

Formulation And Evaluation Of Herbal Toothpaste

Pratik .Y. Pratale*, Prof. Chopde.B.L, Dr. Megha T. Salve

Department of Bachelor in Pharmacy

Shivajirao Pawar College of Pharmacy, Pachegaon, Ahilyanagar-413725.

Email ID- pratikpratale@gmail.com

*Corresponding Author- Pratik. Y. Pratale.

ABSTRACT

The aimed of current research to formulate herbal toothpaste utilizing plant extract like Neem leaves, Guava leaves, Cinnamon bark other ingredient are Camphor, Honey. The plant extract ingredient posses the anti-bacterial. The herbal toothpaste formulated which can satisfy all the required condition to keep the mouth fresh and prevent tooth decay by bacteria. The formulated herbal toothpaste compared with marketed preparation. Physical examination: Colour-greenish brown, smooth in nature, relative density-10.2, pH-8.2, spreadability- Good and stable formulation. The anti-microbial evaluation against Staphylococcus aureus reveal that formulated herbal tooth paste exhibited notable activity with ZOI of 19.7. It has been good scope in future dental research and detal health of public.

Keywords:

Herbal ingredient, toothpaste, anti-ulcer, antibacterial, dental, Comparative study.

INTRODUCTION

Population of India is increasing daily. As the population is increasing needs of population is also increasing and this is affecting on health of peoples. In rural India 75% population is living and majorly elder peoples are depending on others. Because of this health issues are increasing as the factors like the size of population, high no. of aging ones, inadequate income, lack of health education, short supply of quality health needs are distressing on goal of medical team of healthy society

In these affliction situation herbal drugs plays important role due to absence of side effects, easy availability, high ability of cure and more importantly it is low cost. Dental hygiene is one of the important aspect of healthy individual. Maintenance of dental hygiene is poor in elder peoples due to lack of awareness and economical dependency of elder ones. To avoid dental problems many chemical denture cleansers are used, but it has its own side effects and it is costlier in comparison to herbal drugs with lack side effects and high cost. Artificial replacement of one or more teeth with dental structure is called dental prosthesis. If don't take proper care of tooth it gives serious health issues. There are no of microorganisms present in oral cavity but Candida albican is of the most one. Intensity of candida albican presence is more in patients who have replaceable dental prosthesis. Many marketed antimicrobials present in market but chlorhexidine gluconate is a gold standard drug because of its prolonged broad spectrum of activity and plaque removing ability, but it has its own side effects and it is economical in comparison to herbal drugs with lack side effects and cost effective.

The aim of study was to formulate herbal base product was compare the efficacy with conventionally marketed formulated toothpaste and evaluated the various parameter like colour, spreadability, foamability, extrudability and anti-bacterial activity. However, there is approach to provide the formulation for commercial production of herbal dental product with environmental friendly attributes.

Advantages of toothpaste

1. Delivers active ingredients such as fluoride or xylitol to help prevent tooth and gum disease.
2. Recent advances in toothpaste enable high efficacy of oral health delivery:
 - Special toothpaste for kids with fluoride and relatively low abrasion value
 - Desensitizing toothpaste
 - Whitening toothpaste
3. Easy to use, available in collapsible tubes.
4. Combination of various contents available as to combat different oral healthcare needs at once.

DENTAL ORAL DISEASES

Dental and oral health is a crucial part of our health. Less dental hygiene can lead to dental caries and gum disease and also connected to heart disease, cancer and diabetes. Maintaining healthy teeth and gums is long term constancy. Proper oral hygiene habits are brushing, flossing. limit on sugar intake. These habits are helpful to avoid costly dental procedures and lifelong health issues.

Symptoms of dental and oral problems:

- 1) Ulcers sores, or tender areas in mouth
- 2) Bleeding or swollen gums
- 3) Chronic bad breath
- 4) Sensitivity
- 5) Loose teeth
- 6) Gums
- 7) Pain or toothache
- 8) Pain with chewing or biting
- 9) Swelling of face and Cheek
- 10) Cracked or broken teeth.

