



PROJECT

Report on

(STUDY OF EXTRACT HERBAL TOOTHPASTE PRODUCTION)

In the Faculty of Pharmacy,
Dr. Babasaheb Ambedkar Technological University, Lonere

BACHELOR OF PHARMACY

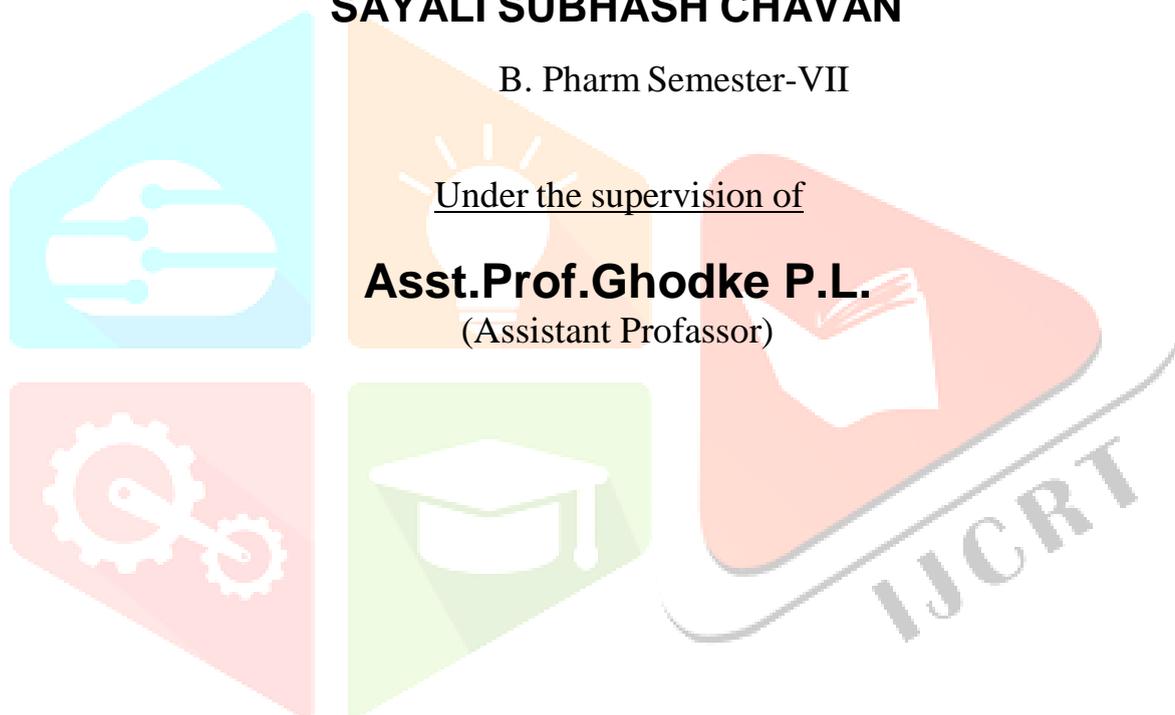
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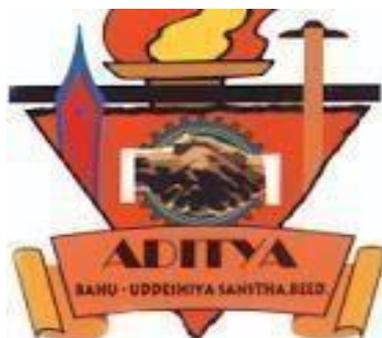
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CERTIFICATE

This is to certify that MISS.SAYALI SUBHASH CHAVAN PRN1926021823035 has carried out the required project work prescribed by Dr. Babasaheb Ambedkar Technological University, Lonere for the VIIIth semester of B. Pharm. course during academic year 2022-2023 & this report represents his/her work done under my supervision.

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I would like to express my special thanks of gratitude to my guidance teacher "Prof.Ms. Ghodake P.L." for their able guidance and support in completing my project.

