WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

FORMULATION AND EVALUATION OF HERBAL TOOTHPASTE

[1)] RAHUL YADAV, [2)] SAKSHI PATIL,[3)] KSHITIJ SAGAR,[4)] SURAJ SAHANI, [5] Ms. PRATIMA BISEN

210000000318
UNDER THE SUPERVISION OF[5]
PROFESSOR CHATTRAPATI SHIVAJI MAHARAJ UNIVERSITY, C.S.M.U ,PANVEL

ABSTRACT

The main goal of this research is to prepare a herbal toothpaste derived from natural constituents .inevery day life, the teeth is frequently in contact with germs, bacteria, and other pollutants. The safety, effectiveness and lack of adverse effect of herbal skin care products have lead to their increasing popularity.

The work is to prepare herbal toothpaste and certain laboratory test are done like Ph test, viscosity test, determination of abrasive particle foamability. In herbal toothpaste natural ingredients are used like neem leaves ,guava leaves. Herbal toothpaste are safer than synthetic toothpaste. The main ingredient of the herbal toothpaste are active charcoal ,beeda, neem leaves, camphor, guava leaves , menthol, clove oil calcium carbonate, glycerine, sodium lauryl, methylparaben, sodium chloride, distilled water,

The plant extract ingredients have the antibacterial effect. The herbal toothpaste formulated which can satisfy all the required conditions to keep the mouth fresh and prevent tooth decay by bacteria.

Key words: tooth decay, ingredients of herbal tooth paste, natural ingredients

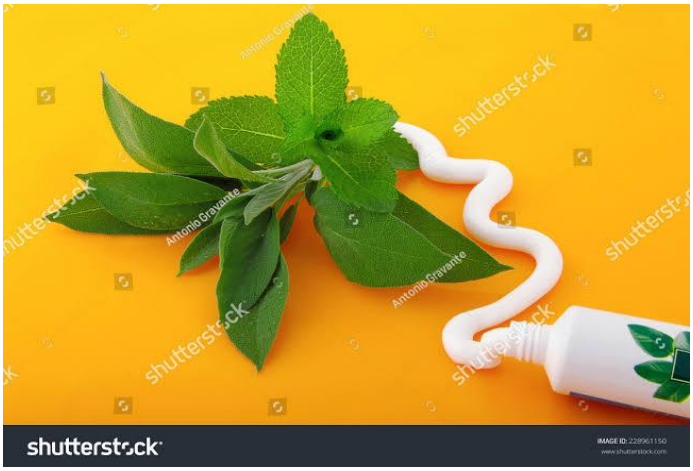
INTRODUCTION OF HERBAL TOOTHPASTE

HERBAL TOOTHPASTE :

From prehistoric times up to now, toothpaste has been very popular. 75 % of Indians have oral health issues. Most of Indian people need oral health care. The chemical-made toothpaste may be harmful. The chemical may harm our tooth. The design of toothpaste formulation began in china and India, 300 to 500bc during that period, squeezed bones, crushed egg and clam shells were employed as aggressive in tooth cleaning. Modern toothpaste formulations were created in 19 century. An excellent dental care formulation containing neem toothpaste protects against plaque, dental caries, and tooth decay thanks to the goodness of new neem and strong oral care herbs. It is strongly suggested for daily use since se prevents gingivitis, poor breath, and dental sensitivity. Time-tested and scientifically proven herb neem is well known for its anti microbial, anti inflammatory, relaxing and healing properties which are very therapeutic for oral health and hygiene. It has been found to be as effective as sodium hypochlorite, a widely used microbial in dental preparation. It helps to treat plaque-induced gingivitis. This herbal dental care composition is 100% safe and effective, maintaining dental hygiene, heals oral ulcers, strengthens the gums, brightens the teeth, and gives fresh breath. One of the most significant components of dental care, herbal toothpaste has been used since antiquity in ancient civilizations. From 300 to 500 BC, China and India started to manufacture and develop toothpaste, using crushed bones, crushed eggs, and mussel shells as abrasive agents in tooth cleaning. Developed in the 19th century, contemporary toothbrushes had chalk and soap added to them after medical breakthroughs. Soon after independence, many changes in the composition of different solvents had started; sodium lauryl sulfate was used as an emulsifying agent. Nowadays, the emphasis is on the release of active ingredients during the formulation's development to help prevent and / or treat oral disease.

