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Innovative herbal formulations in dental care: Evaluation of natural dentifrices

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Abstract

The major Target of the research is to formulation and evaluation of herbal toothpaste. Toothpaste is typically used product with the aid of using all individuals. Toothpaste is normally used for cleansing of tooth enamel and mouth. It is likewise used to deal with many problems of enamel. Many dental specialists propose to apply toothpaste to deal with disease like sensitivity, Chronic gingivitis etc. Herbal formulation of toothpastes is by prepared using herbs like Neem leaves, Mentha leaves, Babul leaves, Clove oil, Turmeric.

These herbal toothpastes are evaluated by different testing like Physical Examination, pH determination, Homogeneity. Sharp and edge abrasive particles. Determination of moisture and volatile matter. Spreadability, Stability study, Extrudability etc.

The aim of this review is to formulate herbal toothpaste that good for oral hygiene & gum bleeding.

Keywords: Herbal toothpaste, oral hygiene, neem, babul leaves, guava leaves

Introduction

Cosmetics are a category of health and beauty products that are used to care for the face and body, or used to accentuated or change a person's appearance^[1]. The history of cosmetics is present for at least 7,000 years and is present in almost every society around the global. In spite of the global economic recession above 350 billion rupees was registered by the cosmetics industries of India in 2009. Cosmetics are not only working to modify appearance of an individual, but are also used for care of skin and body, besides to add fragrance to that person. Although, cosmetics are known for skin and body care, there are various types of cosmetics with specific and important purpose. Most people use cosmetics because it is safe, but adverse reactions occur in many cosmetics such as: deodorants, hair sprays, eye cream, hair color, toothpaste^[3].

Classification

1. **Aerosols:** Perfume, Hair set etc.
2. **Emulsion:** cold cream vanishing cream.
3. **Jellies:** Hand jelly, Brilliantine jelly.
4. **Paste:** Toothpaste paste, deodorants paste
5. **Oils:** hair oil etc.
6. **Powders:** face powder, tooth powder.

Properties of Cosmetics

1. Cleans, beautifies and alters the appearance.
2. Stops the development of bad odor.
3. It does not have any medicinal effect on the body^[2].

Drug and Cosmetic Act 1940 and 1945

Import, manufacture, sale or distributions of cosmetics were not being regulated in India prior to 1962. In the early sixties, it became necessary to regulate import, manufacturing and sale distribution of cosmetics due to prevalence of misbranded or spurious cosmetics.

Cosmetic was brought within the Scope of the Drugs Act and the name of the Act was changed to the Drugs & Cosmetics Act, 1940. The Drugs and Cosmetics Act, 1940 is an act of the Parliament of India Which regulates the buy in, manufacture and distribution of drugs in India. The primary goal of the act is to ensure that the drugs and cosmetics sold in India are safe, effective and conform to state quality standards. Under the Act, Cosmetic has been defined as, "Cosmetic" means any article intended to be rubbed, poured, sprinkled or sprayed on, or introduced into, or otherwise applied to, the human body or any part thereof for cleansing, beautifying, promoting attractiveness, or altering the appearance and includes any article intended for use as a component of cosmetic [3].



Fig 1: Harba Toothpaste

Herbal Toothpaste

Herbal-based toothpaste has been used since early times in ancient life and is one of the most important parts of oral health care. The manufacturing and development of toothpaste production began in China and India, from 300-500 BC. At that time, crushed bone crushed eggs, and mussel shells were used as abrasives as part of tooth cleaning. Modern toothbrushes were developed in the 19th century. After advances in medicine, chalk and soap were added to these forms. Soon after independence, several developments in the formulation of various solvents had begun, sodium lauryl sulfate was used as an emulsifying agent. At present, the focus has shifted to the release of active ingredients during the development of the formulation to prevent and/or treatment oral disease [4].

