WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 13, Issue 21, 686-702. Research Article ISSN 2277–7105

TO PREPARE AND EVALUATE HERBAL TOOTH POWDER FROM NATURAL HERBS

[1*]Badrinath B. Sanap, [2]Rutuja P. Khalpe, [3]Sudarshan D. Ichche, [4]Pallavi S. Patil, [5]Krushna R. Kale and [6]Piraji S. Devkar

At. Chanegaon Tq. Badnapur Dist. Jalna, Maharashtra 431213, Jalna, Maharashtra, India.

Article Received on
07 September 2024,

Revised on 28 Sept. 2024,
Accepted on 18 October 2024

DOI: 10.20959/wjpr202421-34198

***Corresponding Author**
Badrinath B. Sanap
At. Chanegaon Tq.
Badnapur Dist. Jalna,
Maharashtra 431213, Jalna,
Maharashtra, India.

ABSTRACT

Denitrifies are the product which is 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 denitrifies prepared by herbal and synthetic ingredients. This work was carried out to prepare Tooth powder which can be used as a tool for proper oral hygiene and to overcome the side effect of the conventional Tooth power prepared by synthetic ingredients. the Tooth Powder was prepared by using various herbal ingredients which possess the antibacterial, antiseptic and cooling properties. Oral hygiene is an important key to uphold good appearance, thought of an individual and gives confidence. The tooth consists of two parts, the crown, and the root. The crown of the tooth is covered by an outer surface called enamel and it is the hardest tissue in the tooth. The major composition of enamel is hydroxyapatite other than that it consists of water and keratin. Dentine is the under part of the enamel, which is a composite of hydroxyl apatite. It also consists of 70% of the collagen water. Fluorine is the major constituent of dentine. Oral consists of not only tooth but also saliva for easy to consume the food. Saliva is the major element proposed for lubricate the food and to maintain an appropriate environment in the mouth. Saliva is formed by various glands such as Labial, lingual, buccal, and palatal are the larger and smaller glands that produce saliva continuously to keep the tooth environment in the dynamic state. Proteins, enzymes, bacteria, and mucous polysaccharide are there in the saliva and inorganic materials like calcium, sodium, potassium, chloride, phosphate ions, etc. The plaque, calculus, periodontal diseases are the major issues related to the tooth. It is mainly caused by bacterial action and mineralized deposition leads to calculus. These diseases

are mainly due to the negligence in good caring of the tooth, so it can be prevented and controlled by proper brushing by using effective toothpaste and tooth powders.

KEYWORDS: Tooth Powder, Antibacterial, Dental, Herbal and Health.

INTRODUCTION

Dentifrice can be used as a prophylactic cosmetic for thetooth to avoid tooth decay and bad breath. Dentifrice can be prepared by synthetic and herbal ingredients nowadays herbal formulation is high in demand due to its effectiveness, to avoid the side effects when compared with synthetic formulations. Toothpaste and tooth powders are based on its abrasive property, the paste and powder apply on the tooth to rubagainst the tooth which helps to eliminate the deposited food debris and minerals from tooth. "Oral health is essential to good health and quality of life." Natural herbs are used in oral health products to treat various problems, such ashalitosis, bleeding gums, mouth ulcers, and dental caries. Herbs can be used either alone or in combination. Some examplesof herbs used in oral hygiene products include.

Clove and cloveoil Neem and Neem oil

- Some studies have shown that herbs can prevent dental caries. For example, cinnamon barkoil, Papua mace extract, and clove bud oil can inhibit the growth of many oral bacteria
- Herbs could have a potential beneficial effect in the dental field, such as with gum swelling, specifically, and in oral healthcare overall. However, few studies have scientifically reviewed these topics.
- In this chapter, the most common herbal supplements that can be used in dentistry (i.e., neem, ginger, clove, aloe vera, eucalyptus, garlic, miswak, turmeric, tulsi, charcoal, and cinnamon) are reviewed. Evidence-based findings will be presented to support or refute the use of these agents in oral care.
- Neem is scientifically known as Azadirachta indica and can be used as an endodontic irrigation solution to minimize the E. faecalis, which is comparable to 3% of sodium hypochlorite].
- It has antiviral, anti-bacterial (S. mutans, S. faecalis, S. salivarius, S. mitis, and S. Sanghis), anti-sclerotic, and anti-inflammatory properties.
- Neem has been used in Ayurvedic traditions for centuries for agriculture, food storage, andmedicine. It can help with:
- Cleaning: Neem can help reduce plaque buildup and prevent tartar stains
- Anti-inflammatory: Neem can help improve gum health

