

REVIEW ON SIGNIFICANCE OF SOME HERBAL FORMULATION AND EVALUATION OF HERBAL MOUTHWASH

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ABSTRACT:

The mouth is home to many diseases. In summary, some oral bacteria are harmless, while others are problematic and can lead to plaque, bad breath, and mouth infections. Thus, maintaining proper dental hygiene is crucial for both physical and oral health. Herbs are essential if you want to distinguish them from pharmaceuticals. Because of their antibacterial and antifungal qualities, medicinal plants have been used for decades to treat human ailments. Herbal products help control plaque, inhibit bacterial growth, freshen breath and clean teeth. Mouthwashes containing herbs can be used in addition to various other oral hygiene procedures (such brushing and flossing). They have the power to fight diseases and prevent plaque, and therefore can be used to support treatment. Many herbs such as neem, turmeric, cloves, mint and their extracts show good medicinal properties. The use of medicinal plants in the treatment of human illnesses has been significant for many years with their antibacterial, antifungal and antiviral properties. If these arrangements can be made, people can easily prepare and use them at home using natural products. It can improve people's overall health. Herbal mouthwashes are in high demand as they treat mouth infections and provide instant relief with little or no side effects. One of the most common diseases that many people face at different stages of their lives is dental disease and gum disease. This review attempts to provide an overview of natural ingredients that can be used as mouthwash. This study aims to develop a multi-antibiotic mouthwash.

Keywords – Herbal mouthwash, herbs, natural extracts, neem, turmeric, clove, liquorice, mint.

INTRODUCTION

- From the dawn of civilization until the twenty-first century, people have understood the significance of keeping their mouth and teeth clean.
- The mouthwash rinses our ancestors used to maintain a healthy smile were just as widely used as some of the dental treatments available today, demonstrating how far we have come in developing dental therapies that effectively cure and prevent many types of oral ailments.
- About 2700 BC, mouthwash was first mentioned in Ayurvedic and Chinese medicine. Mouthwash is a chemotherapy drug that patients can use as an efficient at-home dental hygiene method.
- Hippocrates advised using a solution of salt, alum, and vinegar for mouthwashing after mechanical cleansing, which became popular among the aristocratic classes during the Greek and Roman eras.
- The first artistic depiction of the value of cleanliness and beauty is credited to the ancient Egyptians. A unclean body was thought to be impure. Pedanius Dioscorides, a Greek physician and surgery who lived from 40 to 90 and whose writings served as a medical textbook, suggested using a mouthwash mixture containing the following ingredients to alleviate bad breath.[1]
- Herbs and traditional methods were used to make mouthwashes in the past. A mouthwash concoction known as decot was developed by the Greek physician Pedanius Dioscorides using olive tree leaves, milk, wine, oil, fruit peelings, nutgalls, and vinegar.

- The Romans included human pee as a hidden component to their mouthwash. Because they believed Portuguese urine to be stronger, they imported it. Urine's ammonia content, which eliminated oral infections, particularly those that produced sulfur, is reported to have had a significant role in the 18th century's use of urine as an active component.

. Native American and Mesamerican tribes employed mouthwashes before European settlers arrived in the Americas. These mouthwashes were frequently derived from plants like *Coptis trifolia*.

Mouthwash, often called mouth rinse, lingual rinse, or mouth bath, is a liquid that is swilled around the mouth with a head movement or contraction that contracts the perioral muscles. It can also be held in the mouth passively. Another method is to gargle, which is tilting the head back and blowing bubbles behind the lips. In addition to their common use as antiseptics to reduce oral bacteria, mouthwashes are also recommended for additional reasons, such as their analgesic, anti-inflammatory, or antifungal qualities. Furthermore, certain rinses function as saliva replacements to counteract acidity and maintain oral moisture in people with xerostomia (dry mouth). Cosmetic mouthwashes leave the mouth tasting good while momentarily controlling or reducing foul breath. Herbal mouthwashes are quite popular since they target oral germs, provide immediate pain relief, and have fewer adverse effects. Chemical mouthwashes include hydrogen peroxide and chlorhexidine, which instantly whiten, sterilize, and soothe teeth. However, they tend to cause tooth discoloration and may have unintended side effects, while being reasonably priced. Among the most common infectious diseases that people encounter at some time in their life are periodontal and dental ailments. Mouthwashes consist of concentrated aqueous anti-bacterial solutions that fight oral germs to prevent oral infections, cleanse the mouth, eliminate bad breath, and provide antiseptic properties. Mouthwashes are typically used by dental patients to alleviate xerostomia, or poor breath, ulcerated throats, and sensitive teeth. Dentists always use mouthwash as an antibacterial agent prior to performing oral surgery on patients in order to help clean the outermost layer of the inflamed gums and teeth and stop the spread of more germs.[2]