Ayurvedic Concept of Teeth

The dentist was not a special branch of Ayurveda, added in the Shalakyana Tantra (surgical program). In Ayurveda, dental health (dantaswasthya in Sanskrit) is considered an individual choice, differing in the individual constitution (prakriti), and climate variation caused by the effects of the sun, moon and planet (kala-parinama). The constitution of the body is divided based on the assembly of one or more doshas of three, vata, pitta and kapha. Dosha dominance in the individual and the environment determines health care in Ayurveda, which include dental health [5].



Fig 2: Benefits of. Toothpaste

Babul

The importance of Acacia plants in animal nutrition and in the prevention and Treatment of human and animal diseases has been recognized for centuries. Babul extract, Obtained from *Acacia nilotica* (also known as gum Arabica tree), is very rich in secondary Metabolites such as tannins, flavonoids, alkaloids, terpenes, fatty acids, etc. These Compounds exert antioxidative, anti-inflammatory, anthelmintic, antidiarrheal, Antispasmodic, antihypertensive, antibacterial, antifungal, antidiabetic, antiplatelet Aggregators, antiplasmodial, antimutagenic, anticancer, acetylcholinesterase-inhibiting, Diuretic, antipyretic, analgesic, and many other effects. This chapter describes various aspects of babul with special emphasis on its nutritional value and applications in prevention and Treatment of diseases in animals [6].

Scope of the work

The Major goal of toothpaste is to reduce oral bacterial flora and deliver fluoride to the teeth. This is since fluoride has been proven to protect teeth against attack from bacteria and can be found naturally in many everyday things including food and drinking water. Toothpaste that efficiently decrease oral bacterial flora should contribute to dental health. Triclosan is commonly used in gum. It is a ingredients used to avert gum disease because of its antibacterial properties. The active substances sodium fluoride is also known to have antibacterial properties [28]. They can ensure that their wards have regularly examine or cleaning their teeth regularly. Good edible toothpastes have the same constitutes as the herbal ones. Children are always attack by food and drink. To keep their teeth in top condition, we need to follow strict oral hygiene with the help of an safe to eat toothpaste or herbal toothpaste [7].

Benefits of Applying Herbal Toothpaste

- It helps to prevent any dental disease.
- It cleans teeth.
- 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 [8].

The major goal of the research is to formulation and evaluation of herbal toothpaste. Toothpaste is typically used products using all individuals. They are normally used for cleaning of enamel and mouth it is likewise used to deal with many issues of enamel many dentists propose to apply Toothpaste to deal with disease like sensitivity, chronic gingivitis etc. [9].

Aim

Formulation and evaluation of herbal toothpaste.

Objective

1. Helps to remove bacteria in mouth.
2. Fights off periodontal (gum) disease
3. Reduces tooth sensitivity.
4. Helps to prevent cavities in the tooth.

Ideal Properties of Toothpaste

- Good abrasive effect
- Nonirritant and non-toxic
- Impart no stain in tooth
- Keep the mouth fresh and clean

Table 1: Formulation of Herbal Toothpastes [10].

Sr. No.	Ingredients	Quantity
1	Babul	10 gm
2	Neem	4 gm
3	Mentha	4 gm
4	Gauva	4 gm
5	Turmeric	2 gm
6	Cinnamon	1.5 gm
7	Clove oil	3-4drop
8	Calcium carbonate	1 gm
9	Glycerine	1.5
10	Sodium lauryl Sulphate	2 gm
11	Honey	2 ml
12	Water	Q.S



Fig 3: Ingredients of Herbal Toothpaste

Making of herbal powder

- First wash the neem leaves, babul leaves and black pepper with water.
- After the washing of dry the herbs in the shade presence of sunlight for 2 or 3 days
- When the herbs are dried then they are grinding in a grinding machine separately
- The grinding of herbs should be fine in size making Of herbal Powder
- Then the obtain powder is pass through the 80.no sieve
- The store in tightly close container [11].