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(sayali subhash chavan)

B.Pharm.VIII Sem

INDEX

Sr. No.	Content	Page No.
1.	Introduction	1
2.	Literature Review	3
3.	Aim & Objective	5
4.	Plan of Work	6
5.	Drug Profile	7
6.	Material, Method & Equipment	9
7.	Experimental Work	10
8.	Evaluation Test	11
9.	Result & Discussion	12
10.	Summary	13
11.	Conclusion	13
12.	Future Scope	14
13.	References	15

Abstract

Oral hygiene is essential to a person's overall health. To develop an oral care cosmeceutical as tooth whitening formulation, propane extract of whole peel (WBP) and inner peel of banana (BPI) *Musa paradisiaca* L. were prepared and evaluated for their phytoconstituents. The extracts (WBP) and (BPI) were then used to prepare teeth whitening formulations T2 and T3. The formulations were evaluated with respect to their physico-chemical parameters, stability studies and in-vitro cosmeceutical use as tooth whitening agents in comparison with the commercial standard formulation T4. Statistical results are expressed as : Mean + S.E.M (n 10), the values "P<0.05 is significant as compared to placebo, **P<0.01 is very significant as compared to placebo, ***P<0.001 is highly significant as compared to placebo. The demand for herbal based product such as toothpaste is high these days. Consumers believed by using herbal based toothpaste are safe, effective and less toxicity because less and only safe chemical used as compared to the synthetically produced toothpaste. Therefore, this study was aimed to formulate and evaluate new polyherbal toothpaste which containing herbal extracts that available in Malaysia to treat periodontal problem. The polyherbal toothpaste was formulated using three herbal extracts namely banana peel (*Musa acuminata*), guava leaves (*Psidium guajava*) and orange peel (*Citrus arranticum*) and tested against *Staphylococcus aureus*, *Bacillus cereus*, *Escherichia coli* and *Pseudomonas aeruginosa* with different concentrations varying from 100 mg/mL, 250 mg/mL and 500 mg/mL. The significant inhibition has seen against *Staphylococcus aureus* (12–18 mm) followed by *Bacillus cereus* (11–15 mm) and there is no inhibition for both *Escherichia coli* and *Pseudomonas aeruginosa*. The formulated toothpaste was also evaluated with the standard physiochemical parameters along with the antimicrobial activity. The formulated toothpaste showed potent inhibition against gram positive bacteria but not against gram negative bacteria. Thereby, it opens a window for future study to enhance the ability of the toothpaste and to prove the efficacy and safety of the formulated toothpaste.

Keywords: Polyherbal toothpaste, antibacterial activity, *Musa acuminata*, *Psidium guajava* *Citrus arranticum*

INTRODUCTION:

Toothpaste is paste or gel dentifrices used with a toothbrush to clean and maintain the aesthetics and health of teeth. Toothpaste is used to promote oral hygiene it is an abrasive that aids in removing dental plaque and food from the teeth, assists in suppressing halitosis, and delivers active ingredients [most commonly fluoride] to help prevent tooth decay and gum disease, owing differences in composition and fluoride content, not all toothpastes are equally effective in maintaining oral health. The decline of tooth decay during the 20th century has been attributed to the introduction and regular use of fluoride containing toothpastes worldwide. Large amounts of swallowed toothpaste worldwide. Large amounts of swallowed toothpaste can be toxic.

Toothpaste is generally useful to maintain health. Toothpastes containing fluoride are effective at preventing tooth decay. Toothpastes may also help to control and remove plaque build-up, promoting healthy gums. 2016 systematic review indicated that using toothpastes when brushing the teeth does not necessarily impact the level of plaque removal. However, the active ingredients in toothpastes are able to prevent dental diseases with regular use. Toothpaste contain fluoride this mineral is key to fighting tooth decay. Glycerol this ingredient keep toothpaste from drying. Sorbitol, Calcium Carbonate, Sodium Lauryl Sulphate. The chemical agent that could supplant patient dependent mechanical plaque control and it reduce and prevent oral disease. Self-perform mechanical plaque removal is one of the most acceptable method of controlling plaque and gingivitis. The mechanical plaque control is time consuming, and some are may lack motivation for these procedures. The therapeutic effect showing plants has been beneficial to the oral health from the thousands of years throughout the world. The traditional medicine has advantage more than the side effect like allergies. Neem is one of the most widely researched tropical trees for the development therapeutic action.

The chemical agent that could supplant patient dependent mechanical plaque control and it reduce and prevent oral disease. Self performed mechanical plaque removal is one of most accepted method of controlling plaque and gingivitis. The mechanical plaque control is time consuming, and some are may lack motivation for these procedures. The therapeutic effect showing plants has been beneficial to the oral health from the thousands of years throughout the world. The traditional medicine has advantage more than the side effect like allergies. Neem is one of the most widely researched tropical trees for the development therapeutic action. 20 year ago the component of neem extract was analyzed. The chewing sticks have been widely used in the Indian subcontinent, the Middle East and Africa since ancient time period. Dental caries is steadily increasing in the underdeveloped and developing country.

