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Review Article

A Comprehensive Review of Herbal Products in Dental Care

Nikhil Jaisawal[1], Sandhya Pandey[2], Mukul Patel[3], Abhinav Yadav[4], Dr. Nalneesh Gupta*[5], Dr. Alok Kumar Shukla[6]

[1,2,3,4,5,6] Babu Sunder Singh College of Pharmacy, Raebareli Road, Nigohan, Lucknow - 226302 (U.P.)

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Corresponding Author:
nalneesh.pharma@gmail.com

Abstract

Dental care has seen a growing interest in herbal products due to their potential benefits in oral health management, particularly in preventing and treating dental diseases. This review explores the role of key herbal ingredients such as Neem (Azadirachta indica), Tulsi (Ocimum sanctum), Ginger (Zingiber officinale), Amla (Phyllanthus emblica), and Mentha (Mentha spicata) in maintaining oral hygiene and combating oral infections. Neem, known for its antibacterial and anti-inflammatory properties, has been traditionally used to treat gingivitis and dental plaque. Tulsi and Ginger contribute with their antioxidant and anti-inflammatory effects, aiding in the reduction of oral bacteria and healing of gum tissues. Amla, rich in vitamin C, helps in strengthening the gums and teeth, while Mentha provides a refreshing effect due to its natural antiseptic and cooling properties. Other herbal products such as clove oil and licorice also play significant roles in alleviating toothaches and reducing microbial growth. These natural agents offer a holistic approach to dental care, minimizing the side effects often associated with chemical-based oral products. With growing consumer preference for natural and sustainable health care solutions, herbal dental care products have a promising future in the market. Further clinical studies are encouraged to substantiate the efficacy and safety of these herbs in modern dentistry.

INTRODUCTION

The dental care herbal product is the preparation of clean the teeth and oral cavity. The toothpowder is used for to maintain the oral hygiene and mouth freshness and avoid the teeth problem. The tooth are following for the two type, both the top and the bottom. Enamel, the hard tissue in your mouth, covers the top of your teeth, the crown. Dentine, a compound of hydroxylapatite, is an enamel component. In order to make food easier to swallow, the oral cavity contains both teeth and saliva. Dental problem is very common problem for the all over countries. The dental problem like-tooth discoloration, plaque, bad smell, gingivitis. Deposition are caused by the poor food habits. Having lack of knowledge for oral hygiene. Mouth is the most absorbent part of the body. The manufacturing of herbal toothpowder is very simple preparation. The homogenous distribution of mix the all ingredients without contamination of any foreign particle. (1)

Tooth Powder: Powder is a pharmaceutical solid dosages form of a drug containing one are more solid substance reduced to a fine state. Powder can be for internal and external use. For both internal and exterior usage, pharmaceutical powders are mixtures of dry, finely divided herbal crude meds. The herbal tooth powder prevents tooth decay and cures different oral problem. Herbal tooth powder benefits are useful for tackling bad breath and oral odour and providing relief form toothaches.The manufacturing of tooth powder is a simple operation. Smooth uniform free or sluggishly flowing fine powder mixture. (2)

Advantages:

- Can boost your oral health.
- May prevent plague form building up.
- Fluoride protects against tooth decay.
- Prevents dry mouth.
- Mouth wash can help you target plague.

Disadvantages:

- Not recommended for use with bitter medications taken orally.
- It takes a lot of time to dispense tooth powder.
- Compared to using pills or capsules, the dosage accuracy is lower.

Types of tooth powder

- Whitening tooth powder
- Natural tooth powder
- Herbal tooth powder
- Homemade tooth powder.

