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A Review On Formulation and Evaluation of Herbal Tooth Powder

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Abstract: *Herbal tooth powders are formulated using various plant-based ingredients that are readily available in nature. These preparations are safe, effective, and non-toxic compared to synthetic oral care products. Infections of the oral cavity, such as dental caries, are common conditions that damage the enamel, and if untreated, can eventually cause tooth loss. Herbal tooth powder, being a pharmaceutical dosage form, is widely utilized in both industrial and practical pharmacy to prevent oral diseases, manage gum problems, tooth decay, and pain. Tooth powder serves as a dentifrice that supports the prevention of dental caries while maintaining oral hygiene, mouth freshness, and overall dental health. With increasing awareness of the harmful effects of chemical-based oral formulations, interest in herbal alternatives has grown rapidly. These herbal products are prepared by drying the selected plant materials, sieving to obtain a uniform particle size, and blending in appropriate proportions to ensure efficacy and consistency. Herbal tooth powders may contain ingredients with anti-inflammatory, antibacterial, antiseptic, and refreshing properties. This article highlights the formulation of herbal tooth powders, focusing on guava leaves as the primary active ingredient for their anti-inflammatory activity, along with other supporting excipients.*

Keywords: Herbal tooth powder, Guava Leaves, Anti-inflammatory, Oral Care, Cinnamon, Gingivitis

I. INTRODUCTION

Oral hygiene is essential not only for health but also for confidence and social well-being. Herbal tooth powders act as protective agents by removing food debris, plaque, and stains while preventing gum diseases, dental caries, and discoloration. Being one of the oldest oral hygiene products, tooth powder has long been used for cleaning and maintaining teeth. Today, both natural and synthetic agents are incorporated in its preparation, but herbal formulations are preferred because they are safer and have minimal side effects. Unlike synthetic toothpastes, herbal powders have a longer shelf life, are economical, and are easy to store and transport. Herbal tooth powders typically contain abrasives, sweeteners, whitening agents, and flavoring components. Their increasing demand reflects consumer preference for safe and natural oral care products.

DENTAL CARE

Dental issues such as caries and gum disease are primarily caused by plaque—a sticky layer of bacteria and food particles that accumulates on teeth after meals. Poor oral hygiene allows plaque to irritate gums, causing gingivitis, and in severe cases, periodontitis, where ligaments and bone may be affected, leading to tooth loss. Preventive care, including daily cleaning, avoiding sugary foods, and maintaining dental appliances like retainers and dentures, is crucial in reducing these risks. Herbal tooth powders provide additional protection by combining antimicrobial, anti-inflammatory, and cleansing properties.

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TYPES OF TOOTH POWDER

Whitening Tooth Powder – Often contains activated charcoal, which polishes teeth and reduces oral irritation.
Organic Tooth Powder – Usually formulated with natural salts, which act as abrasives and help in cleaning.
Natural Tooth Powder – Effective in managing gum bleeding and soreness; easily available and safe.

ADVANTAGES OF HERBAL TOOTH POWDER

- More stable compared to liquid dosage forms.
- Easy to prepare, store, and transport.
- Lower chances of microbial contamination compared to toothpaste.
- Free from harmful synthetic chemicals.

DISADVANTAGES OF HERBAL TOOTH POWDER

- Not suitable for masking pungent-tasting herbal ingredients.
- Hygroscopic in nature, hence requires proper storage.

IDEAL PROPERTIES OF HERBAL TOOTH POWDER

- Should provide an effective abrasive action.
- Must be non-toxic and safe for long-term use.
- Should be cost-effective.

NEED FOR HERBAL TOOTH POWDER

The aim of herbal tooth powder formulation is to provide a safer and more effective alternative to conventional preparations. The use of medicinal plants ensures multiple therapeutic actions, including antimicrobial, anti-inflammatory, and astringent effects, while reducing side effects associated with synthetic agents.

COMMONLY USED INGREDIENTS IN HERBAL TOOTH POWDER

1. **Guava Leaves**

Scientific Name :- Psidium guajava
Family: Myrtaceae
Part Used: Leaves
Constituents: Essential oils (caryophyllene, nerolidol, β-bisabolene), flavonoids, triterpenoids (ursolic acid, oleanolic acid), tannins, calcium, and phosphorus.

Fig.1. Guava leaves

Medicinal Role:

- Anti-inflammatory: Effective in managing gingivitis and swollen gums.
- Astringent tannins and flavonoids control bleeding gums.
- Promote gum healing and strengthen tissues.

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- Reduce inflammatory mediators such as prostaglandins and cytokines, thereby alleviating periodontal inflammation.
- Essential oils like cineole provide antimicrobial and soothing effects.

Mechanism of Action in Oral Inflammation:
Guava leaf extracts act by inhibiting pro-inflammatory mediators. Flavonoids (e.g., quercetin) suppress prostaglandin and cytokine activity, which are responsible for swelling, redness, and pain in gum diseases. This reduces gum inflammation and promotes healing.

Application in Tooth Powder:

- Direct release of flavonoids and tannins during brushing provides localized action.
- Astringent properties help tighten gums and reduce bleeding.
- Promotes healing of gum micro-injuries.
- Regular use prevents chronic gingivitis and periodontal inflammation.

2. Cinnamon
Scientific Name:- Cinnamomum zeylanicum
Family: Lauraceae
Part Used: Inner bark
Constituents: Cinnamaldehyde, cinnamate, cinnamic acid, essential oils.
Uses: Provides a sweet, aromatic flavor; masks bitterness of other herbs; rich in antioxidants; enhances palatability.

Fig. 2 Cinnamon

3. Rock Salt (Sendha Namak)
Constituents: Sodium chloride with minerals like calcium, magnesium, zinc, and iron.
Uses: Acts as a natural abrasive;
removes stains and supports teeth cleaning.

Fig.3. Rock Salt

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4. Mentha Leaves

Scientific Name :- Mentha spicata

Family: Labiatae

Constituents: Volatile oil (carvone, limonene, phellandrene, esters).

Uses: Refreshing agent, antiseptic, and flavor enhancer.

Fig.4. Mentha Leaves

5. Charcoal (Activated Charcoal)

Source: Derived from carbonization of plant material such as coconut shell or wood.

Uses: Acts as a whitening agent; absorbs toxins and bacteria from the oral cavity.

Fig.5. Charcoal

6. Neem

Scientific Name :- Azadirachta indica

Family: Meliaceae

Constituents: Flavonoids (quercetin), triterpenoids, tannins, glycosides.

Uses:

Antimicrobial, antiseptic,
prevents plaque formation,
and strengthens gums.

Fig.6. Neem Leaves

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EVALUATION PARAMETERS

1. Colour – Checked visually.
2. Odour – Evaluated by smelling.
3. Taste – Assessed by tasting.
4. Stability – Observed under different temperature conditions.
5. Spreadability – Checked manually.
6. Abrasiveness – Tested manually.
7. Foamability – Determined by shaking the powder with water and observing foam volume.

II. CONCLUSION

The study of herbal tooth powders highlights their importance in maintaining oral hygiene and preventing dental disorders such as plaque, gingivitis, and tooth decay. Compared to synthetic formulations, they are safer, cost-effective, and less toxic. The use of guava leaves as the main anti-inflammatory agent, along with cinnamon, neem, rock salt, mentha, and charcoal, enhances the overall therapeutic value. These ingredients collectively provide antimicrobial, astringent, refreshing, and whitening effects. Evaluation tests further confirm their stability, effectiveness, and usability. Thus, herbal tooth powders serve as a reliable and natural alternative to conventional toothpaste for promoting oral health.

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