Hence, there is an urgent need to promote traditional preventive measures that are acceptable, easily available and cost effective. The neem has been antibacterial activity is has evaluated from the ancient times. It has been used for the various activities like as astringent, antiseptic, insecticidal, anti ulcer and for cleaning the teeth in pyorrhoea and other dental disease. The leaf extract of neem showed superior antiviral and antihyperglycemic activity in vitro and in vivo on animals. It showed good in vitro broad range antibacterial activity. Nanotechnology may be defined as the creation of material, drug and devices that are used to manipulate matter that in specific size and increase the drug targeting. While the using various herbal be used to be developed the nano-materials to enhance the action. It is a two group comparative study. Food debris are white small particles on teeth, can be easily rinsed off. The dental plaque is thin film of bacteria that sticks to teeth and yellow colour can't be rinsed off. There has been closer relationship between tartar, calculus and periodontal disease. The extract are use in various category like NeemAntibacterial, Guava-Anti-inflammatory, BabulAstringent, Kalmi-Flavoring agent and other ingredient are Camphor-Antiseptic, HoneySweetening agent, Glycerine-Humectant, Cal CarbonateAbrasive, SLS-Detergent and also use the sodium chloride and distilled water. This led to paying increased attention on using natural ingredients in herbal dentifrices. 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.

❖ Evaluation of Toothpaste

1. Physical Examination

- Colour- Formulated toothpaste was evaluated for its colour.
- The visually colour was checked.
- Odour- Odour was found by smelling the product.
- Taste- Taste was checked manually by tasting the formulation

2. Relative density

Relative density was determine by weight in gram taken in 10 ml formulation and 10 ml distilledwater usingRD bottle Evaluation Parameters

3. Abrasiveness

Extrude the content 15-20 cm long on the butter paper, repeat the same process for at least ten collapsible tubes. Press with the contents of the entire length with fingertip for the presence of sharp andhard edged abrasive particles. Toothpaste shall not contain such particles.

4. Determination of spreadability

In this method slip and drag characteristic of paste involve. Formulated paste (2g) placed on the ground slide under study. The formulated paste placed like sandwich between this slide and another glass slides for 5min to expel air and to provide a uniform film of the paste between slides. Excess of the paste was scrapped off from the edges. The top plate was then subjected to pull of 80g with the help of string attached to the hook and time (sec) required by the top slide to cover a distance of 7.5cm was noted. A short interval indicated better spreadability.

Formula was used to calculate spreadability:

$$S=M \times L / T$$

Where,\

S= Spreadability

M= Weight in the pan (tied to the upper slide)L=

Length moved by the glass slide

T=Time (sec) taken to separate the upper slide from the ground slide.

5. pH determination

pH of formulated herbal toothpaste was deter-mined by using pH meter. 10g of toothpaste placed in 150ml of beaker. Allow the 10ml of boiled and then cooled water. Stir vigorously to make a suspension.

6. Homogeneity

The toothpaste shall extrude a homogenous mass from the collapsible tube or any suitable container by applying of normal force at $27 \pm 20^\circ\text{C}$. in addition bulk of contents shall extrude from the crimp of container and then rolled it gradually.

7. Foaming

The foamability of formulated toothpaste evaluated by taking small amount of formulation with water in measuring cylinder initial volume was noted and then shaken for 10 times. Final volume of foam was noted.

Determination of froth power

Foaming power = $V_1 - V_2$

V_1 - Volume in ml of foam with water. V_2 -

Volume in ml of water only.

8. Stability

The stability study was performed as per ICH guideline. The formulated paste was filled in collapsible tube and stored at different temperature and humidity conditions, $25^\circ\text{C} \pm 2^\circ\text{C} / 60\% \pm 5\% \text{ RH}$, $30^\circ\text{C} \pm 2^\circ\text{C} / 65\% \pm 5\% \text{ RH}$, $40^\circ\text{C} \pm 2^\circ\text{C} / 75\% \pm 5\% \text{ RH}$ for the period of three months and studied for appearance, pH and spreadability.

9. Determination of moisture and volatile matter

5 g of formulation placed in a porcelain dish containing 6-8 cm in diameter and 2-4 cm depth in it. Dry the sample in an oven at 105°C .

Calculation

By mass = $\frac{100 \text{ MI} - \text{M MI-Loss of mass (g) on drying}}{\text{M}}$

Mass (g) of the material taken for the test.⁹

10. Moisture content

Toothpaste (10 gm) weighted in a Porcelain dish and dried it in the oven at 105°C . It was cooled in a desiccator. The loss of weight is recorded as percentage moisture content and calculated by the given formula.

% Moisture = $\frac{\text{Original sample weight} - \text{dry sample weight}}{\text{Original sample weight}}$

11. Foaming character

1) 1 gm of tooth paste was poured into stoppered test tube (height 16 cm. diameter 6 mm) and volume of the liquid was adjusted with the water up to 10 ml. Tube was stoppered and shaken length wise, motion for 16 second, two shake/second. Allowed to stand for 15 minutes and height of the foam produced was measured.