- Antimicrobial: Neem can kill bacteria that cause gingivitis and pyorrhea, and can also eliminate periodontal and tooth infections.
- Clove oil contains eugenol, which is an anesthetic and antibacterial agent that may help with toothaches. Cloves and clove oil have been used as a home remedy for toothaches sincethe 19th century.
- Neem and clove extract can be used for antimicrobial mouth washing, but more preclinicaland clinical trials are needed to evaluate safety and biocompatibility Although literature search reveals that Neem tree has multiple potential uses in dentistry, its application is limitedin routine dental practice.

- **AIM AND OBJECTIVE**

A: - AIM

TO PREPARE AND EVALUATE HERBAL TOOTH POWDER FROM NATURAL HERBS.

B: - OBJECTIVE

- Promotes whitening of teeth
- Reduces cavities, tooth ache & gum bleeding
- Strengthens gums
- Promotes fresh breath
- Possesses natural antiseptic properties
- Eliminates bacteria causing bad breath
- Helps treating Gingivitis & sore throat
- Effective formulation for reducing dental hypersensitivity
- Protects teeth, reduces inflammation & prevents plaque formation

- **PHARMACOGNOSTIC ACCOUNT OF NATURALHERBSA:- NEEM**

Common Name: - Neem, Nimtree, kadulimb **Botanical Name:** - Azadiarachta indica **Family:** - Meliaceae

Biological Source: - Neem consists of the fresh or dried leaves and seed oil of Azadirechta indica.

Geographical Source: -some say neem is native to the whole Indian subcontinent; others attribute it to dry forest areas throughout all of South and Southeast Asia, including Pakistan, Sri Lanka, Thailand, Malaysia, and Indonesia.

Macroscopic Characters

Colour: - Smooth and darkgreen

Odour: - typical

Taste: Taste: - Bitter

Chemical Composition: - The major phytochemicals present in Neem are glycoproteins, triterpenes, limonoids, flavonoids, phenols, tannins, nimbins, saponins,catechins, azadirachtin and gallic acid.

Uses: -Neem has antibacterial properties that help remove oral pathogens, prevent cavities,and treat gum disease. Neem can also help with tooth decay, oral infections, bleeding, and sore gums treating skin, teeth, and other health issues. Neem leaves, seeds, bark, stems, oil, and phytochemicals have antibacterial, antiviral, antiparasitic, and antifungal properties.

- **Clove**

Synonyms: - Caryophyllum, Clove flower, Clove buds

Biological Source: - Clove consists of dried flower buds of Eugenia caryophyllus, family Myrtaceae. It should contain not less than 7.0 per cent (w/w) of eugenol calculated on dried basis.

Family: - Myrtaceae

Geographical Source: -indigenous to Amboyna and Molucca islands. It is now cultivated chiefly in Zanzibar, Pemba, Penang, Madagascar, Caribbean islands, Sri Lanka and India. In India, cloves are grown in Nilgiri, Tenkasi-hills and in Kanyakumari district of Tamil Nadu state. It is also cultivated in Kottayam and Quilon districts of Kerala.

Macroscopic Characters: -Colour: - Crimson to dark brown. Odour: - Slightly aromatic

Taste: - Pungent and aromatic followed by numbness

Size: - About 10 to 17.5 mm in length, 4 mm in width, and 2 mm thick.

Shape: -Hypanthium is surmounted with 4 thick acute divergent sepals surrounded by dorneshaped corolla. The corolla consists of unexpanded membranous petals with several starnensand single stiff prominent style. Cloves are heavier than water.

Chemical constituents: - Clove contains about 15 to 20 per cent of volatile oil; 10 per cent 13per cent of tannin (Gallotannic acid), resin, chromone and eugenin. The volatile oil of the drugcontains eugenol (about 70 to 90 per cent), eugend acetate, Caryophyllenes and small

quantities of esters, ketones and alcohols.