- **Herbal Mouthwash** :-Rinses containing natural plant extracts are known as herbal mouthwashes. The herbal mouthwashes' natural extract is derived from a variety of plant leaves, fruits, seeds, and tree oils.[3]

Why is herbal mouthwash more beneficial?

Due to their ability to target oral infections, provide immediate pain relief, and have fewer adverse effects, herbal mouthwashes are highly sought after. Chemical mouthwashes include hydrogen peroxide and chlorhexidine, which instantly whiten, sterilize, and soothe teeth. However, they tend to cause tooth discoloration and may have unintended side effects, while being reasonably priced.

Benefits of herbal mouthwash

- Because herbal mouthwashes are non-irritating, non-staining, and alcohol-free, their usage has become more popular than that of chemical mouthwashes.
- They are less hazardous and have very few, if any, adverse effects.
- Sugar and/or alcohol are not included in any herbal mouthwash.

Herbal mouthwashes have naturally antimicrobial properties and are gentle enough for even the most delicate mouths.

- There are no harsh ingredients in it.

Dry mouth is not a result of using herbal mouthwash.

Herbal mouthwash is free of:

1. Sugar
2. Synthetic hues

3. Fluoroniums sodium
4. Synthetic sweetener
5. CPC, or cetylpyridinium chloride
6. Sulphate of sodium Lauryl Sulphate
7. Preservative made with harsh chemicals
8. Shades

USE OF HERBAL MOUTHWASH

. Mouthwash is necessary for treating a variety of oral health issues, nose fresheners to the administration of potentially deadly subsequent infections in individuals, such as oral mucositis receiving transplantation of bone marrow therapy.^[4]

- In order to use mouthwashes effectively, it is essential to accurately diagnose the oral health and to understand the product.
- The goal of using herbal mouthwash is to enhance dental hygiene.
- It aids in reducing tooth plaque.
- Gum problems can be treated using it.
- Applied to eliminate bacteria in the mouth.
- It refreshes breath and masks foul breath.
- It's crucial to use mouthwash to avoid gum disease.
- Septic socket cleaning is done using it.
- It reduces inflammation and discomfort.
- In the treatment of halitosis and mucositis
- Applicable in

REVIEW OF LITERATURE:

Table no 1. Marketed formulation, key ingredients and category of mouthwash

Sr no	Brand name	Key ingredients	Part used	Category
1	Himalaya Herbals Active fresh mouthwash	Fennel oil, Mint	Dried seed oil, Leaves	Antimicrobial property, Fresh breath
2	Sylveco herbal mouthwash	Peppermint oil, Sage, clove, rosemary	Leaves, Aqueous extract, Clove bud	Breath freshner, Anti-inflammatory, Prevention of caries
3	K P Namboodiris Herbal fresh mouthwash alcohol free	Menthol, Clove, Tea tree, Ginger, Nutmeg, Cardamom	Leaves, Buds	Breath freshner, Antimicrobial
4	Bioayurveda Basics	Tulsi, Turmeric, Neem, Lemon	Leaves powder, Leaves, Extracts	Antibacterial, Prevent plaque
5	Amarantha herbal mouthwash	Amarantha, Nimba, Gandhapura leaf	Leaf extract	Freshness
6	Listrine naturals	Eucalyptol, Menthol, Thymol	Oils and extracts	Antiseptic, Antiplaque. Antigingivitis
7	Biomed sensitive mouthwash	Plantin, brich leaf, oak bark, bromelain, red grape	Extracts	Reduce sensitivity, Remove dental plaque

HERBAL PRODUCT AS MOUTHWASH

- **Synonym**-Neem

- **Biological Source**- The natural source of the substance is the leaves of *Azadirachta indica*, a plant belonging to the Meliaceae family.

- **Chemical constituent**- Nimbinin, Nimbinidin, and Nimbin.

