

# A Review on to Study Herbal Toothpaste

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**Abstract:** All people use toothpaste on a regular basis. Typically, toothpaste is used to clean the mouth and teeth. It is also used to treat a variety of dental conditions. Many dentists advise using toothpaste to treat conditions including chronic gingivitis and sensitivity. Herbal toothpastes can be made with various herbal extracts of various crude medications that have antimicrobial and antibacterial properties. Toothpaste formulations made with herbs such as neem, clove, peppermint, betel, turmeric, honey, glycerine, sodium lauryl sulfate, tragacanth gum, sodium chloride, sorbitol, propylparaben, carboxymethyl cellulose, and distilled water are made. The primary goal of this review paper is to gather all of the information that is currently accessible about herbal toothpaste, including its history, various formulations, and evaluation criteria. For many researchers who wish to conduct research in this field, this knowledge is useful.

**Keywords:** Herbal toothpaste, Neem, Tooth paste, antimicrobial activity, Clove, Herbal Ingredient, formulation, ingredients, vehicle, foaming

## I. INTRODUCTION

Toothpaste has been around since antiquity and is an essential part of oral hygiene. The formulation of toothpaste was designed in China and India between 300 and 500 BC. Toothpaste is a dentifrice used to clean, maintain, and improve the health of teeth. Promoting oral hygiene is toothpaste's main objective. "Herbal medicines" are any plant materials used for medicinal or disease-treating purposes. Herbal medicines have been widely used throughout human history, and according to WHO estimates, 80% of people use herbal medicine as their main source of treatment. Furthermore, it has been demonstrated that more than 35,000 plant species are used medicinally in many human communities worldwide.

A few of them.

When it comes to maintaining dental health, toothpaste is the best preventive measure. A lot of commercially available dentifrices claim to have antibacterial qualities, but not much research has been done to support those claims and use dentifrices as an enameling agent as another older exercise.

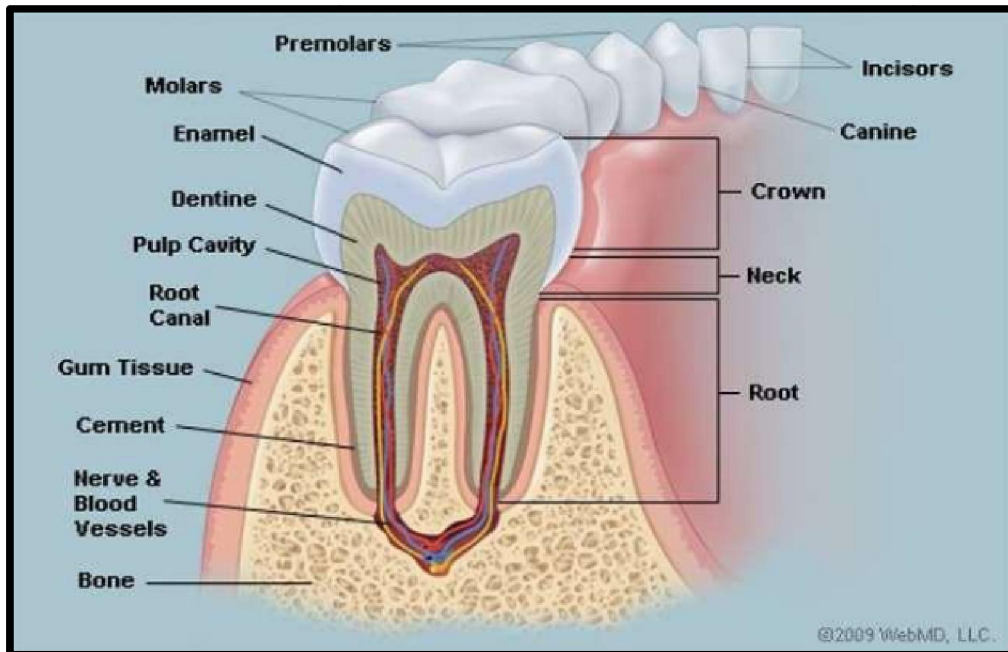
## HISTORY OF TOOTHPASTE

Around 500 BC, toothpaste was used in China and India, and it is known that the ancient Greeks and Romans also used it. Crushed bone and oyster shell, powdered charcoal, and bark were among the ingredients used by the Greeks and Romans to prevent foul breath. To clean their mouths, Chinese people used toothpaste made of ginseng, mint, and salt. Indians used sticks of Azadirachta indica as toothbrushes.

In 1824, Peabody introduced sodium palmitate as a salt, and in 1850, John Harris added chalk, such as calcium carbonate. invented a novel toothpaste in a jar called Creme Dentifrices in the 1850s, and Colgate began producing it in 1873. A collapsible tube was filled with paste by Washington Sheffield in 1892. Fluoride was one of the most significant ingredients added to toothpaste in 1914. In order to manage gingivitis, antiplaque agents were introduced in 1980. Scientists have shown that the body's inherent antibacterial action is provided by enzymes like glucose oxidase and amyloglucosidase.

