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Review Paper

Review On Natural Tooth Powder for Oral Hygiene Care

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ABSTRACT

Oral hygiene is an essential component of overall health, and the increasing awareness of the adverse effects of synthetic oral care products has driven the demand for natural alternatives. Herbal toothpowders have emerged as a promising solution, combining traditional knowledge with modern formulation techniques. These powders typically contain a blend of medicinal herbs such as neem, clove, babul, licorice, and triphala, each offering unique therapeutic benefits including antibacterial, anti-inflammatory, analgesic, and astringent properties. The formulation process involves careful selection, drying, powdering, and blending of herbal ingredients to ensure efficacy and safety. Evaluation parameters like pH, abrasiveness, microbial load, and stability are critical to ensure product quality and consumer acceptability. Herbal toothpowders are favored for being chemical-free, cost-effective, environmentally friendly, and suitable for long-term use. However, challenges such as standardization of herbal raw materials, microbial contamination risks, and lack of clinical validation still hinder their large-scale acceptance. This review aims to provide a comprehensive understanding of the formulation and evaluation of herbal toothpowder, highlighting recent research trends, regulatory considerations, and future prospects. Promoting scientifically-backed herbal products can bridge the gap between traditional remedies and modern oral healthcare, offering safe and effective solutions for maintaining oral hygiene.

INTRODUCTION

Teeth are hard, calcified structures embedded in the jawbones. They are essential for the process of mastication (chewing), which is the first step of digestion. Teeth not only help in breaking down food into smaller pieces but also assist in speech, facial aesthetics, and maintaining the structural integrity of the jawbone. A healthy set of teeth contributes significantly to a person's confidence and overall health.

1.1 Types and Functions of Teeth

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1. **Incisors (8):** 4 in upper and 4 in lower jaw. Sharp-edged teeth used for cutting and slicing food.
2. **Canines (4):** Pointed teeth, also known as cuspids, used for tearing food.
3. **Premolars (8):** Also called bicuspids; they have flat surfaces with ridges for crushing and grinding food.
4. **Molars (12**): Including 4 wisdom teeth, they are located at the back and are responsible for grinding food thoroughly.

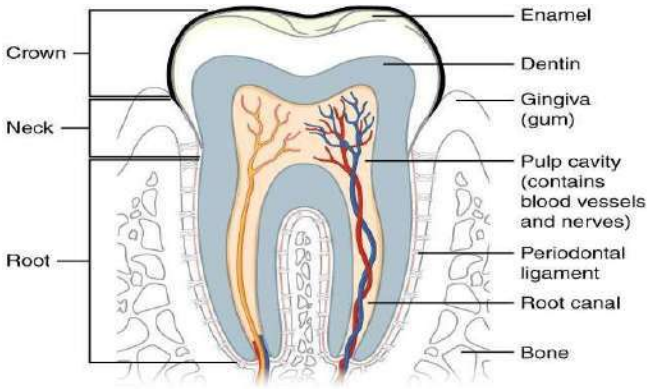

Fig. 1

1.2 Importance of Teeth:

- Maintain Oral Hygiene
- Use a soft-bristled brush and fluoride toothpaste twice a day.
- Removes food particles and plaque between teeth.
- Mouthwash Helps kill bacteria and freshens breath.
- Avoid sugary and acidic foods that promote tooth decay.
- Regular Dental Check-ups

1.3 Dental Problems

- Cavities
- Gingivitis
- Periodontitis
- Tooth Sensitivity

2.1 Herbal Toothpowder

Herbal toothpowders offer several advantages over conventional oral care products: a) Natural and Chemical-Free. Herbal tooth powders have gained renewed interest due to the growing awareness of the side effects of chemical-based products and the desire for more natural and holistic healthcare solutions. These powders are known for their antibacterial, anti-inflammatory, and antioxidant properties, making them effective in preventing common dental issues such as cavities, gingivitis, and halitosis.

2.1.1 Benefits

1. Herbal toothpowder is a natural and traditional alternative to synthetic toothpaste, widely used in Ayurveda and traditional medicine systems. It is formulated using a blend of medicinal herbs, minerals, and other natural substances that work together to clean teeth, freshen breath, and strengthen gums.
2. Herbal toothpowders are free from synthetic additives, artificial colors, preservatives, and fluoride. This makes them safe for long-term use, even for children and people with sensitive oral tissues. b) Antibacterial and Antifungal Action

2.1.2 Ingredients:

Table.1 Natural Ingredients for preparation of Tooth powder

Sr. No	Ingredients	Weight (g)	Uses
1.	Pudina	1	Mouth freshener, Antiseptic
2.	Clove	0.5	Analgesic, improve gum, tissue health increase

3.	Namak	1	Remove stains, reduce gum and inflammation
4.	Babool	2	Anti-bacterial, strengthening gums
5.	Neem	1	Anti-inflammatory, treating tooth decay
6.	Tulsi	2	Anti-ulcer, Anti-bacterial, treats mouth ulcer
7.	Black pepper	0.5	Anti-microbial , Prevent tooth decay
8.	Charcoal	1	Whitening agent, Absorb surface stains
9.	Jethi madh	1	Foaming agent, sweetening agent

2.3 Types of Natural Toothpowder:

1. **Antibacterial Toothpowder**:
   Contains herbs like neem, clove, and babul to reduce bacterial load and prevent gum infections.
2. **Whitening Toothpowder**:
   Formulated with charcoal, salt, and citrus peels to naturally remove stains.
3. **Anti-inflammatory Toothpowder:**
   Includes turmeric, liquorice, or aloe vera to reduce gum swelling and inflammation.
4. **Refreshing Toothpowder**:
   Mint, camphor, or cardamom for a fresh breath and pleasant taste and May include calcium, baking soda, and herbal extracts to strengthen.