- **Uses**-

Medicinal Uses:Antibacterial and Antifungal Properties: Neem has natural antibacterial and antifungal properties, making it useful in the treatment of various skin conditions, wounds, and infections.

Oral Health: Neem twigs have been traditionally used as a natural toothbrush due to their antibacterial properties. Neem oil is also found in some oral care products for its potential benefits in preventing gum disease and maintaining oral hygiene.^[5]

Anti-inflammatory Effects: Neem has anti-inflammatory properties, which can be beneficial for conditions like arthritis and other inflammatory disorders.

Antimalarial: Some components of neem have been investigated for their potential antimalarial properties.

Skin Care:Acne Treatment: Neem oil is used in skincare products for its ability to treat acne and reduce inflammation. It can be applied topically to help with various skin conditions.

Eczema and Psoriasis: Neem may offer relief for conditions like eczema and psoriasis due to its anti-inflammatory and moisturizing properties.^[6]

Scabies and Lice Treatment: Neem oil is sometimes used to treat conditions caused by parasites, such as scabies and lice.

Agricultural Uses:Natural Pesticide and Insecticide: Neem oil is commonly used in organic farming as a natural pesticide and insecticide. It disrupts the life cycle of pests, making it an effective and environmentally friendly option.

Soil Amendment: Neem cake (the byproduct left after oil extraction) is used as a soil conditioner to improve soil fertility and structure.

Cosmetic Uses:Hair Care: Neem oil is used in hair care products for its potential benefits in promoting a healthy scalp and preventing dandruff.

Soap and Shampoo: Neem extracts are included in soaps and shampoos for their antibacterial properties and skin-friendly benefits.^[7]

Traditional Medicine (Ayurveda): Neem is a key ingredient in Ayurvedic medicine and is used in various formulations to treat a wide range of ailments.

Anti-inflammatory Effects:Neem has been studied for its anti-inflammatory effects, which may be beneficial in managing conditions involving inflammation.



Fig.1:-Neem

- **Tulsi**

• **Synonyme-** Ocimum Sanctum

• **Biological Source-** Tulsi is mostly made up of the fresh and dried leaves of Ocimum species, including the species Ocimum sanctum L. and Ocimum basilicum L.

• **Chemical constituent-** Carnosic acid, luteolin, myretenal, eugenol, rosmarinic acid, and apigenin

• **Uses-**

Religious and Cultural Significance:

In Hindu culture, Tulasi is considered a sacred plant and is often planted around homes. It is believed to be the earthly manifestation of the goddess Tulsi, and its presence is considered auspicious.^[8]

Medicinal Uses: Immune System Support: Tulasi is known for its immunomodulatory properties, helping to boost the immune system and fight off infections.

Respiratory Health: It is used to treat respiratory conditions like coughs, colds, bronchitis, and asthma due to its antimicrobial and anti-inflammatory properties.

Adaptogenic Properties: Tulasi is considered an adaptogen, helping the body adapt to stress and promote overall well-being.

Ayurvedic Medicine: Tulasi is a key ingredient in Ayurvedic formulations and is used to balance the doshas (Vata, Pitta, and Kapha) in the body. It is used in various Ayurvedic remedies for ailments such as headaches, fevers, arthritis, and digestive issues.

Antioxidant Properties: Tulasi contains compounds with antioxidant properties, helping to neutralize free radicals and protect cells from damage.^[9]

Anti-inflammatory Effects: The herb has anti-inflammatory properties, making it beneficial for conditions involving inflammation, such as arthritis.

Anti-microbial and Anti-bacterial Properties: Tulasi has been shown to have antimicrobial and antibacterial effects, helping to combat various infections.

Stress Relief: It is believed that Tulasi has calming and stress-relieving properties, making it useful in managing stress and promoting mental well-being.

Dental Health: Tulasi is sometimes used in oral care products due to its antimicrobial properties, promoting dental health and preventing bad breath.

Skin Care: Some formulations in Ayurveda include Tulasi for its potential benefits in promoting healthy skin.^[10]



Fig.2:- Tulsi

• **Clove Oil**

- **Synonym**-Clove buds, Cyrophyllum
- **Biological Source**-Eugenia caryophyllus flower buds that have been dried cloves.
- **Chemical constituent**- At least 15% (v/w) of clove oil, resin, chromone, and eugenin should be present.
- **Uses**-

Culinary Uses:

Spice in Cooking: Cloves are a versatile spice used in both sweet and savory dishes. They are often included in spice blends, curries, stews, and rice dishes.^[11]

Baking: Cloves are used in baking, particularly in gingerbread, fruitcakes, and spiced cookies.