## BASIC STRUCTURE OF TEETH

Teeth are the toughest material in the human body. In addition to being essential for chewing, teeth are also very important for communication. Here are some instances of tooth parts:



**Fig : Anatomy of teeth**

**Enamel** :- The tooth's hardest white outer layer is called enamel. Enamel is made of the rock-hard mineral calcium phosphate.

**Dentin** :- The layer behind enamel is called dentin. It is a hard tissue that contains tiny tubes. When the enamel breaks, heat or cold can enter the tooth through these channels, resulting in pain or sensitivity.

**Pulp** :- Pulp is the term for the softer, living internal component of teeth. The teeth's pulp is home to nerves and blood vessels.

**Cementum** :- A layer of connective tissue that holds the gums and jawbone to the roots of the teeth. facilitates the teeth's tightening against the jaw

The 32 teeth in an average adult's mouth have all erupted by the age of 13 (with the exception of wisdom teeth):

**Incisors** :-The middle four teeth of the upper and lower jaws. There are eight in total.

**Canines** :- The four pointed teeth that are located immediately outside of the incisors.

**Premolars** :- The eight teeth that make up the premolars are situated between the canines and the molars.

**Molars** :- The greatest teeth for crushing food are the flat ones near the back of the mouth.

#### **ADVANTAGES OF HERBAL TOOTHPASTE :-**

- Nobody wants chemicals all over their body, and even store-bought toothpaste contains these dangerous ingredients. We must make use of the already-available natural solutions to stop tooth decay.
- There are numerous advantages to using herbal toothpastes.
- Commercial toothpaste contains sodium laurel sulphate, which can cause irritation and inflammation.
- Delivers active ingredients such as fluoride or xylitol to help prevent tooth and gum disease.
- Desensitizing toothpaste.
- Whitening toothpaste.
- Recent advances in toothpaste enable high efficacy of oral health delivery.
- Special toothpaste for kids with fluoride and relatively low abrasion value.

**DISADVANTAGES OF HERBAL TOOTHPASTE :-**

- Because alternative toothpastes may cause damage to our teeth, the ecologically certified herbal toothpaste is the safest choice.
- It might come from manufacturers that are dishonest about how they conduct business or who fail to properly identify chemicals, like fluoride, which some people find alarming.
- Extended consumption of large volumes of fluoridated toothpaste can result in fluorosis. Fluoridated toothpaste can be either acutely toxic if swallowed in large amounts or chronically toxic if swallowed in small amounts consistently.
- The major problems associated with this technique is the danger of using high concentrated hydrochloric acid
- Not effective for deeper stains
- Removal layer of enamel
- Yellow discoloration of teeth in some cases after treatment

**II. MATERIAL AND METHOD**

The herbs used in the current formulations were listed in Table 1 along with their typical toothpaste use. The botanical components used to make toothpaste formulas using many herbs.

**Table 1: Information on Herbs used in toothpaste Formulations**

Sr. No	Ingredients	Scientific Name	Effects
1	Neem	Azadirachta indica	Anti-inflammatory
2	Clove	Eugenia caryophyllus	Analgesic, Anticancer effects
3	Pippermint	Mentha piperita.	Antiviral, antiseptic effect
4	Betel	Piper betle	Antiulcer, Anti-diabetic
5	Turmeric	Curcuma Longa Linn	Antioxidant, Antimicrobial

**Collection Of Herbs**

**NEEM :-**



Fig : Neem

**Description :-**

**Botanical name:** -Azadirachta indica

**Chemical constituents:** Azadirachta indica L. (neem) shows therapeutic role in health management due to the rich source of various types of ingredients. The most important active constituent is azadirachtin and the others are nimbinolin, nimbin, nimbidin, nimbidol, sodium nimbinat, gedunin, salannin, and quercetin

**Family:** - Meliaceae

**Order:** - Sapindales

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**Use :-**

- It is also used for preserving soil fertility.
- Animal feed: Neem leaves can be once in a while used as forage for ruminants and rabbits.
- Fertilizer: Neemextractis brought to fertilizers (urea) as a nitrification inhibitor.
- Teeth cleaning: Neem has traditionally been used as a type of teeth-cleaning twig.

**CLOVE**



Fig : clove

**Description :-**

**Botanical name :-** *Syzygium aromaticum*

**Chemical constituents :-** The main component, eugenol, makes up at least 50%.  $\beta$ -caryophyllene,  $\alpha$ -humulene, and eugenyl acetate make up the remaining 10–40%. Here is a summary of the primary biological activities that have been reported. Additionally, the primary uses of clove essential oil in the food business are discussed.

