



FORMULATION AND EVALUATION OF TOOTHPASTE WITH HERBAL INGREDIENT

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ABSTRACT:

The purpose of this study is to evaluate herbal toothpaste formulations for efficient oral hygiene. The formulated herbal toothpaste was compared with marketed preparation following Antimicrobial activity, Spreadability, Foamability, pH determination, % Moisture content. During our quality control test for optimized formulation results were observed good pH, good physical properties, good spreadability, good foamability and good moisture content. This herbal toothpaste plays an important role in maintaining oral hygiene and avoiding dental caries, and it is also safer to use.

KEYWORDS: herbal, toothpaste, oral, hygiene, spreadability, foamability, moisture, content, purpose

INTRODUCTION:

One of the most essential parts of oral health care is toothpaste made of herbs, which has been used for many years in ancient times. Between 300 and 500 BC, toothpaste formulations were first manufactured and developed in China and India. Smashed bone, ground egg, and clam shells were used as abrasives in dental cleaning during that time. The nineteenth century saw the development of contemporary toothpaste formulas. Chalk and soap were added to those compositions after advancements in the medical field. Sodium lauryl sulfate was employed as an emulsifying agent in a number of detergent formulation breakthroughs that started right after independence. Nowadays, the emphasis is more on the active compounds' release during formulation. advances in oral health disease prevention and/or treatment. A dentifrice called toothpaste is used to clean, preserve, and enhance the condition of teeth.^[1] Since these herbal remedies typically lessen the negative effects of conventional medications,

they are frequently chosen because of their perceived safety. These substitutes include herbal formulations and natural component dental solutions. Previous research has shown that mouthwashes and toothpaste with antimicrobial properties, as well as physical removal, are effective ways to manage dental plaque.^[2]



Fig: Toothpaste With Herbal Ingredient The following are the best attributes of toothpaste:

- A strong abrasive action.
- Non-allergic and non-toxic .
- Give teeth no discoloration.
- Long-term effects.
- Maintain oral health and hygiene.
- Accessible and reasonably priced.^[3]

toothpaste classification: toothpastes can be divided into nine main groups according to the needs and preferences of the patient, even if many toothpastes have a variety of components and additions that vary the dentist's recommendations for use. These wide toothpaste classifications are

- Cavity protection and caries prevention.
- Anti-tartar action (calculus formation reduction).
- Gingivitis decreases.
- Decreases in Plaque development.
- Remineralizing contains calcium, phosphate, and fluoride.
- The cosmetic benefit of toothpaste includes stain removal and tooth whitening.
- Multicare toothpastes reduce dental sensitivity.
- Natural toothpaste is made of natural ingredients.
- Toothpastes for xerostomi patients with dry mouth.^[4]

PERFECT CHARACTERISTICS:

- Effective abrasive action
- Non-irritating and non-toxic .
- Easy and affordable.
- Long-lasting results .
- Maintain a clean and fresh mouth.
- Give teeth no stains .^[5]

OBJECTIVE:

this study is to evaluate herbal toothpaste formulations for efficient oral hygiene. Specifically, natural substances that are traditionally used for dental care, such as neem leaves, babul leaves, akkarkara leaves, guava leaves, jamun seeds, vidanga, Vajradanti, and clove fruit, will be examined.^[6]

MATERIAL AND METHODS:

Clove and Black seed oil purchased from local market and powder of neem stem and bark prepared. Chemical reagents: All these chemicals are used in this study are sodium lauryl sulphate, calcium carbonate, sodium benzoate, sodium saccharin, glycerine and peppermint oil.^[7]

Methods:

The solid ingredients calcium carbonate, sodium lauryl sulphate, glycerine, sodium benzoate, sodium saccharine were weighed accurately as mentioned in the formula and sieved with sieve No.80 so as to maintain the particle size. These ingredients were also mixed in a mortar and pestle, then triturated with precisely weighed glycerine until a semisolid substance was created. Addition of herbal ingredients Accurately weighed herbal

extract in form of clove oil and black seed oil and neem powder were added to the base. At the end, peppermint oil was added as a flavour.^[7]

EVALUATION PARAMETER:

Physical Examination:

1. **Colour:** The colour of the toothpaste formulation was assessed. That toothpaste's colour was examined visually.
2. **Odour:** Any odor emanating from the product was detected.
3. **Taste:** To evaluate the flavor of the formulation, a physical taste was conducted.
4. **Smoothness:** The paste formulation's smoothness was assessed using it is rubbed between the fingers.
5. **Relative Density:** The weight in grammes used to calculate relative density RD bottle evaluation in 10 ml formulation and 10 ml distilled water.^[8]

Calculating PH

The formulation of the herbal toothpaste was tested using a pH metre. Ten grams of toothpaste were put into a 150 milliliter beaker. Before proceeding, let 10 milliliters of boiling water cool. cold water To establish a suspension, Stir quickly.