2) 10% solution of tooth paste was prepared. 4ml of this solution was added to 146 ml of water at 30°C . The solution was agitated for 10 seconds. The foam was poured in to a 100 ml graduated cylinder to overflowing. A rubber stopper was gently dropped in to the foam. The time for the rubber stopper to pass two points (40ml-80ml) was measured. Longer time of fall indicates the denser and more stable foam.

12. Organoleptic evaluation

Organoleptic evaluation (colour, taste) was done by sensory and visual inspection.

13. pH

pH was tested by dissolving 1 gm product in to 9 ml of water and shaken vigorously then aqueous solution and pH is observed by pH meter.

14. Fragrance test

It was based on individual observation for its acceptability. 5 people were asked for acceptability of fragrance and their opinion was taken. And fragrance was evaluated based on the below-described criteria;

- A) The fragrance was good, as good as the fragrance of reference toothpaste.
- B) The fragrance was not so good but comparable to the reference toothpaste.
- C) The fragrance of the toothpaste was poor than the reference toothpaste.

15. Shape retention

Tooth paste was squeezed out from the tube and put entirely of a tooth brush and the state of the toothpaste after it was allowed to stand for 10 seconds was evaluated based on the below-described criteria;

- A) Shape just after the toothpaste is squeezed out on the toothbrush is maintained.
- B) Shape just after the toothpaste is squeezed out on the toothbrush is almost maintained.
- C) The toothpaste squeezed from the toothbrush and cannot maintain its shape.

16. Storage stability

The toothpaste were filled in a toothpaste tube for storage and stored for 45 days at each of 5 °C, room temperature and 40 °C. The tube was then cut through and whether the liquid component was separated from the toothpaste or not was evaluated based on following criteria. Evaluation criteria of storage stability;

- A) Separation of a liquid component is not observed at all.
 - B) Separation of a liquid component is observed slightly.
 - C) Separation of a liquid component is observed obviously.
- Net content: net content was calculated by using following formula; Net content = weight of filled tube – weight of empty tube.

17. Total flavonoid content estimation of Tooth paste Formulation

1 ml of 2% AlCl₃ solution was added to 3 ml of stock solution of tooth paste and allowed to stand for 15 min at room temperature; absorbance was measured at 420 nm.

18. Stability study (Storage stability)

Toothpaste was stored at 40 °C and RH 75% ± 5% for 45 days. Estimation of Flavonoids was performed at zero period and then samples were withdrawn after every 9 days, total 5 samples were withdrawn. Toothpaste (1 gm) was refluxed with distilled water (75 ml) for 30 min. for complete extraction of flavonoids and filtered through sintered glass funnel by vacuum filtration assembly. The filtrate was centrifuged at 2000 rpm for 20 minutes, the supernatant was collected in 100 ml volumetric flask and volume was made up with water. The same procedure was performed for each sample and solutions (100 ml) of their Total flavonoids content were determined.

19. Antimicrobial activity of toothpaste

The well diffusion method was used to determine the antimicrobial activity of the Toothpaste using standard procedure of Bauer et al 24 .The drug used in standard preparation was ofloxacin and ciprofloxacin of IP grade. The antimicrobial activity was performed by using 24hr culture of *S. Mutans* and *S. aureus*.

There were 3 concentration used which are 25, 50 and 100mg/ml for each extracted phytochemicals in antibiogram studies.It's essential feature is the placing of wells with the antibiotics on the surfaces of agar immediately after inoculation with the organism tested. Undiluted over night broth cultures should never be used as an inoculums. The plates were incubated at 37 o C for 24 hr. and then examined for clear zones of inhibition around the wells. impregnated with particular concentration of drug. The diameter of zone of inhibition of each wall was recorded.

10



➤ Formulations:

1. Formulation of Ginger Toothpaste:

Sr.no	Ingredients(gm)	Quantity(w/w) %
1	Ginger oil(ACTIVE INGREDIENT)	2ml
2	Sodium lauryl sulphate	1.5gm
3	Sodium benzoate	0.1gm
4	Sodium saccharine	0.2gm
5	Glycerin	40ml
6	Calcium carbonate	44gm
7	Pepper mint oil	Qs

Preparation of base

1. The solid ingredients calcium carbonate, sodium lauryl sulphate, glycerin, 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.
2. These ingredients were also mixed in a mortar and pestle, then triturated with precisely weighed glycerin until a semisolid substance was created.
3. Addition of herbal ingredients-
4. Accurately weighed herbal extract in form of ginger oil were added to the base
5. At the end, peppermint oil was added as a flavor⁵

