. Hence separate iron and calcium supplements or calcium/iron rich meals by at least 1 to 2 hours.

Further Reading

Effect of iron deficiency and supplementation on tooth structure and properties. Junfu Shen et al. June 2025.

Foods highest in Vitamin K

(Adult Daily Value: 120 mcg)

Food	Amount per Serving	Serving Size	% Daily Value*
Natto (as MK-7)	850 mcg	3 ounces	708%
Collards, frozen, boiled	530 mcg	½ cup	442%
Turnip greens, frozen, boiled	426 mcg	½ cup	355%
Spinach, raw	145 mcg	1 cup	121%
Kale, raw	113 mcg	1 cup	94%
Broccoli, chopped, boiled	110 mcg	½ cup	92%
Soybeans, roasted	43 mcg	½ cup	36%
Carrot juice	28 mcg	¾ cup	23%
Soybean oil	25 mcg	1 tablespoon	21%
Edamame, frozen, prepared	21 mcg	½ cup	18%
Pumpkin, canned	20 mcg	½ cup	17%
Pomegranate juice	19 mcg	¾ cup	16%
Okra, raw	16 mcg	½ cup	13%
Pine nuts, dried	15 mcg	1 ounce	13%
Blueberries, raw	14 mcg	½ cup	12%
Iceberg lettuce, raw	14 mcg	1 cup	12%

Food	Amount per Serving	Serving Size	% Daily Value*
Chicken breast, rotisserie (as MK-4)	13 mcg	3 ounces	11%
Grapes	11 mcg	½ cup	9%
Canola oil	10 mcg	1 tablespoon	8%
Cashews, dry roasted	10 mcg	1 ounce	8%

Foods Highest in the highest form of highly Bioavailable Calcium

Food	Serving Size	Calcium Content (mg)	Absorp-tion (%)	Amt of Bioavailable Calcium (mg)
Cow's milk	240 mL (1 cup)	300	32%	96
Yoghurt	240 mL (1 cup)	300	32%	96
Kale (cooked)	1 cup (190 g)	179	53%	95
Cabbage, Chinese (cooked)	1 cup (170 g)	158	54%	85
Bok Choy (cooked)	1 cup (170 g)	158	52%	82

Food	Serving Size	Calcium Content (mg)	Absorp-tion (%)	Amt of Bioavailable Calcium (mg)
Tofu (firm, calcium-set)	½ cup (126 g)	258	31%	80
Cheddar cheese	30 g (1 oz)	240	32%	77
Soy milk (calcium-fortified)	240 mL (1 cup)	300	21%	63
Cabbage, Green (cooked)	1 cup (150 g)	72	65%	47
Brussels Sprouts (cooked)	1 cup (156 g)	56	64%	36
Broccoli (cooked)	1 cup (156 g)	62	48%	30
White beans (cooked)	1 cup (182 g)	126	22%	28
Whole wheat bread	28 g (1 oz)	30	82%	25
Oranges	1 (131 g)	52	36%	19
Almonds	1 handful	80	21%	17

Food	Serving Size	Calcium Content (mg)	Absorp-tion (%)	Amt of Bioavailable Calcium (mg)
	(28 g)			
Chickpeas (cooked)	1 cup (164 g)	80	21%	17
Kidney beans (cooked)	1 cup (177 g)	62	24%	15
Cauliflowe r (cooked)	1 cup (124 g)	20	69%	14
Spinach (cooked)	1 cup (180 g)	243	5%	12
Sweet Potatoes (cooked, mashed)	½ cup (124 g)	33	22%	10
Rhubarb	1 cup (122 g)	105	9%	9
Sesame seeds	1 tsp (3 g)	29	21%	6
Apricots (dried)	3–4 pieces (30 g)	17	35%	6
Figs (dried)	2 pieces (30 g)	49	11%	5
Wheat bran cereal	28 g (1 oz)	20	22%	4

Foods highest in Manganese

(Adult Daily Value: 2.3 mg)
It is best to keep manganese intake in moderation as excessive manganese intake has been shown to contribute to Parkinson's and Learning Disabilities [124].

Food	Amount per Serving	Serving Size	% Daily Value*
Mussels, blue, cooked	5.8 mg	3 ounces	252%
Hazelnuts, dry roasted	1.6 mg	1 ounce	70%
Pecans, dry roasted	1.1 mg	1 ounce	48%
Brown rice, medium grain, cooked	1.1 mg	½ cup	48%
Oysters, Pacific, cooked	1.0 mg	3 ounces	43%
Clams, cooked	0.9 mg	3 ounces	39%
Chickpeas, cooked	0.9 mg	½ cup	39%
Spinach, boiled	0.8 mg	½ cup	35%
Pineapple, raw, chunks	0.8 mg	½ cup	35%
Soybeans, boiled	0.7 mg	½ cup	30%
Bread, whole wheat	0.7 mg	1 slice	30%

Food	Amount per Serving	Serving Size	% Daily Value*
Oatmeal, cooked	0.7 mg	½ cup	30%
Peanuts, oil roasted	0.5 mg	1 ounce	22%
Tea, black, brewed	0.5 mg	1 cup	22%
Lentils, cooked	0.5 mg	½ cup	22%
Potato, flesh and skin, baked	0.3 mg	1 medium	13%
White rice, long grain, cooked	0.3 mg	½ cup	13%
Kidney beans, canned	0.3 mg	½ cup	13%
Blueberries, raw	0.3 mg	½ cup	13%
Kale, raw	0.2 mg	1 cup	9%