**Family :-** Myrtaceae

**Order :-** Myrtales

**Use :-**

- To aid in the destruction of microorganisms as an antibacterial.
- As a painkiller for ailments like toothaches and muscular pain.
- As an expectorant and treatment for unsettled stomach, clove is utilised.
- For stomach distress, nausea, and intestinal gas, clove and clove oil are utilised

**PEPPERMINT :-**



Fig : Peppermint

**Description :-**

**Botanical name :-** *Mentha piperita* L

**Chemical constituents :-** Menthone, menthol, isomenthone, menthyl acetate,  $\alpha$ -pinene,  $\beta$ -pinene, champhor, limonene, linalool, and piperitone are the oil's active ingredients. Tinoleate (18:2), linolenate (18:3), and palmitate (16:0) make up the majority of the qualitative fatty acid content. In 1992, Maffei and Scannerini

**Family :-** Lamiaceae

Order :- Lamiales

Use :-

- The Common Cold
- Sinus Infections
- Headaches
- Irritable Bowel Syndrome (IBS)
- Digestive Issues

**BETEL :-**



Fig : Betel

**Description :-**

**Botanical name :-** Piper betle

**Chemical constituents :-** Phytochemical analysis of leaves showed the presence of steroidal components and tannins. Safrole (48.7%), chavibetol acetate (12.5%), allylpyrocate choldiacetate (34.0%),  $p$ -cymene, 4-terpinol, eugenol, and  $\beta$ -caryophyllene are the primary constituents of betel leaf oil.

**Family :-** Piperaceae

Order :- Piperales

Use :-

- An antibacterial, a stimulant, and a breath refresher It benefits diabetics.
- It eases asthma symptoms.
- It promotes wound healing.
- It enhances dental health

**TURMERIC :-**



Fig : Turmeric

**Description :-**

**Botanical name:** - Curcuma Longa, Indian saffron

**Chemical constituents:** - Brown explains that the active ingredient in turmeric is a natural compound (polyphenol) called curcumin, which has both antioxidant and anti-inflammatory properties. “Curcumin has many biological activities, not all of which are understood,” says.

**Family:** - ginger, zingiberaceae

Order: - Aromatic

**Uses: -**

- Reduce acne,
- Glowing skin,
- Lightens skin
- protect the skin form sun damage

**HONEY :-**



Fig : Honey

**Description :-**

Botanical name :-Apis mellifera

**Chemical constituents :-** It also contains ascorbic acid (vitamin C), and the minerals calcium, iron, zinc, potassium, phosphorous, magnesium, selenium, chromium and manganese.

Family :- Apidae

Order :- class Insecta

Use :-

- Attending to wounds and burns. Burns and wounds can be treated with honey.
- Acne treatment.
- Resistance to allergies to pollen.
- Organic cough medicine

### III. METHOD OF PREPARATION OF TOOTHPASTE

#### Trituration Method :-

To make the multi-herbal toothpaste, all of the herbal extracts (powders) were gathered. An electronic weighing balance (FB 600 Essae, Teroka) was used to determine the precise amounts of the substances. Then, in increasing order of proportion, the weighed herbal powders of betel, peppermint, turmeric, neem, and clove were added to the mortar. Then, using a pestle, properly triturate. Sorbitol, calcium carbonate, and sodium lauryl sulfate are then added and thoroughly combined. Additionally, tragacanth gum, glycerine,

#### FORMULATION TABLE

Sr. No	Name of Crude drugs/ Medicinal plant	Quantity
1	Neem extract	1
2	Clove	1
3	Peppermint	1
4	Betel	1
5	Turmeric	1
6	Calcium carbonate	12.5
7	Glycerine	2.5
8	Sodium lauryl sulfate	0.5
9	Tragacanth gum	0.25
10	Sodium chloride	0.25
11	Carboxy methyl cellulose	0.25
12	Distilled water	10-20

#### BENEFITS OF HERBAL TOOTHPASTE :-

- Safely cleans your teeth.
- Effectively makes your breath fresh.
- Reduces and prevents gum discomfort.
- Remove stains without damaging enamel
- It is safe for children.
- Calms throbbing pain in gums.
- Herbal Toothpaste is made from natural ingredients of Ayurvedic, natural oils, minerals, and herbal extracts.
- Regular use of Herbal Toothpaste helps with dental problems.
- No side effects of herbal toothpaste.
- It helps to prevent any dental disease.
- It cleans teeth
- It stimulates the air.
- Prevents gum disease.

#### IDEAL PROPERTIES OF TOOTHPASTE :-

- Strong abrasive action
- Non-toxic and non-irritating

- Leave no stains on the teeth.
- Maintain a healthy and clean mouth
- Long-lasting impact
- Accessible and affordable
- It should not be harmful to the oral tissue & fluid. It should not stain teeth.
- It should not be scratching to the enamel surface of tooth. If it is ingested, it should not be harmful to the G.I.T.
- It should have pleasant odour & taste. Shouldn't hurt the oral fluid and tissue.

#### **IV. CONCLUSION**

Every herbal toothpaste that is sold commercially, including those created in laboratories, was evaluated and contrasted with the Bureau of Indian Norms Standards. Specially formulated toothpaste includes antibacterial properties that help keep teeth and mouths clean and fight against bacteria like E. The developed herbal toothpaste has a promising future in research and dental care for the general population, society, and country by utilizing more natural ingredients to create safer and more effective natural medications. The created herbal toothpaste was found to be of high quality. Using the trituration process, a multi-herbal toothpaste comprising betel, turmeric, peppermint, clove, and neem was made.

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