Formulation of herbal toothpaste Formulation

All herbal ingredients 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

❖ Composition:

Sr. No	Ingredient	Quantity(g)
1	Neem stem & bark	0.5
2	Babul leaves	0.5
3	Gauva leaves	0.5
4	Kalmi bark	0.5
5	Camphor	0.5
6	Honey	0.5
7	Calcium carbonate	3.5
8	Glycerine	2.0
9	Para hydroxyl benzoic acid	0.3
10	Sodium lauryl sulfate	0.5
11	Sodium chloride	0.2
12	Distilled water	q. s.

2. Formulation of polyherbal toothpaste:

The poly-herbal toothpaste was prepared using Cassia simmia plant (pods), Celastrus paniculata (leaves), Vateria indica (gum resin) babul (leaves) are acts as possessing antibacterial properties and anti-inflammatory properties.

Ginger (rhizome), lemon oil acts as a antiseptic activity, turmeric acts as antimicrobial and anti-inflammatory properties, calcium carbonate acts as a abrasive agent, glycerine acts as humectants sodium lauryl sulphate as detergent, sodium saccharin acts as a sweetening agent, para hydroxyl benzoic acid is used for preservative, menthol used for flavouring agent amaranthacts as a colouring agent and water as aqueous media. All aboveherbal extract was used to formulate the poly-herbal toothpaste.⁷

Sr. no	Ingredients	Quantity (%)
1	Cassia simmia, Celastrus paniculata, Vateria indica extracts	9
2	Babul leaves extract	3
3	Ginger extract	4
4	Lemon oil extract	3
5	Sodium saccharin	0.25
6	Turmeric extract	3
7	Para-hydroxyl benzoic acid	0.1
8	Amaranth	0.50
9	Calcium carbonate	35
10	Glycerin	25
11	Sodium lauryl sulphate	1
12	Menthol	1.5

LITERATURE SURVEY:

1. Siswomihardjon W et al. (2007): The difference of antibacterial effect of neem leaves and stick extracts

In this paper, study determined the antibacterial effect of ethanolic neem leaves and stick extract in inhibiting the growth of streptococcus mutants.

2. Prashant GM et.al (2007): The effect of mango and neem extract on four organisms causing dental caries: Streptococcus mutant, streptococcus salivavivus, streptococcus mitis, and streptococcus sanguis: An in vitro study

In this paper, study was conducted to evaluate the antimicrobial effects of these chewing sticks on the microorganisms Streptococcus mutant, Streptococcus salivavivus, Streptococcus mitis, and Streptococcus sanguis which are involved in the development of dental caries.

3. N. Yigit, et al. (2008): Antifungal activity of toothpastes against oral Candida isolates

In this paper formulated antimicrobial compounds with the aim of preventing or reducing plaque, calculus, gingival inflammation or dental caries. The herbal toothpaste exhibited good antifungal activity against all Candida species.

4. Shah S et.al (2016): Evaluation of antimicrobial effect of azadirachtin plant e tract (Soluneem™) on commonly found root canal pathogenic microorganisms (viz. Enter coccus faecalis) in primary teeth

The aim of this study is to evaluate the antimicrobial activity of Soluneem when used as an irrigating solution along with other commonly used irrigating solution sodium hypochlorite (NaOCl) against Enterococcus faecalis.

5. George J et al. (2009): The efficacy of a herbal-based toothpaste in the control of plaque and gingivitis

The present study was conducted a double-blinded controlled clinical trial with parallel groups was designed to investigate the effectiveness of a herbal-based toothpaste in the control of plaque and gingivitis as compared with a conventional dentifrice. The efficacy of Colgate Herbal over Colgate toothpaste was assessed in this study.

6. Martinis J. Verkaik, et al. (2011): Efficacy of natural antimicrobials in toothpaste formulations against oral biofilms in vitro

This paper explain about biofilm formation is a natural process in the oral environment but needs to be controlled through regular brushing in order to prevent the development of caries and periodontal diseases.

7. Telrandhe R et.al (2016): Nanotechnology for cancer therapy

This paper is an overview of advances and prospects in applications of nanotechnology for cancer treatment. Nanotechnology is an use for prevention, diagnosis, and treatment. nanotechnology offers a promise for the targeted delivery of drugs, genes and protein to tumor tissue and therefore alleviating the toxicity of anticancer agent in healthy tissues.