Hot Beverages: Whole cloves or ground cloves are added to hot beverages like chai tea, mulled wine, and spiced cider.

Medicinal Uses:

Dental Health: Clove oil is known for its analgesic properties and has been used traditionally to alleviate toothaches. It contains eugenol, a natural compound with pain-relieving and antibacterial properties.

Sore Throat Relief: Clove tea or gargling with clove-infused water can be soothing for sore throats.

Digestive Aid: Cloves may help with indigestion and bloating. They are sometimes included in herbal teas or taken in powder form for digestive benefits.^[12]

Anti-inflammatory Properties: Cloves contain compounds with anti-inflammatory properties that may contribute to their use in traditional medicine for various ailments.

Essential Oil/Aromatherapy: Clove essential oil is used in aromatherapy for its warm and spicy fragrance. It is believed to have stimulating and uplifting effects.

Preservation:

Pickling: Whole cloves are often added to pickles for flavor and preservation.

Insect Repellent:

Natural Insect Repellent: Clove oil, with its strong and distinct aroma, is sometimes used in natural insect repellent formulations.

Home Remedies:

Respiratory Relief: Clove tea or inhalation of clove oil vapor is believed to provide relief from respiratory issues like congestion and coughs.

Headache Relief: The analgesic properties of cloves may provide relief for headaches when applied topically or used in aromatherapy.^[13]

Skin Care:

Antiseptic Properties: Cloves have natural antiseptic properties and may be used in skincare products or home remedies for minor skin issues.

Flavor Enhancer/Flavoring Agents: Cloves are sometimes used to add flavor to syrups, sauces, and marinades.



Fig.3:-Clove

Peppermint

• **Synonyme-** Peppermint Oil, Sweet Balm.

• **Biological Source-** The leaves of the fragrant plant *Mentha piperata*, which is a member of the Lamiaceae family.

• **Chemical constituent-** Menthol, Menthone, cineole.

• **Uses-**

Culinary Purposes:

Flavoring: Peppermint is widely used as a flavoring agent in both sweet and savory dishes, including candies, desserts, teas, and sauces.^[14]

Beverages: Peppermint is often used to add a refreshing and aromatic flavor to beverages such as peppermint tea and cocktails.

Herbal Tea:

Peppermint Tea: Peppermint leaves are commonly used to make herbal tea, known for its refreshing taste and potential health benefits. Peppermint tea is often consumed to aid digestion and relieve stomach discomfort.

Aromatherapy:

Essential Oil: Peppermint essential oil is popular in aromatherapy. It is used in diffusers, massage oils, and inhalers for its invigorating and energizing scent. Inhaling peppermint aroma may also help alleviate headaches.

Medicinal Uses:

Digestive Aid: Peppermint has been traditionally used to relieve indigestion and soothe upset stomachs. Peppermint oil capsules are sometimes used for these purposes.^[15]

Headache Relief: Peppermint oil, when applied topically or inhaled, may help alleviate headaches and migraines.

Oral Care:

Toothpaste and Mouthwash: Peppermint is a common flavor in toothpaste and mouthwash due to its refreshing taste. It also contributes to a clean feeling in the mouth.

Cosmetic Products:

Skin Care: Peppermint is used in skincare products for its cooling sensation and potential benefits for oily or acne-prone skin.

Hair Care: Peppermint oil is sometimes added to shampoos and conditioners for its invigorating scent and potential benefits for the scalp.

Insect Repellent: Natural Repellent: Peppermint oil is used as a natural insect repellent. It can be applied to the skin or used in sprays to deter insects.^[16]

Candles and Potpourri: Home Fragrance: Peppermint is used in candles, potpourri, and air fresheners for its pleasant and uplifting scent.

Flavoring in Pharmaceuticals: Medicines and Syrups: Peppermint is used to mask the taste of medicines and enhance the flavor of pharmaceutical syrups.