MATERIALS AND METHODS

Materials and ingredients –

- Herbal-
 1. Neem leaves powder
 2. Guava leaves powder
 3. Kalmi bark powder (cinnamon bark)
 4. Babul leaves powder

Collection

The following ingredient Neem, Gauva, Babul and Kalmi were collected from the plant present at medicinal garden campus of the shivajirao pawar College of Pharmacy situated in the Pachegaon area of Newasa, Ahamednagar city in Maharashtra state of India.

Preparation- All herbal ingredient were dried and grounded using domestic mixer.

Physical examination of herbal ingredients

1)Neem powder- the physical parameters of neem powder were evaluated. It occurs as greenish in colour. It has extremely bitter taste.

2)Guava powder- The physical parameter of guava powder were evaluated.It occurs as dark green colour. It is slightly bitter in taste. Aromatic in odour.

3)Kalmi bark- The physical parameter of guava powder were evaluated.It is brown in colour. It is slightly sweet and spicy in taste. Aromatic in odour.

4)Babul leaves powder – The physical parameter of guava powder were evaluated. It is green in colour. It is bitter and astringent in taste. Fabales in odour.

- Chemicals –
 1. Calcium carbonate,
 2. Para hydroxyl benzoic acid
 3. Sodium lauryl sulfate
 4. Sodium chloride
 5. Camphor
 6. Honey

1) calcium carbonate-

Calcium carbonate is essential ingredient in the preparation of natural toothpaste. Its very gentle abrasive action gently polishes tooth enamel without damaging it.

2) parahydroxy benzoic

parahydroxy benzoic acid are an important class of preservatives extensively used in toothpaste.

3) Sodium lauryl sulfate

Sodium lauryl sulfate is one of the most widely used synthetic detergents in toothpaste.

4) Sodium chloride

Sodium chloride A key ingredient in salt toothpaste in sodium chloride the salt works as gentle abrasive, helping to remove stains in the teeth.

5) Camphor

Camphor its antiseptic properties help relieve toothache and freshen breath.

6) Honey

Honey is antibacterial properties flush out harmful bacteria.

FORMULATION

All herbal ingredient were dried and grounded using domestic mixer. The required quantity of ingredients were weighed and taken in mortar. Calcium carbonate, Sodium lauryl sulfate, methyl cellulose, honey and glycerine were mixed in water. 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 Table 1 and 2 shows plant extracts and composition of chemicals.

Sr.no	Ingredient	Quantity (g)
1.	Kalmi bark powder(cinnamon)	0.5
2.	Guava leaves powder	0.5
3..	Babul leaves powder	0.5
4	Neem powder	0.5

Table no:1 Herbal ingredient

Sr.no	Ingredient	Quantity (g)
1.	Camphor	0.5
2.	Honey	0.5
3.	Calcium carbonate	3.5
4.	Glycerine	2.0
5.	Para hydroxyl benzoic acid	0.3
6.	Sodium lauryl sulfate	0.5
7.	Sodium chloride	0.2
8.	Distilled water	q.s

Table No:2 Chemical ingredient**RESULTS AND DISCUSSION**

The herbal tooth paste formulation was prepared from Neem leaves, Guava leaves, cinnamon bark, natural ingredient and small amount of synthetic ingredient. At the trial phase of formulation three batches were performed due to the problem like homogeneity, spreadability, and foamability the two batch discarded permentaly and only single batch was selected for next steps. The formulated herbal toothpaste greenish brown in colour and showed the good homogeneity with absence of lumps and good anti-microbial activity.

Physical Examination

The physical parameter of herbal toothpaste were evaluated.
 It occurs as brownish in green in colour.
 It has characteristic in odour.
 It has bitter taste & slightly bitter in taste.