Ayurvedic Concept of Teeth:

In Ayurveda, dantaswasthya in Sanskrit—that is, dental health—is regarded as a personal choice, varying with the individual constitution (prakriti) and climate change caused by the impacts of the sun, moon and planet (kalaparinama). The body's constitution is split according to the gathering of one or more doshas of three: vata, pitta and kapha. In Ayurveda, which covers dental health, dosha dominance in the person and the environment defines health care.Ben



Advantages of herbal toothpaste: Natural components: Avoiding synthetic chemicals, it employs plant-based substances including neem, aloe vera, tea tree oil that are mild on the teeth and gums.

• Anti-inflammatory characteristics: Herbal toothpaste usually includes components with inherent anti-inflammatory benefits that soothe irritated gums. Natural antibacterial properties of herbs like neem and clove help to minimize plaque, combat halitosis, and support oral hygiene. Sensitivity reduction: Certain herbs, like clove, are known to help with tooth sensitivity and provide relief from discomfort.

Herbal toothpastes often have a gentler abrasive action than some commercial brands, therefore lowering the risk of enamel erosion.

Drawbacks of herbal toothpaste: Limited fluoride content: Many herbal toothpaste products lack fluoride, which is vital to stop tooth decay and strengthen enamel.

Irritation: Some herbal compounds, like tea tree oil or peppermint, could induce allergic responses or irritation in susceptible people.

- Efficiency: Compared to traditional toothpastes containing active components, herbal toothpastes could not be as successful in tartar control, brightening, or antibacterial capabilities. Some people may find the taste and texture of herbal toothpaste less enticing as it might lack the foamy action or minty freshness present in conventional toothpaste

LITERATURE REIVEW

Formulational and Evaluation Study of Herbal Toothpaste: Shital V. Sirsat, Sanket S. Toshniwal, Nikita T. Zagare, Shaikh Fazil ShaikhMahamad, Nikita M. Rathi

All people use toothpaste frequently. Usually used to clean mouths and teeth, toothpaste. It is also applied in the treatment of several dental ailments. Many dentists advise using toothpaste to cure illnesses including sensitivity, Chronic gingivitis, etc. Herbal toothpastes can be made from several herbal extracts of several crude medicines with antibacterial and antifungal properties. Herbal formulations of toothpastes are made using herbs such ginger, Cassia simmia, Celastrus paniculata, Vateria indica extracts, Babul leaves extract, ginger extract, lemon oil extract, neem stem and bark, Babul leaves, gauva leaves, Kalmi bark etc**.**

2. Formulation development and evaluation of new herbal toothpaste from natural sources: K.L. Senthilkumar1,*, S. Venkateswaran.1, A. Vasanthan1, P. Chiranjeevi1,N Mohamed1, S. Dinesh1, K.L.S. Neshkumar.2

Herbal toothpaste including natural components is more acceptable in popular opinion than chemical-based synthetic compounds in the present oral dentistry scene because of their safety and efficacy in minimizing dental caries and preventing other dental conditions to which this generation is inclined. Aloe Vera gel, clove oil, Neem powder, and pomegranate peel powder—all of which have never been used before in any studies—are among the elements in this composition. In order to create a more effective and stableproduct, herbal toothpastes were examined for significant physical qualities including pH, stability, extrudability, spreadability, foamability, and homogeneity. Additionally anti-cancer and anti-fungal qualities, these extracts have anti-ulcer, anti-caries, anti-bacterial, and wound-healing properties. This project aims to produce and test herbal toothpaste. This study shows that in terms of performance, our herbal-based toothpaste recipe made with natural components is as good as it gets.

3. HERBAL TOOTHPASTE FORMULATION AND ASSESSMENT: VANKUDAVATHU.SRINIVASANAIK1,KATURI..ANEELA2, KANAKAPUDI.SRINIVASARAO3, U PPU.HARSHA4, BOJJA.ABHISHEK5, VUHASI.PURNA CHANDRASEKHAR6, CHINTALA.PAVAN

Since the beginning of history 1, toothpastes have been employed as a primary and essential part of oral health care. Starting in China and India 300–500 BC, the design of toothpaste compounds started with squashed bone, powdered egg, and clam. One of the primary irreplaceable items, toothpastes have been used since antiquity 1. Re-creating preimshetal toothpaste compositions determined the weight of each component. With a combined weight percentage of 100%, the sum of amount of toothpaste will forrnulzte1yn of toothpaste Table 1 znd compares the ingredients of the toothpaste made in lah to commercial herbal toothpastes Meswak and Sudanta end Dabur red. Guava leaf extract, tulsi, banyan, acacia, calcium carbonateandsodiumlaurylsulphate are among the herbal tooth paste's ingredients. Neem leaf has antibacterial action, ginger provides antiseptic property, and tulsi prevents bad breath of mouth; guava extract gives relief from toothache. Against toothache, banyan is applied. As a gelling agent as well as to help to avoid gingivitis, acacia is used. Para hydroxy benzoic acid is used as a preservative; sodium lauryl sulphate serves as a foaming agent. Water acts as a vehicle; amaranth is used as colourant; PSaccharin sodium acts as sweetener.