Culinary Garnish: Decorative Garnish: Fresh peppermint leaves are sometimes used as a garnish in salads, desserts, and beverages for both flavor and visual appeal.



Fig.4:-Pippermint oil

Liquorice

• **Synoname**-Licorise root

• **Biological Source**-Oil of licorice (*Glycyrrhiza glabra* L.), a perennial plant, is extensively used as a natural flavoring and sweetener. Glycyrrhizin, its primary bioactive ingredient that gives it a sweet flavor, is also present, along with a few volatile chemicals, flavonoids, and saponins.

• **Chemical constituent**-sugars, carbohydrates, bitters, tannins, resins, essential oils, and inorganic salts, together with small amounts of nitrogenous substances including nucleic acids, proteins, and individual amino acids

• **Uses-**

Culinary Uses:Sweetener: Licorice root extract, known as glycyrrhizin, is used as a natural sweetener in some candies, confectioneries, and beverages. However, it's important to note that excessive consumption of licorice can lead to health issues, so moderation is key.^[17]

Herbal Medicine:

Traditional Medicine: Licorice has a long history of use in traditional medicine, particularly in Ayurveda and Traditional Chinese Medicine (TCM). It is believed to have various health benefits.

Cough and Respiratory Health: Licorice is often used in herbal cough syrups and teas for its soothing properties on the respiratory tract.

Digestive Health:

Gastric Ulcers and Indigestion: Licorice may be used to help soothe and protect the lining of the stomach and intestines, potentially aiding in the treatment of gastric ulcers and indigestion.

Skincare:

Anti-Inflammatory: Licorice extract is known for its anti-inflammatory properties and is used in some skincare products to help soothe irritated skin and reduce redness.

Adrenal Support:^[18]

Adaptogenic Properties: Licorice is considered an adaptogen, and some herbalists suggest that it may support the adrenal glands and help the body cope with stress.

Licorice Tea:

Digestive Aid: Licorice root is used to make herbal teas that are believed to have digestive benefits. It is often combined with other herbs for flavor and additional therapeutic effects.

Hormonal Balance:

Menopausal Symptoms: Licorice may be used to help manage certain symptoms of menopause, such as hot flashes, due to its potential influence on hormonal balance.

Confectionery:

Licorice Candy: Licorice flavor is popular in various candies and sweets. Traditional licorice candy is made from licorice root extract.

Traditional Chinese Medicine (TCM): Harmony in Herbal Formulas: In TCM, licorice is often used to harmonize and balance the effects of other herbs in herbal formulas.

Ethnic Cuisine:

Culinary Ingredient: Licorice root is used in various ethnic cuisines for its unique flavor profile. It is sometimes included in savory dishes, sauces, and marinades.^[19]



Fig.5:-Licorice

TYPES OF HERBAL MOUTHWASH-

Neem Mouthwash:

Key Ingredients: Neem oil or neem extract.

Benefits: Neem has antibacterial and antifungal properties, making it effective against bacteria in the mouth. Neem mouthwashes are often used to support gum health.^[20]

Tea Tree Oil Mouthwash:

Key Ingredients: Tea tree oil (*Melaleuca alternifolia*).

Benefits: Tea tree oil is known for its antimicrobial properties, helping to fight bacteria and fungi in the mouth. It is commonly used for its potential in treating bad breath and promoting oral hygiene.

Peppermint Mouthwash:

Key Ingredients: Peppermint oil or peppermint extract.

Benefits: Peppermint provides a refreshing flavor and has antimicrobial properties. Peppermint mouthwashes are used for their ability to freshen breath and promote overall oral health.^[21]

Clove Mouthwash:

Key Ingredients: Clove oil or clove extract.

Benefits: Clove has natural analgesic and antibacterial properties. Clove mouthwashes may be used for soothing toothaches, reducing gum inflammation, and combating bad breath.

Aloe Vera Mouthwash:

Key Ingredients: Aloe vera gel or aloe vera extract.

Benefits: Aloe vera is known for its soothing and anti-inflammatory properties. Aloe vera mouthwashes may help alleviate gum irritation and support oral health.^[22]

Licorice Root Mouthwash:

Key Ingredients: Licorice root extract.

Benefits: Licorice root has anti-inflammatory and antimicrobial properties. Licorice mouthwashes may be used to reduce inflammation and support overall oral health.

Sage Mouthwash:

Key Ingredients: Sage oil or sage extract.