Fig.5 herbal toothpaste formulation

Sr.no	Parameter	Observation
1	Colour	Greenish brown
2	Odour	Characteristics
3	Taste	Characteristics
4	Smoothness	Smooth
5	Relative density	10.2

Table No: 3 physical Examination

Evaluation results

Sr.no	Parameters	Observations
1	pH	8.2
2	Homogeneity	Good
3	Abrasiveness	Good abrasive
4	Foamability	10(Good)
5	Moisture content	13
6	Spreadability	3.5 cm/sec(Good)
7	Stability	stable

Table no: 4 Evaluation result

STABILITY**At 25°C 2°C / 60% ± 5% RH (3 month):**

Colour	Appearance	Spreadability	pH
Greenish brown	Homogeneous	3.5	8.2

At 30°C± 2°C / 65% ± 5% RH (3 month):

Colour	Appearance	Spreadability	pH
Greenish brown	homogeneous	3.45	7.95

At 40°C± 2°C/75% ± 5% RH (3 month):

Colour	Appearance	Spreadability	pH
Greenishbrown	Homogeneous	3.0	7.50

{The stability study was indicated that the formulated toothpaste was good stability}

Table:6 Stability result**Anti-microbial activity**

The formulated herbal toothpaste exhibited fairly good anti-S. aureus activity as compared to the standard drug ciprofloxacin. The formulation exhibited an impressive ZOI of 19.7 mm, whereas ciprofloxacin exhibited 24.5 mm. Therefore it may be concluded that formulated tooth paste have potential to exhibit anti-microbial activity.

CONCLUSION

The research 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 tooth paste capable to the tooth and oral hygiene and show the anti-microbial activity against pathogen. The formulated herbal toothpaste has been good scope in future in nature remedies research and Dental health of public.

REFERENCE

- 1) Formulation and evaluation of guava leaf extract gel for mouth ulcer management [0000-0002-1941-6044] Vrushali Patil
- 2) Formulation and Evaluation Study on Herbal Toothpaste : A Review Nikita M. Rathi, Shital V. Sirsat, Sanket S. Toshniwal, Nikita T. Zagare, Shaikh Fazil Shaikh Mahamad.
- 3) Formulation and Evaluation of Herbal Toothpaste: Compared With Marketed Preparation Pavan Deshmukh, Roshan Telrandhe*, Mahendra Gunde
- 4) Pavan deshmukh, Roshan telrandhe. Mahendra Gunde

<https://www.google.com/url?sa=t&source=web&rct=j&url=https://www>
w

- 5) <https://www.webmd.com/oral-health/ss/slideshow-tooth-problems>
- 6) Kokate C K, Purohit A P, pharmacognosy 4th edn, Nirali Prakashan ; 11 :81-94.c
- 7) George J, Hegde S, KS R, Kumar A. The efficacy of a herbal-based toothpaste in the control of plaque and gingivitis: A clinic- -biochemical study. Indian J Dent Res. 2009;20(4): 480-482.
- 8) Telrandhe R, Mahapatra D K, Kamble M A. Bombax ceiba thorn extract mediated synthesis of silver nanoparticles: Evaluation of anti staphylococcus aureus activity. Int J Pharm Drug Analysis. 2017;5(9): 376-379.
- 9) Singh K, Singh P, Oberoi G. Comparative studies between herbal toothpaste (dantkanti) and non-herbal tooth paste. Int J Dent Res. 2016;4(2): 53-56.
- 10) Effects of Cinnamon (*Cinnamomum* spp.) in Dentistry: A Review
- 11) Effect Of Herbal Toothpaste Containing Neem Leaves Extract (*Azadirachta Indica*) Against Gingivitis: A Clinical Study Ac Amelia Priscilla Sugiarta, Robert Lessang", Natalina.
- 12) <https://www.webmd.com/oral-health/ss/slideshow-tooth-problems>.