4. Formulation and assessment of herbal toothpaste Gulshan Manohar Rathi, Madhavi DigambarraoBorade, Rutika Bharatrao Solanke1 Toothpaste is often used.

Many times, toothpaste is used to keep the teeth clean. It helps with chronic gingivitis and sensitivity as well. Herbal extracts of several ancient drugs with antibacterial and antifungal qualities allow one to produce herbal toothpaste. Commercial herbal toothpaste's teeth herbs are peppermint, cloves, and ginger. The quality of the commercial herbal toothpastes Himalaya, Meswak, and Dent County has been evaluated in the present study. The aim of the present study is to create herbal toothpaste utilizing plant extracts like neem, tulshi leaves, and guava leaves along with ingredients including camphor, honey leaves extract, ginger, lemon oil extract, neem stem and bark, and babul leaves. This constituent of plant extract has antibiotic capabilities. Made to satisfy every need for keeping a fresh mouth and avoiding bacterial caused tooth decay, the herbal toothpaste meets all demands. The handcrafted herbal toothpaste was matched to commercial substitutes. Physical characteristics include a pH of 8.2, a greenish brown color, a smooth texture, a relative density of 10.2, an extrudability of 90.37, a good spreadability, and a stable formula. Compared to the marketed product (Colgate, Dabour Red, Dantkanti), the prepared herbal toothpaste showed a considerable anti-microbial action with a ZOI of 19.7 mm at a MIC of 25 µg/mL against Staphylococcusaureus. Herbal toothpaste is shown in this study to be as engaging and patronizing as the commercial alternative. Future dental research seems quite encouraging.

AIM: Herbal toothpaste formation and assessment

The goal of this study was to develop a toothpaste that produces little to no side effects or none at all Natural elements are: Renowned for their inherent antibacterial and anti-inflammatory qualities, herbal toothpaste employs plant-based components like neem, clove, and tea tree oil. It is ideal for those with sensitive gums or teeth since it offers thorough cleaning without strong chemicals. Prevention of cavities: Properties found in herbal components often help to guard against cavities and lessen plaque formation. Freshens breath: Many herbal toothpastes have mint or other natural herbs that help freshen breath naturally.

• Gum Health: Herbal components including neem and aloe vera support stronger gums and help avoid gum disease. Some herbal recipes include baking soda or natural abrasives to softly whiten teeth. These toothpastes are especially enticing to those who want free from synthetic chemicals, artificial dyes, or flavors. Many herbal toothpaste companies emphasize eco-friendly and sustainable packaging and components.

REQUIREMENT AND METHODOLOGY

Requirements:

Preformulation of herbal toothpaste determined the weight of each component. Using different proportions of chemical and plant extract as specified in the table, I have produced one herbal toothpaste.

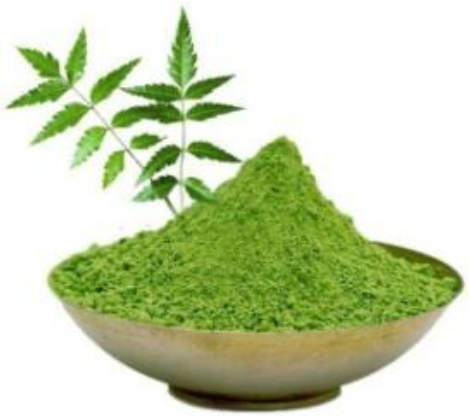
Sr No.	Ingredients	Quantity
1.	Neem leaves	15 gm
2.	Active charcoal	15gm
3.	Camphor	5gm
4.	Guava leaves	15gm
5.	Calcium carbonate	25gm
6.	Sodium lauryl sulphate	15gm
7.	Methyl paraben	5gm
8.	menthol	10gm
9.	Distilled water	q.s

METHODOLOGY:

Gather neem leaves and guava leaves from the tree in my collage first; then, neem leaves and guava leaves are allowed to dry in pharmaceutical lab following grinding the powder form of leaves is created. Use weighing scale to determine the amount of each and every chemical. Mix the guava leaves and neem leaves and active charcoal in the proportion measured. After that, mix all of the components except methyl paraben, which is utilized as preservatives in the toothpaste. Add enough of water if the toothpaste is not thick. Collect in the ultimate container. The toothpaste is ready and kept in lab.