Uses: - Clove is used as a dental analgesic, carminative, stimulant, flavouring agent, an aromatic and antiseptic. It is also used in the preparation of cigarettes. The oil is used in perfumery and also in the manufacture of vanillin**.** People commonly use clove for toothache, pain during dental work, dental plaque, hangover, indigestion, and many other conditions, butthere is no good scientific evidence to support these uses.

- **ROCK SALT**

Synonyms:- Halite, Saindhava lavana, Rock salt.

Biological Source:- Sendha namak, a type of salt, is formed when salt water from a sea or lakeevaporates and leaves behind colourful crystals of sodium chloride.

Chemical constituents:- Sodium chloride, Zinc, iron, Potassium, Magnesium, Calcium.

Uses:- Rock salt improves digestion and is a natural way to relieve stomachpain.It also used to cure stomach infection and aids in deforming as well.

It helps stabilise blood pressure by maintaining a balance of high and low blood pressure.Rock salt provides the entire essential and greatly improves the body immune system.

- **CINNAMON**

Synonyms:- Amber, bay, beige, bister, brick, bronze, buff, chestn, dalchini

Biological source:- Cinnamon is the dried inner bark of the coppiced shoots Nees., belongingto of Cinnamomum zeylanicum

family:- Lauraceae

Chemical Composition:- cinnamaldehyde, cinnamate, cinnamic acid, and numerous essentialoils

family:- Lauraceae

Uses:- Cinnamon oils, extracts, and their compounds may help prevent cavities, treat gum disease, and fight fungal and bacterial infections. Thus, hygiene products containing cinnamonmay have some uses for oral health and pain relief.

- **MULETHI**

Synonyms:- Madhuka, Yashtimadhuka, Yashtik, Madhuyashtika

Biological source:- Mulethi is a small perennial herb, commonly known as licorice, sweet wood, or mulaithi, that is indigenous to Eurasia, northern Africa, and western Asia.[12] The Glycyrrhiza genus is widely distributed worldwide and it consists of more than 30 species.

Botanical name:- Glycyrrhiza glabra
Family:- Fabaceae

Chemical constituents:- Roots contain glycyrrhizin, asparagin, sugar, starch, acid resin, gum, mucilage, phosphoric, sulfuric & malic acids. Bark contains a small quantity of tannins.

Uses:- The antimicrobial and anti-bacterial properties of Mulethi inhibit the growth of bacteriawhich causes cavities and bad breath. Dried Mulethi powder can be used to brush our teeth and mouthwash thereby reducing plaque and keeping the gums and teeth healthy and strong.

- **MINT**

Synonyms:- Oleum mentha piperita, Colpermin, Mentha Oil.
Biological Source:- It is obtained from fresh flowering tops of the plants known as Mentha piperita Linn.
Family:- Labiatae.

Chemical Constituents:- Peppermint oil contains chiefly menthol to the extent of 70 per cent. Other important constituents of the peppermint oil are menthone, menthofuran, jasmone, menthyl acetate.

Uses:- It stimulates saliva production. Saliva acts as a natural mouthwash, rinsing away bacteria and any bits of food that might feed bacteria.

- **BENEFITS OF NEEM AND CLOVE IN ORAL CARE**

A: - BENEFITS OF NEEM

- Neem Toothpaste: This is one of the easiest ways in which you can include neem in yourdaily dental routine. There are several kinds of toothpaste available in the market with neem extract as their main ingredient. Brush your teeth daily with such toothpaste, for healthier teeth and gums.

- Neem Powder: Grind the neem leaves to turn them into a fine powder. You can then makea paste by mixing this powder with a teaspoon of baking soda and water. This natural paste can be used to brush your teeth in order to attain bright and clean teeth.

- Neem Oil: Did you know neem oil has several antibacterial properties that can be usedin

order to help reduce the risk of cavities and inflammation of the gums? Just add a tinydropof neem oil to your toothpaste and gently brush your teeth & gums with the same every day.

- Neem Concoction: One can gargle their mouth with a neem concoction in order to fight the build-up of bacteria in the mouth, thus preventing bad breath. To make this concoction, just boil neem leaves in water and wait till the volume of the water is reducedto 1/4th.

- Neem Twigs: In ancient times, people used to brush their teeth with neem twigs. One canfollow this old method and brush their teeth using neem twigs. This will help in preventing gum diseases and will also work towards whitening the teeth.