Benefits: Sage has antimicrobial properties and may help with oral infections. Sage mouthwashes are also used for their potential to combat bad breath.^[23]

Myrrh Mouthwash:

Key Ingredients: Myrrh resin or myrrh extract.

Benefits: Myrrh has antimicrobial and astringent properties. Myrrh mouthwashes may support gum health and help reduce inflammation.

Chamomile Mouthwash:

Key Ingredients: Chamomile extract or chamomile tea.

Benefits: Chamomile has soothing and anti-inflammatory properties. Chamomile mouthwashes may be used to ease oral irritations and promote relaxation.^[24]

Echinacea Mouthwash:

Key Ingredients: Echinacea extract.

Benefits: Echinacea is known for its immune-boosting properties. Echinacea mouthwashes may support oral health by addressing bacterial issues.

PREPARATION OF MOUTHWASH: -

Select Herbs: If using fresh herbs, wash them thoroughly. If using essential oils, ensure they are of high quality and safe for oral use.

Measure Ingredients: Determine the quantity based on the desired volume of mouthwash. A common starting point is 1 cup of distilled water to 1-2 tablespoons of mixed herbs.

Prepare the Herbs: If using fresh herbs, bruise or crush them slightly to release their natural oils. If using essential oils, measure the drops accordingly.^[25]

Boil Water: In a saucepan, bring the distilled water to a boil.

Add Herbs: Once the water is boiling, add the fresh herbs or essential oils. Stir well.

Simmer: -Reduce heat to low, cover, and let the mixture simmer for about 10-15 minutes to allow the herbs to infuse into the water.

Cool and Strain: Remove the mixture from heat and let it cool. Strain the liquid to remove the herbs, leaving you with a clear liquid.

EVALUTION OF THE HERBAL MOUTHWASH :-

Color: -The herbal mouthwash's color is a light green, as determined by ocular inspection.

Test: bitter and strong

PH- The made herbal mouthwash's pH was measured with a digital pH meter. The Ph meter was calibrated using standard buffer. One milliliter of mouthwash was weighed and dissolved in 50 milliliters of water that was distilled using a pH meter.

Examine the mouthwash formulation for microbiological growth. Use the streak plate method to introduce the mouthwash formulation on agar medium plates, creating a control in the process. The plates are allowed to incubate for twenty-four hours at 37°C after being placed in the incubator. After the plates were taken out of the incubator, their growth on microorganisms was assessed by contrasting it with the control.^[26]

CONCLUSION

Natural Ingredients: Herbal mouthwashes are crafted from plant-based ingredients, often known for their antimicrobial, anti-inflammatory, and soothing properties. Common herbs include neem, tea tree oil, peppermint, clove, aloe vera, and more.

Oral Health Benefits: Many herbal ingredients in these mouthwashes have been traditionally used to promote oral health. They may help combat bacteria, soothe gums, and contribute to fresher breath.

Reduced Chemicals: Herbal mouthwashes often contain fewer synthetic chemicals compared to conventional mouthwashes, appealing to those who prefer more natural oral care options.

Gentle and Soothing: Herbal ingredients, such as aloe vera and chamomile, may provide a gentle and soothing effect, making them suitable for individuals with sensitive gums or those looking for a milder option.

Aromatherapeutic Benefits:Essential oils from herbs like peppermint, tea tree, and eucalyptus not only contribute to the flavor but may also offer aromatherapeutic benefits, promoting a sense of freshness and relaxation.

Environmentally Friendly:Some herbal mouthwashes are formulated with environmentally friendly practices in mind, using sustainable sourcing and avoiding certain synthetic ingredients.

Varied Formulations:There is a diverse range of herbal mouthwashes on the market, catering to different needs such as gum health, natural breath freshening, or specific herbal benefits.

Potential for DIY Recipes:Some individuals may choose to create their herbal mouthwash at home using fresh or dried herbs, allowing for customization based on personal preferences and needs.

Caution for Certain Conditions:Individuals with specific health conditions or allergies should exercise caution and consult with healthcare professionals before using herbal mouthwashes, as certain herbs may interact with medications or cause allergic reactions.

Holistic Approach to Oral Care:Herbal mouthwashes align with a holistic approach to oral care, acknowledging the interconnectedness of overall health and oral health.

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