INGREDIENTS ANDS EXCIPIENTS

INGRIENTS :



1.NEEM LEAVES:

- Synonym : neem
- Scientific name: azadirachta indica
- Biological source: dried leaves of azadirachta indica
- Family: meliaceae
- Genus :azadirachta
- Chemical constituents: Nimbim,nimbidin,tannins,carbazole alkaloids

Use :

- Antibacterial properties: Neem has natural antibacterial qualities that help reduce the growth of harmful bacteria in the mouth, promoting oral hygiene and preventing gum disease and bad breath.
- Anti-inflammatory effects: Neem leaves can help reduce inflammation in the gums, alleviating conditions like gingivitis and swollen gums.
- Prevention of cavities: The antimicrobial properties of neem help fight plaque buildup, reducing the risk of cavities and tooth decay.
- Fighting bad breath: Neem's antibacterial action helps combat the bacteria responsible for causing bad breath, leading to fresher breath
- Strengthening gums: Neem is known to promote overall gum health and can help in preventing bleeding or receding gums

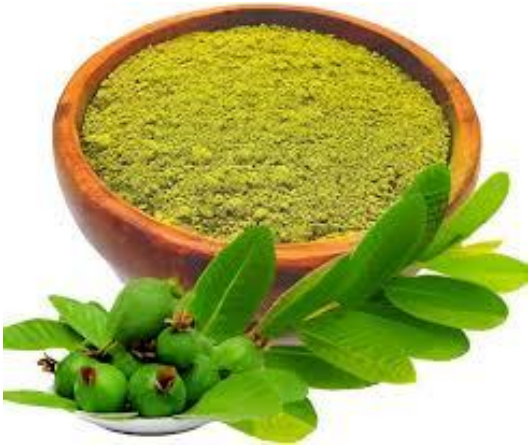
2.Active charcoal:

- Synonym : charcoal gray
- Scientific name: carbon
- Biological source: wood ,coconut,sheel bamboo
- Family: araceae
- Genus: cocos
- Chemical constituents: carbon , oxygen, sulfur, nitrogen, mineral water

Uses:

- Whitening: Activated charcoal can help remove surface stains on teeth caused by food, drinks, and smoking, making teeth appear whiter.
- Absorbing Toxins and Impurities: It helps in absorbing bacteria and toxins from the mouth, potentially leading to fresher breath.

- Plaque Removal: Activated charcoal can help reduce plaque buildup on teeth, which may contribute to gum disease or cavities if left unchecked.
- Odor Control: Its ability to neutralize odors can help combat bad breath by removing food particles and bacteria in the mouth.



3. guava leaves :

- Synonym: psidium guajava
- Scientific name:psidium guajava l folium
- Family: myrtaceae
- Genus :psidium
- Chemical constituents: flavonoids , phenols, essential oil, vitamins

Uses:

- Guava leaves have several benefits when used in toothpaste or oral care products. Here are some of the potential uses:
- Antibacterial properties: Guava leaves have natural antibacterial properties that can help fight oral bacteria, reduce plaque buildup, and prevent gum infections.
- Anti-inflammatory effects: The leaves have anti-inflammatory properties that may help reduce gum swelling and irritation, promoting healthier gums.
- Fighting bad breath: The antimicrobial activity of guava leaves can help reduce bad breath (halitosis) by controlling bacteria in the mouth.
- Promoting oral health: The antioxidants and nutrients in guava leaves may help in maintaining overall oral health by strengthening gums and teeth**.**

4. CLOVIE OIL :

- used as a pian relieving properties
- Used as cavity prevention
- Its helps in fresh breath

5.METHYLPARABEN:

- Used to prevent bacteria growth
- Helps in extending product shelf life
- used as a pharmaceutical preservative

6.SODIUM LAURYL SULPHATE :

- it help in removing food debris
- it creates foams

7.CALCIUM CARBONATE :

- helps in clean and polish teeth
- it reduce tooth decay
- uses as a thickener and desensitizer

8.MENTHOL:

- used to provide a cooling sensation
- add a minty odour and taste

CONCLUSION

This herbal toothpaste helps to keep oral hygiene and prevent dental caries, in addition to being more safer and having fewer adverse effects than chemically produced synthetic toothpaste. All commercially available herbal toothpaste and lab-made alternatives were evaluated and matched against Bureau of Indian Norms benchmarks.