Method of formulation

1. The solid ingredients calcium carbonate and sodium benzoate were weighed accurately as mentioned in the formula and sieved with sieve no.80 to maintain the particle size.
2. These ingredients were also mixed in a mortar and pestle, and then triturated with precisely weighed glycerine until a semisolid substance was created.
3. Addition of herbal ingredients- Babul, Mentha, Neem, Gauva, Turmeric, cinnamon.
4. Accurately weighed herbal extract in form of oil were added to the base.
5. At the end, distilled water, glycerine, clove oil was added as a flavouring agent [12].

Evaluation Test of Toothpaste

Physical Examination of herbal toothpaste

1. **Color:** The formulation toothpaste was examine for its color and checked color visually
2. **Odor:** The odor was checked by smelling the product.
3. **Smoothness:** The Smoothness was tested by rubbing the formulation paste between the
4. Fingers
5. **Taste:** Taste was checked manually by tasting the formulation ^[13].

Abrasiveness

Extrude the content 15-20 cm long on the butter paper; repeat the same procedure for at least ten collapsible tubes. Press with the contents of the entire length with fingertips for the Presences of sharp and hard edged abrasives particles. Toothpaste do not contain such Particles ^[14].

Uniformity

The toothpaste shall extrude a similar mass from the collapsible tube or any appropriate container by applying of normal force at 27+20C. In addition size of contents shall extrude from the fold of container and then rolled it gradually.

Formability

The foaming power (Formability) of herbal toothpaste was determined by taking 2gm of toothpaste with 5ml water in measuring cylinder primary volume was noted and then shaken for 10 times. Final volume of foaming was noted

pH

PH of formulation herbal toothpaste was determined by using pH meter. 10g of toothpaste situated in 150ml of beaker. Allow the 10ml of boiled then to cooled water. Stirring vigorously to make a suspension ^[15].

Moisture contents

Toothpaste (10 gm) weight in a Porcelain dish and dried it in the oven at 105 o C. It was cooled in dry. The loss of weight is recorded as per cent moisture content and calculates by the given formulas. Moisture Original sample weight dry sample weight Original sample weight ^[16].

Result and Discussion

Neem leaves, Guava leaves, cinnamon bark, natural ingredients and small amount of synthetic ingredients. At the two phase of formulation two batches were performed due to the problem like homogeneity, spread ability, and foam ability the two batches discarded permanently and only single batch was selected for next steps. The formulated herbal toothpaste greenish brown in color and showed the good homogeneity with absence of lumps and good antimicrobial activity. Formulated herbal toothpaste evaluations tests were carried out to compare dissimilar properties of formulation herbal and marketed toothpastes. All the results of evaluating parameters were given in tables. In the present study, comparatively same and little better result have been observe with the formulated herbal toothpaste than the marketed herbal toothpastes.

Physical Examination

1. Color – greenish – brown
2. Order – Characteristics I
3. Test – Characteristics
4. Smoothness. – Smooth
5. Appearance – Homogeneous
6. Texture – Smooth

Evaluation Results

1. **Ph:** 7.8
2. **Moisture contents:** 16.5%
3. **Fomability:** Good
4. **Abrasiveness:** Good Abresive
5. **Uniformity:** Good

Conclusions

It concluded that Herbal toothpaste an emphasizing and more acceptable in dental research and they are safer with minimum side effect than synthetic preparation. The formulated toothpaste capable to the tooth and oral hygiene and show the anti-microbial activity against pathogen.. The formulation compared with retail preparation. Therefore it shows the equal patronizing and engrossing passion over the marketed formulations (Colgate, Dabour Red, and Dantakanti). Herbal toothpastes have an emphasized role in maintain the oral hygienic nature as well as preventing dental cares. The formulated polyherbal toothpaste was successfully assessment using different standard parameters. The formulated toothpaste may be safer compared to artificial toothpaste. Advance studies are warranted to prove safety and efficacy of the formulated toothpaste.

The fomulated herbal toothpaste has been good scope in future in nature remedies research Dental health of public.

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