8. Meng-long Hu, et al. (2018): Effect of desensitizing toothpastes on dentine hypersensitivity: A systematic review and meta-analysis

This paper explain study about Randomized Controlled Trials (RCTs) comparing desensitizing toothpastes with a toothpaste without desensitizing component in adult patients that suffer from DH were included.

9. Shishir Ram Shetty, et al. (2019) : Herbal medicine as adjunct in periodontal therapies- A review of clinical trials in past decade

The aim of this paper was to analyse the literature published in the research related to herbal medicine as adjunct in periodontal therapies.

10. Nagehan Yilmaz, et al. (2021): Comparison of the abrasive effects of children's toothpaste on glass ionomer cement

This paper evaluates the effect of two different children's toothpaste on the surface property of the conventional class ionomer cement which is used in atraumatic restorative treatment method.

11. Marcin olek, et al. (2021): Advantages of using toothpaste containing propolis and plant oils for gingivitis prevention and oral cavity hygiene in cleft lip/palate patients

The aim of paper focus on prevention of dental caries and periodontal disease through elimination of these factors as well as recommending oral hygiene preparation and providing motivation is a one of the basic tasks of dental team.

➤ AIM AND OBJECTIVE:

Aim: Formulation and evaluation of herbal toothpaste.

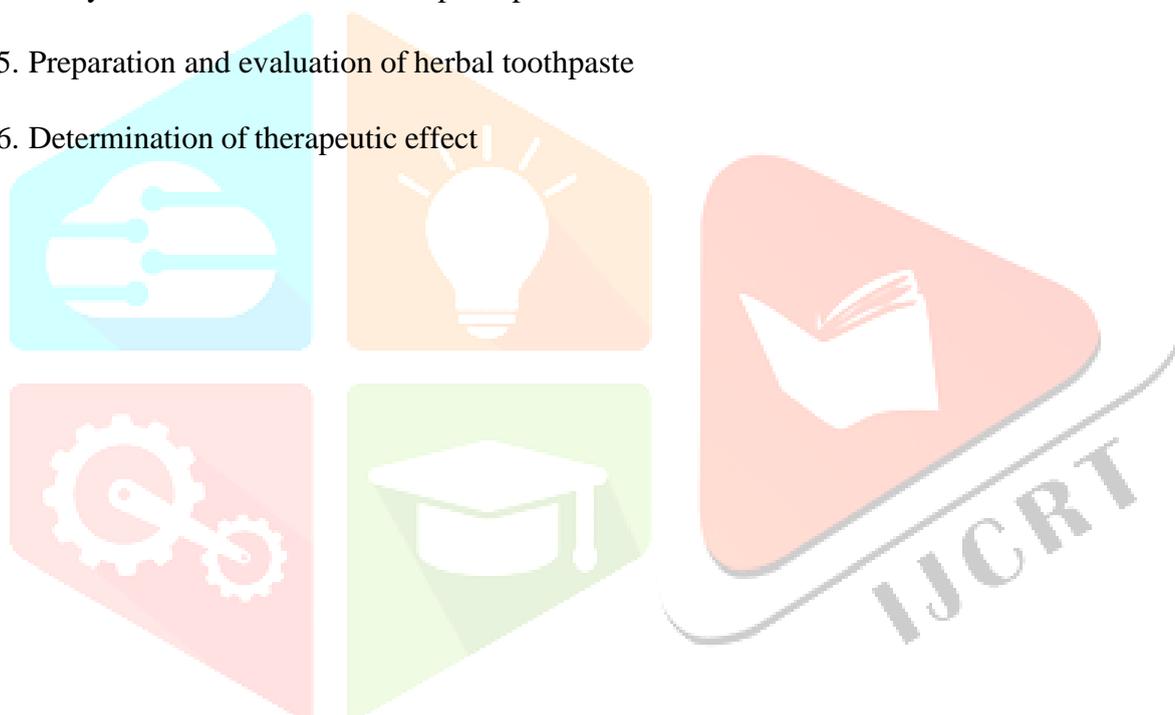
Objective of the study:

1. The herbal toothpaste formulated which can satisfy all the required condition to keep the mouth fresh and prevent tooth decay by bacteria.
2. To remove plaque and its bacterial build-up on teeth and fights off periodontal disease.
3. Most toothpaste also contains fluoride which bolsters tooth enamel and fight tooth decay.
4. Toothpaste aids in prevention against gingivitis and tooth decay, which leads to more severe dental issues.
5. Herbal dentifrices are as effective as non-herbal (conventional) dentifrices in the control of plaque and gingivitis.
6. Toothpaste comes in many flavors and helps to leave your mouth and breath feeling fresh after brushing.
7. Addition of chemical agents in dentifrices aids in plaque control and improves oral health.
8. Herbal base product was comparing the efficacy with conventionally marketed formulated toothpaste and evaluated the various parameter like colour, spread ability, foamability, extrudability and anti-bacterial activity.

