

# Formulation And Evaluation of Herbal Tooth Powder

Monali Devrao Nagrikar<sup>1</sup>, Payal Kuldip Indurkar<sup>2</sup>

**Abstract-** This abstract presents the development and evaluation of herbal tooth powders with the aim of providing a natural alternative For oral care. With growing concerns about the potential risks associated with synthetic chemicals and additives commonly found in Commercial toothpastes, the demand for herbal and natural oral care products is on the rise. A blend of carefully selected botanical Substances with proven efficacy in improving oral health was used to create the Herbal Tooth Powder. These blends contained the Antibacterial, anti-inflammatory, and refreshing properties of herbs. The powder formulation was created to ensure ease of use and Efficient cleaning while improving general oral health. The evaluation of herbal tooth powder included various parameters including Physical characteristics, microbial analysis and sensory evaluation. The physical properties of the powders was evaluated to meet the Desired specifications. Microbial analysis was performed to verify the safety of the product and confirm the absence of harmful bacteria. Additionally, sensory evaluation was performed to assess factors such as taste, aroma and overall user experience.

**Keywords:** Natural, Oral care products, Botanical substances, Ease of use, Efficient cleaning .

## I. INTRODUCTION

Oral hygiene is an important key to uphold good appearance, thought of an individual and gives confidence. The tooth consists of two parts, the crown, and the root. The crown of the tooth is covered by an outer surface called enamel and it is the hardest tissue in the tooth. The major composition of enamel is hydroxyapatite other than that it consists of water and keratin . Dentine is the under part of the enamel, which is a composite of hydroxylapatite. Fluorine is the major constituent of dentine. Oral consists of not only tooth but also saliva for easy to consume the food. Saliva is the major element proposed for lubricate the food and to maintain an appropriate environment in the mouth. Saliva is formed by various glands such as Labial, lingual, buccal, and palatal are the larger and smaller glands that produce saliva continuously to keep the tooth environment in the dynamic state . Proteins, enzymes, bacteria, and mucous -polysaccharide are there in the saliva and inorganic materials like calcium, sodium, potassium, chloride, phosphate ions, etc. The plaque, calculus, periodontal diseases are the major issues related to the tooth. It is mainly caused by bacterial action and mineralized

deposition leads to calculus. These diseases are mainly due to the negligence in good caring of the tooth, so it can be prevented and controlled by proper brushing by using effective toothpaste and tooth powders .



Fig.no.1 Herbal Tooth Powder

## IDEAL PROPERTIES OF HERBAL TOOTH POWDER

- Good abrasive effect.
- Non irritant and non toxic.
- Impart no stain in totoxi
- Keep the mouth fresh and clean.
- Cheap and easily available.
- Economical and easily available
- Prolonged refreshing effect.

## TYPES OF TOOTH POWDER:

1. Whitening Tooth Powder : The purpose is to freshen breath, help gums and reduce the amount of inflammation in The mouth. It is used to polish and whiten a person's teeth.
2. Natural Tooth Powder : ingredients like sea salt which act as an abrasive, natural chalk and certain essential Oils like peppermint, eucalyptus used in the natural tooth powder.
3. Herbal Tooth Powder : Sore or bleeding gums also can benefit from herbal tooth powder. Can have a variety Of ingredients. Baking soda, powdered chalk, and white clay are common. Herbal Tooth powder has been around for centuries and many believe it to be as essential part Of any Teeth Cleaning regimen.

4. Homemade Tooth Powder : These powders also can be made at home. Homemade herbal tooth powder can be Beneficial because they may cost less and the person making it will know what Ingredients he is putting in his mouth or in the mouth of the children.

Tooth powder is a mildly powder that is used in combination with tooth brush to maintain Oral hygiene. The manufacturing of tooth powder is a comparatively simple operation. The Primary objective is the homogenous distribution of all the ingredients without contamination Of foreign substances.

#### CHARACTERISTICS OF GOOD QUALITY HERBAL TOOTH POWDER:

- It cures tooth sensitivity.
- It cures toothache.
- It gives whitening and shining teeth.
- It removes plaques.
- It fights with bad breath and freshens it up.
- It removes stains of beverages like coffee, tea, etc.
- It cures gum sensitivity and prevents it from coming back.
- It helps to lighten up the colour of the lips.

#### MATERIALS &METHODS :

##### COLLECTION OF HERBAL INGREDIENTS AND EXCIPIENT PROFILE :

Herbal ingredients and excipient profile were collected from the local market.

##### SELECTION OF HERBAL INGREDIENTS :

The formulation should involve a careful selection of herbal ingredients known for their health benefits. These may include herbs like Neem , Ritha , Babool , Tulsi , Black Salt , Clove, Mentha , Alum , Charcoal , Amlaand Guava leaf etc .