Foods High in Vitamin D

Food	Amount per Serving	Serving Size	% Daily Value*
Cod liver oil	34.0 mcg	1 tablespoon	170%
Trout (rainbow), farmed, cooked	16.2 mcg	3 ounces	81%
Salmon (sockeye),	14.2 mcg	3 ounces	71%

Food	Amount per Serving	Serving Size	% Daily Value*
cooked			
Mushrooms, white, raw, UV-exposed	9.2 mcg	½ cup	46%
Milk, 2% milkfat, vitamin D fortified	2.9 mcg	1 cup	15%
Soy, almond, or oat milk, fortified	2.5–3.6 mcg	1 cup	13–18%
Ready-to-eat cereal, fortified	2.0 mcg	1 serving	10%
Sardines (Atlantic), canned in oil	1.2 mcg	2 sardines	6%
Egg, scrambled (yolk)	1.1 mcg	1 large	6%
Liver, beef, braised	1.0 mcg	3 ounces	5%
Tuna fish (light), canned in water	1.0 mcg	3 ounces	5%
Cheese, cheddar	0.4 mcg	1.5 ounces	2%
Mushrooms, portabella, raw	0.1 mcg	½ cup	1%
Chicken breast,	0.1 mcg	3 ounces	1%

Food	Amount per Serving	Serving Size	% Daily Value*
roasted			

Foods highest in Magnesium

Food	Amount per Serving	Serving Size	% Daily Value*
Pumpkin seeds, roasted	156 mg	1 ounce	37%
Chia seeds	111 mg	1 ounce	26%
Almonds, dry roasted	80 mg	1 ounce	19%
Spinach, boiled	78 mg	½ cup	19%
Cashews, dry roasted	74 mg	1 ounce	18%
Peanuts, oil roasted	63 mg	¼ cup	15%
Cereal, shredded wheat	61 mg	2 large biscuits	15%
Soymilk, plain or vanilla	61 mg	1 cup	15%
Black beans, cooked	60 mg	½ cup	14%
Edamame, shelled, cooked	50 mg	½ cup	12%
Peanut butter, smooth	49 mg	2 tablespoons	12%

Food	Amount per Serving	Serving Size	% Daily Value*
Potato, baked with skin	43 mg	3.5 ounces	10%
Rice, brown, cooked	42 mg	½ cup	10%
Yogurt, plain, low fat	42 mg	8 ounces	10%
Oatmeal, instant	36 mg	1 packet	9%
Kidney beans, canned	35 mg	½ cup	8%
Banana	32 mg	1 medium	8%
Milk	27 mg	1 cup	6%
Salmon, Atlantic, farmed, cooked	26 mg	3 ounces	6%
Avocado, cubed	22 mg	½ cup	5%

Foods highest in **Phosphorus**
(Adult Daily Value: 1,250 mg)
The absorption rate of phosphorus naturally occurring in food is approximately 40–70%, with animal-source phosphorus absorbed more efficiently than plant-source phosphorus (much of which is bound as phytic acid and poorly absorbed by humans). Phosphate food additives, common in processed foods, are absorbed at a much higher rate (~70%)

Food	Amount per Serving	Serving Size	% Daily Value*
Yogurt, plain, low fat	245 mg	6-ounce container	20%
Milk, 2% milkfat	226 mg	1 cup	18%
Salmon, Atlantic, farmed, cooked	214 mg	3 ounces	17%
Scallops, breaded and fried	201 mg	3 ounces	16%
Cheese, mozzarella, part skim	197 mg	1.5 ounces	16%
Chicken, breast meat, roasted	182 mg	3 ounces	15%
Lentils, boiled	178 mg	½ cup	14%
Beef patty, ground, 90% lean, broiled	172 mg	3 ounces	14%
Cashew nuts, dry roasted	139 mg	1 ounce	11%
Potatoes, russet, flesh and skin, baked	123 mg	1 medium	10%

Food	Amount per Serving	Serving Size	% Daily Value*
Kidney beans, canned	115 mg	½ cup	9%
Rice, brown, long grain, cooked	102 mg	½ cup	8%
Peas, green, boiled	94 mg	½ cup	8%
Oatmeal, cooked with water	90 mg	½ cup	7%
Egg, hard boiled	86 mg	1 large	7%
Tortillas, corn	82 mg	1 medium	7%
Bread, whole wheat	60 mg	1 slice	5%
Sesame seeds	57 mg	1 tablespoon	5%
Bread, pita, whole wheat	50 mg	4-inch pita	4%
Asparagus, boiled	49 mg	½ cup	4%
Tomatoes, ripe, chopped	22 mg	½ cup	2%
Apple	20 mg	1 medium	2%
Cauliflower, boiled	20 mg	½ cup	2%
Clementine	16 mg	1 medium	1%

References

Calcium bioavailability data is drawn from controlled human absorption studies (primarily by Dr. Connie Weaver and colleagues, published in the Journal of Food Science, Journal of Nutrition, and American Journal of Clinical Nutrition) as compiled in Shkembi & Huppertz, "Calcium Absorption from Food Products: Food Matrix Effects," Nutrients (2022).

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Note on sources: The USDA's original "National Nutrient Database (ndb.nal.usda.gov)" was retired and its data migrated into USDA FoodData Central

(fdc.nal.usda.gov), which is the current authoritative USDA nutrient database and the source underlying the NIH ODS food-content tables above.

END PREVEIW EDITION.

COMPLETED REVISED EDITION COMING BEFORE AUGUST 2026.

THANK YOU FOR READING!