Research Article

PREPARATION AND EVALUATION OF HERBAL DENTIFRICE

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ABSTRACT

Dentifrices are the products which are used to maintain the oral hygiene such as freshness of mouth and to avoid tooth decay. The oral hygiene can be maintained throughout the day by using various dentifrices prepared by herbal and synthetic ingredients. This work was carried out to prepare a tooth paste which can be used as a tool for proper oral hygiene and to overcome the side effects of the conventional toothpaste prepared by synthetic ingredients. The toothpaste was prepared by using various herbal ingredients which possess the antibacterial, antiseptic and cooling properties. Clove, Ginger, Neem, Banyan, Tulsi and Acacia are the herbal ingredients were used in this work to formulate ideal toothpaste which can satisfy all the required properties to keep the mouth fresh and to prevent tooth decay caused by bacteria. The prepared toothpaste was evaluated for its organoleptic and physical characteristics such as colour, odour, taste, stability, foamability and abrasiveness to ensure that it possesses all the desired features to use against the dental diseases. The result was found to be within the permitted limits.

Key words: Oral hygiene, Herbal ingredients, Anti bacterial effect

INTRODUCTION

Oral hygiene is an important key to maintain good appearance, impression of an individual and gives confidence. The tooth consists of two parts, crown and the root. The crown of the tooth is covered by outer surface called enamel and it is the hardest tissue in the tooth. The major composition of enamel is hydroxylapatite other than that it consists of water and keratin¹. Dentine is the beneath part of the enamel, which is a composite of hydroxylapatite. It also consists of 70% of the collagen water. Fluorine is the major component of dentine. Oral consists of not only tooth but also saliva for easy to swallow the food. Saliva is the major element which intended for lubricating the food and to maintain proper environment in the mouth. Saliva is produced by various glands such as Labial, lingual, buccal and palatal are the larger and smaller glands which produce saliva continuously to keep the tooth environment in the dynamic state². Proteins, enzymes, bacteria and mucco polysaccharide are present in the saliva and the inorganic materials like calcium, sodium, potassium, chloride, phosphate ions etc.

The plaque, calculus, periodontal diseases are the major issues related to tooth. It is mainly caused by bacterial action and mineralized deposition leads to calculus. These diseases are mainly due to the negligence in proper caring of tooth, so it can be prevented and controlled by proper brushing by using effective toothpastes and tooth powders³.

Dentifrice can be used as prophylactic cosmetic for tooth to prevent tooth decay and bad breath. Dentifrice can be prepared by synthetic

and herbal ingredients now a days herbal formulation are high in demand due to its efficiency to avoid the side effects when compared with synthetic formulations. Tooth paste and tooth powders are based on its abrasive property, the paste and powder applied on the tooth to rub against the tooth which helps to remove the deposited food debris and minerals from tooth⁴.

The herbal dentifrices are available in different formulations such as toothpaste, tooth powder, mouthwashes etc. Plaques can be removed by effective toothpaste and toothpowder due to the presences of ingredients which possess the antibacterial, antiseptic property and it also gives fresh and cool feeling. The toothpaste is mainly composite⁵ of abrasive agents (eg: calcium phosphates, calcium carbonate etc); detergents (eg: sodium lauryl sulphate, sodium ricinoleole, sodium sulphoricinoleole); humectants (eg: propylene glycol); gelling agents (eg:gum tragacanth, carraghen) which is used to maintain the stability, dispersability, foam properties. Other ingredients such as sweetening agents, preservatives, colours also used in the formulation, water is used as vehicle.

Ideal properties⁶

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

Formulation of herbal dentifrice**Table 1: Formulation of herbal dentifrice**

S.no	Common name	Botanical name	Parts used	Category	Quantity (%)
1	Neem	<i>Azadirachta indica</i>	Leaves	Antibacterial	3.0
2	Clove	<i>Eugenia caryophyllata</i>	Fruits	Antibacterial	5.0
3	Ginger	<i>Zingiber officinale</i>	Root	Antiseptic	5.0
4	Tulsi	<i>Ocimum sanctum</i>	Leaves	Prevents bad breath	5.0
5	Banyan	<i>Ficus bengalensis</i>	Bark	Prevents tooth ache	5.0
6	Calcium carbonate	-	-	Abrasive	5.0
7	Acacia	-	-	Prevention and treatment of gingivitis	3.0
8	Sodium lauryl sulphate	-	-	Detergent	2.5
9	Glycerine	-	-	Humectant	3.0
10	Saccharin sodium	-	-	Sweetening agent	1
11	Para hydroxyl benzoic acid	-	-	Preservative	0.5
12	Amaranth	-	-	Colouring agent	0.1
13	Water	-	-	Vehicle	Q.S

MATERIALS AND METHODS

Herbal tooth paste was prepared using clove, tulsi, banyan, acacia, calcium phosphate, and sodium lauryl sulphate. Neem leaf and fruit of clove possesses the antibacterial activity, Ginger gives antiseptic property and bad breath of mouth is prevented by tulsi. Banyan is used against toothache. Sodium lauryl sulphate used gives foaming, Para hydroxy benzoic acid to preserve the product, Acacia to prevent gingivitis and also acts as gelling agent. Saccharin sodium acts as sweetening agent; amaranth is used as colourant and water as vehicle.

All the herbal ingredients were dried and grounded using domestic mixer. The required quantities of the ingredients were weighed and taken in mortar. Calcium carbonate, sodium lauryl sulphate, glycerine and saccharin sodium were mixed in water. Para hydroxy benzoic acid and acacia were added into the above mixture. This solution was added drop wise into mortar containing herbal ingredients and triturated well until a paste consistency is formed.

Evaluation⁷**Colour:**

The prepared toothpaste was evaluated for its colour. The colour was checked visually.

Odour:

Odour was found by smelling the product.

Taste:

Taste was checked manually by tasting the product.

Stability:

The product was maintained in different temperature conditions to check its stability.

Spreadability:

Spreadability was evaluated by spreading the paste manually.

Abrasiveness:

It was evaluated manually.

Foamability:

The foamability of the product was evaluated by taking small amount of preparation with water in a measuring cylinder initial volume was noted and then shaken for 10 times. Final volume of foam was noted.

Usage

Sufficient quantity should be applied with tooth brush and to be used twice daily early in the morning and before going to bed or as advised by the dentist for best result.

It is useful against bacterial infections and to maintain freshness of mouth.

RESULTS AND DISCUSSION**Table 2: Evaluation of Herbal Dentifrice**

S.No	Parameters	Observations
1	Colour	Pink
2	Odour	Characteristic
3	Taste	Sweet
4	Stability	Stable
5	Spreadability	Easily spreadable
6	Abrasiveness	Good abrasive
7	Foamability	Good

CONCLUSION

The ingredients used in the present work, was screened and selected to possess antibacterial effect and to maintain oral hygiene as it can be claimed by its results as effective toothpaste. Any herbal toothpaste is considered safe to use 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 pastes.

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