^[3] Homogeneity:

The commercial formulas and the lab scale create a consistent dispersion in the cream. Both touch and visual appearance supported this.^[9]

Foamability:

A small amount of the toothpaste formulation was combined with water in a measuring cylinder, the initial volume was documented, and the toothpaste was shaken ten times to assess its foamability. The total amount of foam was recorded.^[10,11]

Determination of sharp and edge abrasive particles :

Using the butter paper, select the content that is 15-20 cm long. Continue this method for at least ten collapsible tubes. Check for the presence of sharp, hard-edged abrasive particles by pressing the contents of the entire length with your fingertip. Such particles are not allowed in toothpaste.^[10]

Determination of moisture and volatile matter:

5 g of the formulation were put into a porcelain dish. The sample is dried at 105°C in an oven.

% by mass = $\frac{100(MI - M)}{M}$, MI-Mass loss (g) during drying M: The mass (g) of the test-related substance.^[12]

Determination of Viscosity:

By using a Brookfield Viscometer, the viscosity of formulation was determined using spindle number 4 at a 50 rpm at a temperature of 25°C.^[13]

Spreadability:

This method involves the slide and drag properties of paste. Put 2g of the prepared paste onto the ground slide that is being studied. For five minutes, the prepared paste was sandwiched between this slide and another glass slide to release air and create a consistent layer of paste between the slides. The excess paste around the margins was scraped off. The top plate was then pulled 80 grams using a thread that was fastened to the hook, and the amount of time (in seconds) needed for the top slide to travel 7.5 cm was recorded. A brief gap suggested improved spreading capacity.

Spread ability was computed using the formula $S = M \times L / T$.

In this case,

S= Spreadability

M is the pan's weight (attached to the upper slide).

L= Length moved by the glass slide

T=Time (sec) taken to separate the upper slide from the ground slide. ^[9]

No.1: Formulation of herbal toothpaste

Sr.No	Ingredients	F1	F2	F3	F4	Uses
1	Black seed oil	2	2	4	4	Anti-inflammatory
2	Neem stem and bark powder	0.5	0.5	1	1	Anti- bacterial
3	Clove oil	1.5	1.5	3	3	Anti- bacterial
4	Sodium lauryl sulphate (gm)	1.5	1.5	1.5	1.5	Detergent & foamingagent
5	Sodium benzoate (gm)	0.5	0.5	0.5	0.5	Preservative
6	Sodium saccharin (gm)	1	1	1	1	sweetening agent
7	Glycerin (ml)	10	10	10	10	Humectant
8	Calcium carbonate (ml)	5	5	5	5	Abrasive agent
9	Peppermint oil (ml)	q.s	q.s	q.s	q.s	flavoring agent

Comparison: Formulated herbal toothpaste with marketed preparation:

The formulated herbal toothpaste was compared with marketed preparation follows Antimicrobial activity, Spreadability, Foamability, pH determination, % Moisture content^[9].

RESULT:

Table No.2: Quality control test for formulation

Sr.No.	Parameters	Results
1	Color	Half white
2	Odour	Pleasant
3	Taste	Sweet

4	Abrasiveness	Good abrasive
5	Foamability	Good
6	Moisture content	14 %
7	Spread ability	Easily spreadable

CONCLUSION:

The following conclusion can be derived from the findings of this inquiry. This herbal toothpaste plays an important role in maintaining oral hygiene and avoiding dental caries, and it is also safer to use. In formulation of herbal tooth paste different ingredients are used such as clove oil and neem powder to inhibit bacterial growth and black seed oil to reduce inflammation respectively. During our quality control test for optimized formulation results were observed good pH, good physical properties, good spreadability, good foamability and good moisture content.

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