Composition of herbal tooth powder

Clove: The germs get accumulated on the surface of the teeth or get stuck in between each tooth which result tooth decay. Clove treatment is the most helpful treatment. Clove is cure for the infection of the teeth due to antimicrobial properties, particularly eugenol. (3)

Figure 1 Clove

Ginger: An additional benefit to your health is that the ginger ingredient can lessen the number of bacteria in your mouth, which can lead to cavities and gum disease. (4)

Figure 2 Ginger

Neem: The neem are used for the dental care and hack to prevent the bad breath of mouth. The boil of neem leaves in water till the use of limited quantity is reduce to one fourth. The neem are used for the kill the bacteria in the mouth. (5)

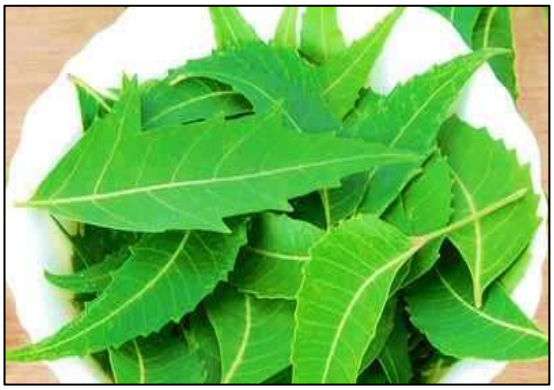

Figure 3 Neem leaf

Cinnamon The cinnamon powder are used for the analgesic activity in your mouth that the leave your teeth and mouth feeling clean, polished and refreshed. (6)

Figure 4 Cinnamon

Tulsi The tulsi is a herbal ingredient in toothpowder. It is very effective for oral cavity. The powdered tulsi leaves used to kill the halitosis and maintaining good oral health. It is treatment of gingival and periodontal diseases. (7)

Figure 5 Tulsi

Amla Amla is the used for the anti-inflammatory activity. It is promote to the oral conditions. It is maintain to optimal dental hygiene is crucial to preventing tooth problems such as bleeding gums caused by inflammation due to inadequate oral care and plaque formation. (8)

Figure 6 Amala

Mentha leaf The mint is the used for the antibacterial, antifungal and antiallergic treatment of oral cavity. Mint leaves powder are used for the clear the plaque deposition on teeth. It is also used for the mouthwash. Or chewing gum can discontinue oral bacterial growth and keep your oral cavity clean. (9)

Figure 7 Mentha leaf

Black pepper The black pepper is used for the fights tooth decay and provides quick relief from a toothache. The black pepper also containing the calcium, potassium and other chemical constituent present in the black pepper. The calcium is the good for the teeth and bones. (10)

Figure 8 Black pepper

Acacia powder The acacia powder is used for the dental problems.It is also used for the herbal toothpowder. That is shown to clean teeth effectively while being gentle on their surfaces. The pharmacological components of treatments for esophageal or gastric inflammation and the film-forming agent in peel-off skin masks both make use of acacia powder. (11)

Figure 9 Acacia powder

Preparation

Formula for tooth powder:-

Table 1

S. No.	Ingredient	Quantity	Uses
1	Clove powder	18gm	Antimicrobial
2	Liquaricepowder	8gm	ulcers
3	Neem powder	10gm	Antiseptic
4	Cinnamon powder	6gm	Analgesic
5	Black pepper	2gm	Mouth ulcer
6	Arjuna powder	5gm	Cleaning teeth
7	Amla powder	19gm	Astringent
8	Acacia powder	20gm	Cleaning teeth
9	Black salt	1.0gm	Cleaning teeth
10	Mentha leaf	6gm	Cleaning teeth
11	Ginger	9gm	Cleaning teeth
12	Tulsi	6gm	Decrese inflammation

Procedure Every medication was gathered from the nearby marketplace. The Standardized herbal materials were allowed to dry in the shade. The moisture level was monitored until it dropped below 6%, at which point the materials were examined for compliance with Indian Ayurvedic Pharmacopoeia requirements. The ingredients were ground into a powder and added to the herbal tooth powder mixture. The herbal powders were sieved using an 85 mesh screen. provides a summary of the developed formulation's composition. (12)

ContainersA metal or plastic jar with a perforated cover is used to package tooth powders.

DirectionTo be applied to the teeth's surface with a tooth brush.

Storage

Store a cool, dry place, protect from moisture.