- Neem Bark: Chewing on neem bark is also one such method that can be used to fight various dental concerns such as cavities and gum diseases. Not only this but neem bark isalso used in several tooth powders and pastes in order to ensure healthy oralcare for people.

ROLE OF NEEM IN ORAL CARE

Neem as a preventive major in dental care the most effective usage of neem bark and leafextract is to prevent cavities and gum disease.

Tooth decay, oral infections, bleeding, and painful gums can all be treated with neem mouthwash has antibacterial properties that can help with gum disease, cavities, and plaque buildup. Neem bark is used in many toothpastes and toothpowders, and neem twigs canbe used as oral fresheners and toothache relievers**.**

B: - BENEFITS OF CLOVE

Cloves which is the scientific name of Syzygium aromaticum are used as an element in Ayurvedic medicine.

In India, it is used as a spice material to add flavor to the food items. Similarly,theingredient is used in Chinese and African cookeries, drinks, etc.

Do you know the dental care products like toothpaste, mouthwashes also contain cloves?

It is because the aromatic flower buds (cloves) accommodate germicidal properties whichare required to get relief from various dental problems. A detailed note on the dental health benefits of cloves has been given here.

- **High nutritional value**

Cloves have a high nutritional value which is comprised of:

Calories, Fiber, Proteins, Calcium, Carbohydrates Manganese, Potassium, Vitamins A, C, E and K These compounds present in cloves are effective to abolish the fungal infections which areresponsible for various dental diseases.

- **Provides relief from toothache**

Clove oil – The fluid extracted from cloves are rich in a chemical compound called Eugenol. This is rich in anesthetic, antibacterial and antibacterial properties. Thus the Eugenol provides effective relief from pain in the oral regions. Likewise the clove oil iseffective in soothing the throbbing nerves in gums and alleviate gum infections, gum diseases like Periodontitis, etc. Dentists also recommend clove oil as a natural remedyfor periodontal diseases.

- **Highly efficient in killing bacteria**

The antimicrobial properties and compounds present in cloves are powerful to avert thegrowth of microorganisms inside our mouth. Cloves have the potent to execute Escherichiacoli (E. coli) which is responsible for gum diseases, peri-implantitis and otherharmful oral diseases.

Dental Health Specialists recommend rinsing the mouth with clove oil every day willstrengthen the gums and remove plaque build-up over the gum surfaces.

- **Protect bone health**

Magnesium is the mineral which helps in bone development and enhances the bonevolume. The Eugenol and manganese present in the cloves safeguard the bones. As cloves are rich in both these compounds, the spicy ingredient takes care of the bonedevelopmentand feeds the required nutrients to strengthen the bone.

When you fix implant teeth, a new bone needs to be developed around the implant. Thisprocess is known as Osseointegration. Cloves are competent to aid the process of bone formation.

- **MATERIAL AND METHOD OF PREPRATION**
- INGREDIENTS

Sr. No.	Ingredients	Chemical Constituents	Collection Of Raw material	Image
1	Neem leaves	Nimbin, Nimbinene, Nimbandiol and Nimbolide	It is collected fromNeem plant.	

				
2	Clove	Eugenol and Volatile oil	It is issue from ourcollege laboratorySSGMCOP Buldhana.	
3	Rock salt	Sodium Chloride	It was purchasedfrom Buldhana market.	
4	Cinnamon	Volatile oil, Tannin and Mannitol	It is issue from ourcollege laboratorySSGMCOP Buldhana.	
5	Mulethi	Glycyrrizic acid	It was purchasedfrom Buldhana market.	
6	Mint leaves	Menthol, Flavonoids, Resin and cineole	It is collected fromMint plant.	

- **Method for the preparation of herbal toothpowder**
- Take a morter & pastel in that adding the ingredient that are given below.
- For making this powder we take 8gm of rock salt and then grind it properly.
- Then we take 7gm of the clove powder after that,
- We are adding 4.78gm of cinnamon powder and then,
- Addition of 8gm of mulethi powder in the morter & pastel and then
- We are added dry neem leaves and dry mint leaves in the morter & pastel.
- After that we grind it properly into the morter & pastel.
- The fine powder is formed then we pass from the sieve then the powder is collect into thesuitable container then label it properly.

Table 1: Composition Of Herbal Toothpowder.