##### SELECTION OF EXCIPIENT PROFILE :

Select an appropriate base material that will provide a mild abrasive action for cleaning teeth without being too harsh on the enamel.

These may include Menthol crystFi Himalayan rock salt and Bentonite clay.

#### PREPARATION OF TOOTH POWDER:

All the powder ingredients are size reduced to fine powder by using mortar and pestle and pass through Fmesh (sieve). Now weigh all the required quantity of ingredients separately by using weighing balance. Transfer all the weighed ingredients in a mortar and pestle according to their weights in ascendiFirder and triturathe help of pestle, until all ingredients are homogenously mixed and finally add fragrance for good flavor.

#### FORMULATION OF HERBAL TOOTH POWDER

##### 1] Neem



Fig.no.2 Neem leaves

**Synonyms:** Holy tree, Margosa.

**Biological Source:** It is obtained from fully matured seeds of *Azadirachta indica* Linn.

**Family:** Meliaceae.

**Uses:** Nimbin, nimbidin and related compounds possess anti-viral activity.

##### 2] RITHA



Fig.no.3 Ritha fruit

**Synonyms:** Soapnut, Soapberry, Washnut, Ritha, Aritha.

**Biological Source:** It is obtained from *Sapindus mukorossi*

**Family:** Sapindaceae

**Uses:** Soapnuts are used to get rich foam and pleasant aroma. Soapnuts are used as detergent for washing cloth before dyeing.

### 3] BABOOL



Fig.no.4 Babool Bark

**Synonyms:** vachellia nilotica

**Biological source :** It is native to Africa, the Middle East and the Indian subcontinent. It is also considered a 'weed of national significance' and an invasive species of concern in Australia, as well as a noxious weed by the federal government of the United States.

**Family:** leguminocae

**Uses:** Wound. Babool gum is an excellent healer due to its Ropan (healing) and Kashaya(astringent) (properties. ...Skin disease.

### 4] TULSI



Fig.no.5 Tulsi leaves

**Synonyms:** sacred Basil, Holy Basil.

**Biological Source:** Tulsi consist of fresh and dried leaves of Ocimum sanctum Linn

Family: lamiaceae.

**Uses:** It has Anti inflammatory properties. And used as stimulant.

### 5] ROCK SALT



Fig.no. 6 Rock salt

**Synonyms :** Himalayan salt and sulemani salt

**Uses :**Black salt has antioxidant properties and has surprisingly low sodium levels. It also contains important minerals like iron, calcium, and magnesium, which are essential to healthy bodies. Black salt stimulates bile production in the liver, and helps control heartburn and bloating.

### 6] GUAVA LLEAVES



Fig.no. 7 Guava leave

**Synonyms:** Common guava, Lemon Guava

**Biological source:** Guava trees are native to tropical America and are grown in tropical and subtropical areas worldwide. Guava fruits are processed into jams, jellies, and preserves and are common pastry fillings.

**Family:** Myrtaceae

**Uses:** Guava leaves have long been used effectively for oral hygiene due to their antibacterial and antimicrobial properties. These properties have a positive effect on controlling plaque.

### 7] CLOVE



Fig.no.8 Clove

**Synonyms:** Caryophyllum, Clove flower, Clove buds.  
**Biological Source:** Clove consists of dried flower buds of *Eugenia caryophyllus*. It should contain not less than 7.0 per cent (w/w) of eugenol calculated on dried basis.  
**Family:** Myrtaceae  
**Uses:** Clove is used as a dental analgesic, carminative, stimulant, flavouring agent, an aromatic and antiseptic

## 8] MENTHA



Fig.no.9 Mentha leave

**Synonyms:** Oleum mentha piperita, Colpermin, Mentha Oil.  
**Biological Source:** It is obtained from fresh flowering tops of the plants known as *Mentha piperita* Linn.  
**Family:** Labiatae.  
**Uses:** Peppermint or Mentha oil is used as carminative (prevent flatulence) stimulant, and flavouring agent.

## 9] ALUM



Fig.no.10 Alum stone

**Synonyms :** Turuti

**Uses :** purification of drinking water as a chemical flocculant. In styptic pencil to stop bleeding from minor cuts.

The adjuvant in vaccines ( a chemical that enhances the immune response) deodorant “rock” Pickling agent to help keep pickles crisp. Flame Retardant.