Evaluation methods

1. Organoleptic evaluation
2. Physico-chemical evaluation.
3. Rheological evaluation

1. Organoleptic evaluation:

Table 2

Parameters	Methods	Result
Colour	Colour accuracy was verified visually.	Brown
Odour	The product's odour was assessed via inhalation.	characteristic
Taste	We tasted the goods to make sure it had the right flavour.	Sour

2. Physio-chemical Evaluation

❖ **pH** A 100 ml beaker containing 2 grammes of tooth powder was used as the pH meter to measure it. Before using the cooled water, bring 100 ml of water to a boil. Get a suspension by aggressively stirring, and then measure the pH volume. (13)

❖ **Moisture content** Identify the relative humidity of tooth powder.Get 50 grammes of tooth powder, bake it at 1000 degrees Celsius, and let it cool. To find density using the provided formula, we first record the weight loss as a percentage of moisture content. (14)

% moisture content = original sample weight/dry sample weight.

3. Rheological Evaluation

Bulk density: The measuring container is filled with the tooth powder. A spatula is used to smooth up the powder's surface. The powder's bulk volume is the amount of space it takes up, whereas its bulk mass is its weight. Applying the following formula yields the bulk density. (13)

Bulk density = mass of powder/ bulk volume occupied by powder

Tapped density The tooth powder is taken in a measuring cylinder and tapped up and down position until it is crushed to constant volume. (11-15)

Tapped density = mass of the powder/bulk volume occupied by powder

Angle of repose the heap approach is used to determine it. A conical pile of maximum height is created by pouring powder via a funnel from a specific distance to a flat, smooth surface. (11-13)

Angle of repose = $\tan^{-1}h/r$

Angle of repose (^{0})	Type of flow
25	Good
25-30	Good
30-40	Passable
>40	Very poor.

Foaming Index To find it, use a 100 ml measuring cylinder and add 20 ml of a 2% w/v tooth powder. In order to make the foams, the mixture is mechanically churned for 30 minutes. After the maximum amount of foam has been formed, its volume is measured, and the average of the three measurements is taken. The measuring cylinder is used to calculate the result by measuring the height of the foam that has developed. (14)

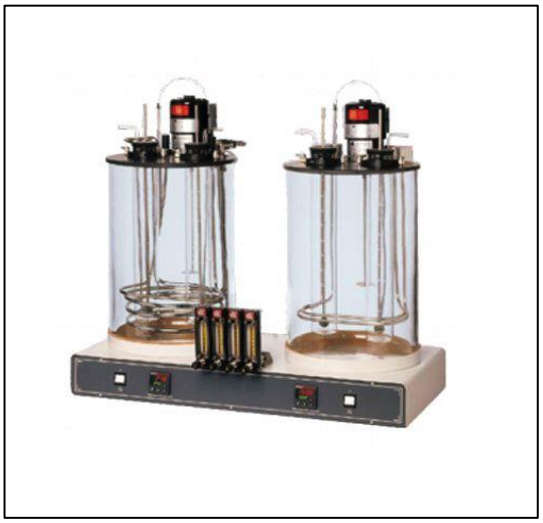

Figure 10 Foaming test apparatus

Porosity This is the empty area that the powder and trapped air occupy. Here is the formula to calculate porosity. (15-18)

% porosity = 1 – tapped volume/bulk volume *100

Conclusion In the case of dental issues, a tooth is a straightforward product. Plaque and other deposits on teeth can be controlled with tooth powder, which in turn reduces the risk of gingivitis. Toothpaste helps keep teeth clean and shiny, which in turn reduces the risk of dental caries. There is no known negative impact of using tooth powder. Keep your teeth clean using tooth powder. Tooth powder contains beneficial components that, when used correctly, protect the mouth from oral diseases. You can use any herbal toothpowder twice a day without worrying about any negative side effects; in fact, it will give your breath a pleasant scent and keep bad breath. Based on their claims of being an effective tooth powder, the components utilised in this study were chosen for their antimicrobial properties and their ability to promote good oral hygiene.

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