Sr. No	Ingredients	Quantity taken	Role
1	Neem leaves	3.5 gm	Antiseptic
2	Clove powder	7 gm	Dental analgesic
3	Rock salt	8 gm	Cleaning
4	Cinnamon powder	4.78 gm	Analgesic
5	Mulethi powder	8 gm	Antimicrobial and Antibacterial
6	Mint leaves	3 gm	Antifungal

Table 2: Formulation table.

Sr. No.	Ingredients	F1TP	F2TP
1.	Neem leaves	3.5 gm	3.7 gm
2.	Clove powder	7 gm	7.2 gm
3.	Rock salt	8 gm	8.2 gm
4.	Cinnamon powder	4.78 gm	4.80 gm
5.	Mulethi powder	8 gm	8.2 gm
6.	Mint leaves	3 gm	3.2 gm

6. BEBEFITS OF HERBAL TOOTH POWDER

Herbal tooth powder is an excellent way to improve your overall dental health. Here are some of the benefits that Ayurvedic tooth powders can offer.

- Contains natural ingredients

Ayurvedic tooth powders are made with all-natural ingredients, making them a safe choice for dental care. Unlike chemical toothpaste, ayurvedic toothpowder ingredients are not chemicals. As such, it reduces your exposure to harmful chemicals that are often found in regular toothpaste, such as fluoride or sodium lauryl sulphate.

- Strengthens Gums

The ingredients in ayurvedic tooth powders, such as Babul, Bakul, and Anantmul, are known to strengthen gums and help prevent gum disease. In particular, Babul bark powder has been used for centuries as a natural tooth cleaner and gum-strengthening agent. It has anti-inflammatory properties, and it can also prevent gum bleeding.

- Prevents tooth decay and cures different oral problems:

Ayurvedic tooth powders are also believed to prevent tooth decay and cure different oral problems like pyorrhea, swollen gums, bleeding gums, and inflammation of the gums.

One of the known Ayurvedic tooth powders ingredients is Amla known for its high vitamin C

content and its ability to kill bacteria that cause gum disease, cavities, and bad breath. It alsohelps strengthen the teeth and prevent premature tooth decay.

In addition, herbal tooth powder benefits are useful for tackling bad breath and oral odorand providing relief from toothaches. Moreover, several herbal ingredients included in ViccoVajradanti tooth powder, like Anantmul, Amla, Bakul, and Lavang, are known for their strong antimicrobial properties. As such, they help to fight off bacteria and other harmful organismsthat cause gum inflammation, bad breath, and other oral health problems.

Oral health is integral to general wellbeing and relates to the quality of life that extends beyond the functions of the craniofacial complex. Herbs have been used for centuries to prevent and control dental disease. Herbal extracts are effective because they interact with specific chemical receptors within the body.

Antimicrobial activities of these have been found to be particularly useful for periodontal diseases. Aloe vera, Bloodroot, Caraway, Chamomile, Clove, Cranberry, Evening Primrose, Garlic, Ginger, Green Tea, Haritaki, Liquorice, Myrrh, Neem, Peppermint, Propolis, Purple Coneflower, Rosemary, Sage, Thyme, Turmeric, Tulsi and Triphala are useful in dentistry. Table represents list of drugs used in oral care.

Herbal remedies have a long history of use for gum and tooth p In many traditional cultures, there are no plastic-bristle brushes, rather, the use of herbal "chewing sticks" are common.

Chewing sticks are usually taken from plants, shrubs or trees with high anti-microbialactivity. The ends of selected sticks are shredded and they are used to massage the gumsand "floss" the teeth.

In California, the young twigs of any of a number of oaks or willows have served for chewing sticks, and are still available today.

In Traditional Medicine, the many herbs have a long history of use for prevention and in assisting the body to heal itself in gum and tooth disorders.

Properties

- Using natural products.
- Rinsing & Flossing.

- Monitoring your oral health.
- Building a routine.
- Regular visits to your dentist.

Disadvantages of tooth powder

-Some herbs might leave behind a texture on your teeth.

-may be too abrasive for teeth

-may be too abrasive for teeth

7. EVALUATION OF HEARBAL TOOTH POWDER

The prepared herbal tooth powder was evaluated for its various parameters such as organoleptic, physic-chemical, rheological evaluation and anti-microbial activity.