Specially made toothpaste helps to preserve tooth and oral cleanliness and exhibits antibacterial action against bacteria including E. coli.

Regarding all parameters of toothpaste evaluation, herbal toothpaste was found to be as effective as commercially available toothpastes in this exploratory in-vitro study.

The designed herbal toothpaste has a great future in research and dental care for the public, society, and country by increasing the range of natural components used in making more and safer natural medicines. The made herbal tooth paste was found to be of excellent quality.

RESULT TABLE :

SR NO	TEST PARAMETER	FORMULATION A	FORMULATION B	FORMULATION C
1	COLOUR	BLACKISH	BLACKISH	BLACKISH
2	ODOUR	PLEASANT	PLEASANT	PLEASANT
3	PH	7.14	7.15	7.16
4	IRRITABILITY	NON-IRRITANT	NON-IRRITANT	NON-IRRITANT
5	FOAMABILITY	FAOMABLE	FAOMABLE	FAOMABLE
6	MOISTURISATION	GOOD	GOOD	GOOD

REFERENCE

1. Ersoy M, Tanalp J, Ozel E, Cengizlier R, Soyman M. The allergy of toothpaste: a case report. AllergolImmunopathol. 2008;36(6):368-70. doi:10.1016/s0301-0546(08)75871-3.

2. Davies R, Scully C, Preston AJ. Dentifrices- an update. Medicina Oral Patologia Oral. Cirugia Bucal. 2010;15(6):976-82. doi:10.4317/medoral.15.e976.

3. Jardim J, Alves L, Maltz M. The history and global market of oral home-care products. Braz Oral Res. 2009;23:17-22. doi:10.1590/s1806-8324200

4. Jensena JL, Barkvoll P. ClinicalImplicationsofthe Dry Mouth:Oral mucosal

5. Diseases.AnnalsoftheNewYork Academy of Sciences. 1998. 842:1,156¬

6. 162. http://dx.doi.org10.UUj.1749-6632.1998.tb09643.

7. Al ALKholani, Comparison between the Efficacy of Herbal and Conventional Dentifriceson Established Gingivitis, Dental Research Journal (Isfahan).

Springer; 2011. 8(2): 57-63 >

8. Ersoy, M;Tanalp, J; Ozel, E; Cengizlier, R; Soyman,M; The allergy of toothpaste: a case report.

Kokate C K, Purohit A P, Pharmacognosy,4th edn, NiraliPrakashan ;11 : 81-94.

9. Shende V, Telrandhe R. Formulation and evaluation of Tooth Gel from Aloe vera leaves extract. Int J Pharm Drug Analysis. 2017;5(10): 394-398.

10. Telrandhe R, Mahapatra D K, Kamble M A. Bombax ceiba thorn extract mediated synthesis of silver nanoparticles: Int J Pharm Drug Analysis. 2017;5(9): 376-379.

11. T Mangilal, M Ravikumar. Preparation and Evaluation Of Herbal Toothpaste And Compared With Commercial Herbal Toothpastes: An Invitro Study. Int J Ayu Herb Med. 2016; 3(6): 2266-2273.

12.. Mithal BM and Saha RN. A handbook of cosmetics. VallabhPrakashan. 2000; 1st Ed. pp. 204-212.

13.. Dange VN, Magdum C.S, Mohite SK and Nitlikar M. Review on Oral Care Product: formulation of toothpaste from various and extracts of tender twigs of neem, J of Pharm Res. 2008; 1(2): 148-152.

14.. Sherikar AS and Patil RA. Standardization of polyherbal formulations: containing Cassia angustifolia. International Journal of Pharmacy and Life Sciences. 2010; 1: 213-216.

15.. Clark-Perry D, Levin L (December 2020). "Comparison of new formulas of stannous fluoride toothpastes with other commercially available fluoridated toothpastes: A systematic review and meta-analysis of randomised controlled trials". International Dental Journal. 70 (6): 418–426.

16.. Soeteman GD, Valkenburg C, Van der Weijden GA, Van Loveren C, Bakker E, Slot DE (February 2018). "Whitening dentifrice and tooth surface discoloration-a systematic review and meta-analysis". International Journal of Dental Hygiene. 16 (1): 24–35.

17.. Dhingra K (April 2014). "Aloe vera herbal dentifrices for plaque and gingivitis control: a systematic.