➤ **PLAN OF WORK:**

The present proposed research work is planned as follows:

1. Literature Survey
2. Selection of method required
3. Procure ingredients used for procedure
4. Study of extract for herbal toothpaste production
5. Preparation and evaluation of herbal toothpaste
6. Determination of therapeutic effect



➤ DRUG PROFILE:

1. Neem stem & bark

Scientific name: *Azadirachta indica*

Family: Meliaceae

Order: Sapindales

Kingdom: Plantae

Uses: Neem helps to support healthy gums with its antibacterial properties. It also protects against gum infections, tooth decay and plaque formation. It is one of the most natural ways to maintain healthy gums and whiter teeth.



2. Clove

Scientific name: *Syzygium aromaticum*

Family: Myrtaceae

Order: Myrtale

Kingdom: Plantae

Uses: Clove has unique antibacterial properties that helps in Fighting germs and preventing cavities. Its antiseptic and analgesic properties helps prevent tooth decay and mainly used for cavity protection.

Dabur Herbal Clove has natural astringent like Blackberry bark that strengthens teeth and gums.



3. Tulsi leaves

Scientific name: *Ocimum tenuiflorum*

Family: Lamiaceae

Order: Lamiales

Kingdom: Plantae

Uses: The anti-inflammatory and analgesic (pain relieving) properties in Tulsi on account of its various constituents make it an excellent choice for oral care.



4. Babul leaves

Scientific name: *Vachellia nilotica*

Family: Fabaceae

Order: Fabales

Kingdom: Plantae

Uses: It prevent swelling and bleeding of gums, keeping your gums healthy and teeth strong.



5. Kalmi bark

Scientific name: *Cinnamomum verum*

Family: Lauraceae Order: Laurales

Kingdom: Plantae

Uses: It's strong antibacterial and antiinflammatory properties are what make it perfect for your teeth in the correct doses.



6. Turmeric

Scientific name: *Curcuma longa*

Family: Zingiberaceae

Order: Zingiberales

Kingdom: Plantae

Uses: Antioxidant Curcumin protects against free radical damage because it is a strong antioxidant. Turmeric reduce the presence of bacteria that causes cavities. turmeric can be used to reduce the infection within root canals.



MATERIAL, METHOD AND EQUIPMENT:

Chemicals

Calcium carbonate, Para hydroxyl benzoic acid, Sodium lauryl sulfate, Sodium chloride, Camphor, Honey was purchased from market.

Table 1: Plant extracts

Ingredient	Quantity(g)
Neem leaves	0.5
Babul leaves	0.3
Kalmi bark	0.5
Tulsi leaves	0.5
Turmeric	0.2

Table 2: composition of chemicals

Ingredient	Quantity(g)
Camphor	0.2
Honey	0.5
Calcium carbonate	3.5
Glycerine	2.0
Para hydroxyl benzoic acid	0.3
Sodium lauryl sulphate	0.5
Sodium chloride	0.2
Methyl Cellulose	0.3

COLLECTION:

Above ingredients Neem, Babul and Tulsi were collected from the plant present at college campus.



EXPERIMENTAL WORK:

All herbal ingredients were dried and grounded using domestic mixer



The required quantity of ingredients were weighed and taken in mortar



Calcium carbonate, Sodium lauryl sulfate, Sodium chloride, Para hydroxyl benzoic acid, methyl cellulose, honey and glycerine were mixed in water



Acacia were added into the above mixture



Above solution was added drop wise into mortar containing herbal ingredients



Triturated well until a paste consistency is formed

EVALUATION TEST:

- ‡Physical Appearance (colour, odour, taste)
- ‡pH determination
- ‡Spread ability
- ‡Foaming stability
- ‡Consistency



RESULT AND DISCUSSION:

The formulated herbal toothpaste evaluation tests were carried out according to standard specified. Formulated herbal toothpaste evaluation tests were carried out to compare different properties of formulated herbal and marketed toothpastes. Formulated herbal toothpaste was evaluated visually for its colour i.e. Yellowish brown. Odour was found by smelling the product i.e. Aromatic and Characteristic. Taste was checked manually by testing the formulation. We found that all the toothpastes were having good consistency and smooth texture and shown no symptoms for deterioration such as phase separation, gassing.