- Organoleptic Evaluation

Organoleptic characteristics for various sensory characters like colour, odour, taste was carefully noted down as illustrated. The raw drugs and powder were separately studied byorganoleptic and morphological characters like colour, odour, texture, and appearance.

Colour: The prepared tooth powder was evaluated for its colour. The colour was checked visually under normal lamp.

Odour: Odour was checked by smelling the product. Taste: Taste was manually checked by tasting the product.

Table 4: Organoleptic evaluation of herbal tooth powder.

Sr. No.	Parameters	Result
1.	Colour	Yellowish green
2.	Odour	Characteristics
3.	Taste	Slightly bitter
4.	Texture	Fine
5.	Appearance	powder

- Physic-chemical Evaluation

-The physical and chemical feature of the herbal tooth powder was evaluated to determinethe pH, its moisture content, and ash value and the amount of inorganicmatter present in it.

- pH

-PH of formulated herbal tooth powder was observed by using pH meter. 5gm of toothpowder

placed in 100ml of beaker. Allow the 10ml of boiled and then cool water. Stir vigorously to make a suspension and measured the pH.

- Moisture Content

Tooth powder (10gm) weighed and dried it in the oven at 1050 C then it was cooled. Theloss of weight is recorded as percentage moisture content and calculated by the given formula % Moisture content = Original sample weight-Dry sample weight.

- Ash value

Weight accurately about 3gm of the powdered drug in silica crucible, Incinerate the powdered drug by increasing the heat gradually until the sample was free from carbon andcool it keep it in a desiccators. Weigh the ash and calculate the percentage of total ash in contrast to the air dried sample.

Table 5: Physical-chemical evaluation.

Sr. No.	Parameters	Result
1.	PH	5
2.	Ash value	0.58
3.	Moisture content	1.64

- Rheological Evaluation

Physical parameters like bulk density, foaming test, angle of repose ware observed andcalculates for the formulation.

- Bulk Density
- Foam test
- Flow Property

- Bulk Density: -The bulk density of the powder is the ratio of the mass of an untappedpowder sample and its volume including the contribution of the inter-particulate void volume. It is expressed in gram/ml.

Bulk density = Untapped density - tapped density

- Foam test

The foamability of the product was evaluated by taking 2gms of tooth powder with waterina measuring cylinder initial volume was noted as v1 and then shaken for ten times. Finalvolume

of foam was noted v2.

- Flow Property

A funnel was taken and fixed with a clamp to the sand. A graph paper was kept below the funnel and the height between graph paper and bottom of the funnel was measured. Then50gm of powder was weighed and poured into funnel by blocking the orifice of the funnel by thumb, the thumb was removed. The powder s2tarted flowing down onto the graph paper and formed a cone shaped pile until the peak of pile becometouched to the bottomof the funnel stem. Then, the angle of repose was calculated by following formula. Tan 0 = H/R

H = Height of powder, R = Radius of graph paper

Table 6: Rheological evaluation of herbal tooth powder.

Sr. no.	Parameters	Result
1.	Bulk density	4gm /ml
2.	Foam	Present
3.	Angle of repose	48.74

- Anti-Bacterial Activity

Anti-bacterial activity was determined by agar well diffusion method-Preparation of Agar media.

Suspended 7gm Nutrient agar in a 250ml conical flask and 250ml distilled water was added. Then, it was heated on a hot plate with frequent agitation until it completelydissolved.

Then, the media was sterilized in an autoclave at 121°C for 1 hour. Agar well diffusion method.

Approximately 25ml of Nutrient agar was poured into a sterile petridish and allowed to solidify. 50µl of bacterial inoculums was spread on the solidify nutrient agar media by usingthe sterile spreader. In these plates, four wells (5mm diameter) were punched into the agarby using a sterile cork borer. Then, the working concentration of 100mg, 200mg, 300mg, and 400mg dilution were prepared and was separately added into wells and allowed to diffuse at room temperature. standard antibiotic (Erythromycin) was used as a positive control. The plates were incubated for 24hours at 37°C for one day and another day I seen the zone of inhibition.

Table 7: Aati-microbial activity of E. coli.