Fig.2

Fig.3

2. REVIEW OF LITERATURE

These formulations combine the therapeutic value of multiple herbs that have been traditionally used in Indian medicine systems such as Ayurveda, Unani, and Siddha.

- Herbal powders for abrasiveness and found that a balanced mixture of herbal ingredients like Myristica fragrans (Nutmeg) and Punica granatum (Pomegranate rind) helped in cleaning without damaging enamel.
- Compared herbal toothpowders with marketed toothpastes and found that the herbal products were equally effective in reducing plaque scores and improving gingival health. Showed effective antimicrobial activity against Streptococcus mutans and Lactobacillus acidophilus. The powder also showed acceptable pH and abrasiveness, suitable for daily use.
- Consumer Acceptance and Market Growth: The global herbal oral care market is expected to grow significantly due to Rising awareness about natural ingredients Increasing prevalence of periodontal diseases Preference for chemical-free products Consumers increasingly prefer herbal powders that are cruelty-free, free from SLS, fluoride, and artificial preservatives.

3. PLAN OF WORK

3.1 Materials and methods

1. Selection of Herbs for formulating herbal toothpowder. Herbs must possess medicinal properties like antimicrobial, Anti inflammatory, or deodorizing effects

2. Method of Formulation Selection of Herbal Ingredients based on desired therapeutic actions.
3. Drying: Clean the herbs and shade-dry to preserve phytoconstituents.
4. Grinding: Powder the dried herbs using a mechanical grinder.
5. Sieving: Pass the powder through sieve #80 for uniformity.
6. Weighing and Mixing: Accurately weigh and mix the powders homogeneously. Packaging: Store in airtight, moisture-resistant containers.

3.2 Procedure

Selection of Herbal Ingredients
↓
Authentication of Raw Materials
↓
Cleaning and Drying (Shade Drying)
↓
Pulverization (Grinding)
↓
Sieving (Through Sieve No. 80)
↓
Weighing of Each Ingredient Accurately
↓
Mixing (Using Mortar & Pestle or Blender)
↓
Evaluation of Formulated Powder
↓
Packaging in Airtight Containers
↓
Storage and Labelling

3.3 Assessment parameters:

Odour: Odour was found by smelling the product**.**
Taste: Taste was checked manually by tasting the product**.**
Colour: The prepared tooth powder was evaluated for its colour. The colour was checked visually**.**
Stability: The product was maintained in different temperature conditions to check its stability.
Spread ability: It evaluated by spreading the powder manually. Abrasiveness: It was evaluated manually. Foamability: The foamability of the product was evaluated by taking small amount of preparation with water in a measuring cylinder initial volume was noted and then shaken for 10 times. Final volume of foam was noted.
Usage: Sufficient quantity should be applied with tooth brush on teeth and to be used twice daily early in the morning and before going to bed or as advised by the dentist for best result. It is useful against bacterial infections and to maintain freshness of mouth**.**

4. RESULTS AND DISCUSSION

Fig.5 Appearance of natural tooth powder

Sr. No	Parameters	Result
1	pH	6.07
2	Ash value	0.91
3	Moisture content	0.47%

Table Physico-chemical evaluation

Sr. No	Parameters	Result
1	Alkaloide (Mayers test)	Positive

2	Saponin (Foam test)	Positive
3	Steriod & triterpenoids (Salkowsaki test)	Positive
4	Carbohydrate (Fehling test)	Positive
5	Flavonides (Lead acetate test)	Positive

Table: Phytochemical evaluation

Sr. No	Parameters	Result
1	Color	Olive green
2	Odour	Characteristics
3	Taste	Astringent
4	Texture	Fine
5	Appearance	Powder

Table: Organoleptic Properties

Sr. No	Parameters	Result
1	Bulk density	0.45 gm/ml
2	Foam	Good
3	Angle of repose	25.17 (good)

Table: Rheological Evaluation

CONCLUSION

Tooth powders are common oral care product used to control plaque and other deposits from tooth surface thereby reducing gingivitis. From the current study, it may be concluded that toothpowder has been shown to be Statistically superior to toothpastes in controlling dental plaque and gingivitis. The impact of toothpowder in the healthcare system can't be excluded. The evaluated tooth powder demonstrates favourable organoleptic, phytochemical, physicochemical, and rheological properties, along with excellent safety. any herbal toothpaste is considered safe to use twice a day and it does not cause any harmful effects, instead imparts good freshness and away from bad odour. Oral hygiene can be maintained in a reliable, safe and inexpensive way by using herbal tooth pastes.

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