## 10] CHARCHOL



Fig.no. 11 Charchol

**Synonyms :** Activated Coconut Charcoal Powder, Charcoal Teeth Whitening Powder, Natural Teeth Whitening Powder , Black Dental Powders

**Family:** coconut shells ,bamboo

**Role:** whitening agents

**Uses and Benefits of Charcoal Powder Surface Stain Removal:** It is used to reduce stains caused by coffee, tea, and red wine by lifting stains from the enamel.

## 11] AMLA



Fig.no. 12 Amla fruits

**Synonym :** *Phyllanthus Emblica* Emblica, Indian goose berry, amla.

**Biological source:** This consists of dried, as well as fresh fruits of the plant *Emblica officinalis* Gaertn

(Phyllanthusemblica Linn.). Genus:Phyllanthus Species: P. Emblica

**Family:** Phyllanthaceae

### MATERIALS USED :

Table 1 : Herbs , properties and suppliers for Herbal Tooth Powder

Sr.no.	Name of herb	Uses/ properties	Name of suppliers
1.	Neem leaves	Antimicrobial/ Antioxidant	Ayurvedic store
2.	Ritha	Anti inflammatory	Ayurvedic store
3.	Acacia bark	Antimicrobial	Ayurvedic store
4.	Tulsi	Antimicrobial	Ayurvedic store
5.	Rock salt	Cleansing agent	Ayurvedic store
6.	Guava leaves	Relive tooth ache	Nutri.org
7.	Clove	Pain reliving & Antiseptic	Ayurvedic store
8.	Mentha leaves	Antiseptic	Vegetable market
9.	Alum	Rapid relief	Ayurvedic store
10.	Charchol	Cleaning agent	Ayurvedic store
11.	Amla Fruit	Astringent	Nutri.org

### FORMULATION OF HERBAL TOOTH POWDER :

Table 2 : Formulation of herbal tooth powder

Sr.no.	Ingredients	Quantities (gm) (100 gm)
1.	Neem leaves	3.5 gm
2.	Ritha	6.82 gm
3.	Babool Bark (Acacia)	17.15 gm
4.	Tulsi leaves	8.85 gm
5.	Rock salt	10.98 gm
6.	Guava leaves	15 gm
7.	Clove	7.0 gm
8.	Mentha leaves	2.85 gm
9.	Alum	10 gm
10.	Charchol	10 gm
11.	Amla Fruit	7.85 gm

### RESULT :



Fig.no.11 Propertion



Fig.no.12 Mixing

### ORGANOLEPTIC EVALUATION

Distinct parameters were studied such as: Color, Odour, Taste, Texture and Appearance.

Table 3 : Organoleptic Evaluation

Parameters	Result
Colour	Brown
Odour	Pleasant
Taste	Astringent
Texture	Fine
Appearance	Powder

### PATCH TEST

Table 4 : Patch Test

Parameters	Result
Swelling	Negative
Redness	Negative
Irritation	Negative

### PHYSICO – CHEMICAL EVALUATION

Table 5 : Physico-chemical Evaluation

Parameters	Result
pH	5.19
Bulk density	0.5 g/ml
Tapped density	0.724 g/ml
Angle of repose	27.83 (Excellent)
Foaming Power	10 ml
Spreadability	3.5 cm (Easily spreadable)

### II. DISCUSSION

Dental caries are the most common oral infectious disease among children and old age. The prevention Strategy against dental caries includes the elimination of carcinogenic microorganisms from the oral cavity, Inhibition of their plaque formation, and the enhancement of tooth resistance to demineralization. In the Former strategies, phytochemicals

have been widely studied for their antimicrobial activity. A variety of plants With potent activity are known to be traditionally used for dental hygiene world- wide. Antibiotics and other Antimicrobial agents are effective in the prevention and treatment of dental caries. The aim of the present work Is to Prepare antibacterial activity tooth powder by Using bentonite and camphor. The prepared Antibacterial tooth powder was evaluated for Physical appearance, PH, bulk density, tapped Density , angle of repose, Moisture content, foaming power and Antibacterial studies.

### III. CONCLUSIONS:

The ingredient used in the present work was selected to pass antibacterial effect and to Maintain oral hygiene. Any herbal toothpowder is considered safe to used 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 Powder. In the study, it was found that Natural plant products are an important source to Control bacterial pathogens. Our herbal tooth powder is considered safe to use twice a day And it does not cause any harmful effects, instead, it imparts good freshness and away from Bad odour.

The good quality and purity of the herbal Toothpowder has met with almost all the parameters And comes under the specified limits. This Toothpowder reduces inflammation, bad odor and Plaque formation. Usage of herbal toothpowder Twice a day is safe and effective. Oral hygiene can Be maintained in a reliable, safe and inexpensive Way by using herbal tooth powder.

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