CONCLUSION:

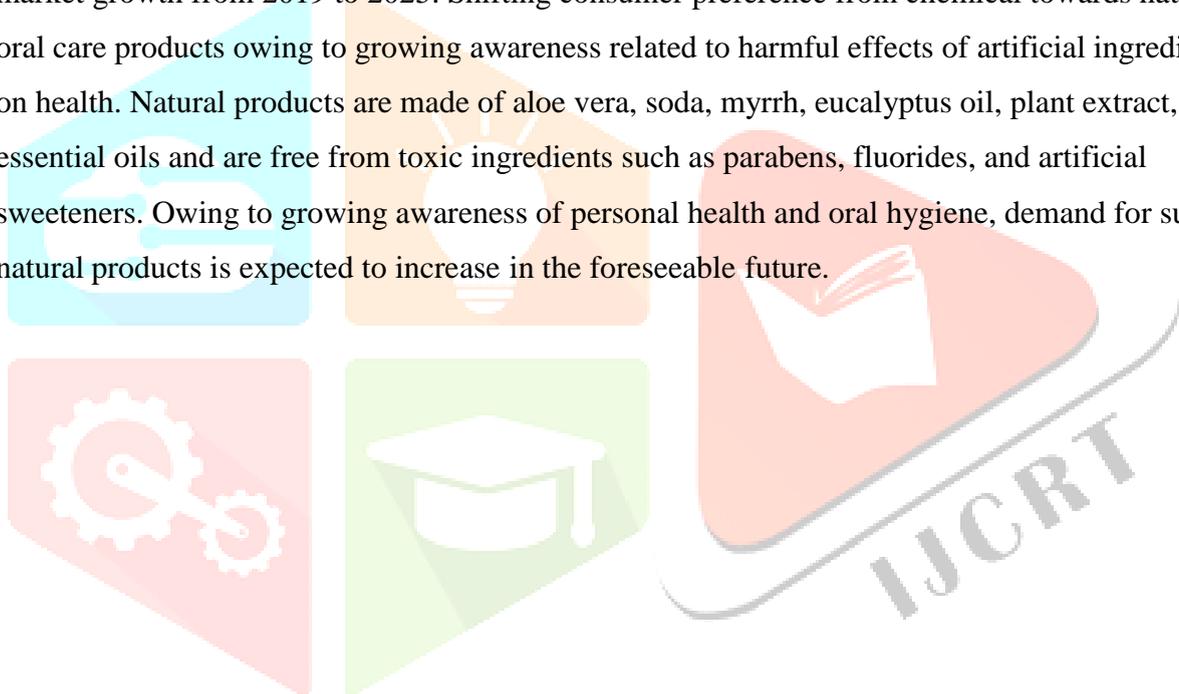
Based on the results of this study we can conclude that both herbal based toothpastes caused significant reduction in plaque levels and gingival inflammation. The control toothpaste (Colgate Herbal toothpaste) showed significantly higher reduction in plaque levels. The pH of the saliva was not altered. Toothpaste is a key part of your daily oral hygiene routine. Along with your toothbrush and floss it helps to remove food debris and plaque from your teeth and gums. Toothpastes can come in a gel, paste or powder form.

SUMMARY:

Aim of our study to formulate and evaluate herbal toothpaste using chemicals like camphor, honey, calcium carbonate, glycerine, para-hydroxy benzoic acid, sodium lauryl sulfate, sodium chloride along with herbal ingredients such as Neem stem, Turmeric, Clove, Tulsi leaves, Kalmi bark were used to formulate herbal toothpaste. Prepared herbal toothpaste was evaluated for different evaluation test such as Colour, odour, taste, smoothness, relative density, pH, spread ability, melting point, stability study and compare with marketed standard formulation. Result shows that different evaluation parameter of prepared toothpaste which resembles with standard values and marketed formulation.

FUTURE SCOPE:

The global herbal toothpaste market size was valued at USD 1.5 billion in 2018. Shifting consumer taste from chemical to herbal and natural products is a key factor driving the market. Companies including Dabur and Patanjali Ayurved has been driving the herbal and natural product market owing to growing demand for natural based ingredient products. Growing trend of natural products has forced many companies to launch natural variants of toothpaste. Patanjali Ayurved is expected to launch new variants within Dant Kanti brand including fresh active gel, aloe Vera, and red toothpaste, which is expected to have a positive impact on herbal toothpaste market growth from 2019 to 2025. Shifting consumer preference from chemical towards natural oral care products owing to growing awareness related to harmful effects of artificial ingredients on health. Natural products are made of aloe vera, soda, myrrh, eucalyptus oil, plant extract, and essential oils and are free from toxic ingredients such as parabens, fluorides, and artificial sweeteners. Owing to growing awareness of personal health and oral hygiene, demand for such natural products is expected to increase in the foreseeable future.



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