Culture	Minimum inhibition concentration	Results
Escherichia coli	0.1mg/ml	Sensitive

- **RESULT**

Sr. no.	Evolution	Result
1.	Colour	Yellowish green
2.	Odour	Characteristics
3.	Taste	Slightly Bitter
4.	Texture	Fine
5.	Appearance	Powder
6.	pH	5
7.	Ash value	0.58
8.	Moisture content	1.64
9.	Bulk density	4gm/ml
10.	Foam	Present
11.	Angle of repose	48.74

- **CONCLUSION**

The research concluded that herbal tooth powder an emphasizing and more acceptable in dental research and they are safer with minimum 3 side effect than synthetic preparation. The formulated tooth powder capable to the tooth and oral hygiene and show the anti-microbial activity against pathogens. The formulated herbal tooth powder has beengood scope in future in nature remedies research and dental health of public. Natural plant products are an important source to control bacterial pathogens. Therefore, in the present study, a herbal tooth powder was developed and evaluated for antimicrobial activity which has shown excellent results. The ingredients areused in the present work, was screened andselected to possess anti-microbial effect and to maintain oral hygiene as it claimed by its results as effective tooth Powder. It does not cause any harmful effects, instead, it imparts good freshness and away from bad Odour. Oral hygiene can be maintained in a reliable, safe, and inexpensive way by using herbaltooth powder.

REFERENCES

1. Nidhi Sharma, Neeru and Dr.Sushil Kumar Dubey; To evaluate marketed herbal tooth powders with antimicrobial and antioxidant activity. WJPPS; ISSN 2278-4357, 5(7): 1473- 1491.
2. Jensena JL, Barkvoll p. Clinical implications of the dry mouth; Oral Mucosal Diseases. Annals of the New York Academy of Sciences, 1998; 842(1): 156-162.

3. Sharma S, Agarwal S, Prakash J, Pandey M, Singh A. Formulation development and quality evaluation of polyherbal toothpaste "orals". International Journal of Pharmaceutical Researchand Allied Sciences, 2014; 3: 30-39.
4. W Scherer, The ability of an herbal mouth rinse to reduce gingival bleeding, Journal of Clinical Dentistry, 1998; 9(4): 97-100.
5. Rajasekaran Aiyalu, Arul Kumaran Govindarjan, Arivukkarasu Ramasamy; Formulation andevaluation of topical herbal gel for the treatment of arthritis in animal model; BJPS, Jul./Sep., 2016; 52(3).
6. Roshan Telrandhe, Pawan Deshmukh, Mahendra Gunde; Formulation and evaluation of herbal toothpaste: compared with marketed preparation. IJPDA, 2017; 5(10): 406- 410.
7. Haque M, Singh AK, Maurya SK, Seth A. Formulation development, physico- chemical characterization and evaluation of anti-microbial activity of herbal tooth gel. Journal of Chemical and Pharmaceutical Research, 2014; 6(3): 1279-1285.
8. Nimisha N. Formulation and evaluation of herbal shampoo having antimicrobial potential. International Journal of Pharmacy and Pharmaceutical Sciences, 2013; 5: 708-712.
9. Collins Let al., Instant tooth whitening from a silica toothpaste containing blue covarine.j. of Dentistry, 2006; 36(8): 21-5
10. T. Mangilal, International journal of Ayurvedic & herbal medicine, May-June 2016; 6(3): 2266-2273.
11. Anna T, et al., Remineralization potential of a new toothpaste formulation: An In- vitro study. The j. of cont. Dent. Practice, 2004; 5(1): 1-12.
12. Shashikiran ND. Pharmacognosy. Journal of Indian Society of Pedodontics and Preventive Dentistry, 2016; 34(2): 103-103. Available from: 10.4103/0970-4388.180371. & Nimisha N. Formulation and evaluation of herbal shampoo having antimicrobial potential. International Journal of Pharmacy and Pharmaceutical Sciences, 2013; 5: 708-712.
13. Haque M, Singh AK, Maurya SK, Seth A. Formulation development, physico-chemical characterization and evaluation of antimicrobial activity of herbal tooth gel. Journal of Chemical and Pharmaceutical Research, 2014; 6(3): 1279-1285.
14. Saliasi I. Llodra J, Bravo M. Tramini P, Dussart C, Viennot S, et al. Effect of a Toothpaste/Mouthwash Containing Carica papaya Leaf Extract on Interdental Gingival Bleeding: A Randomized Controlled Trial. International Journal of Environmental Research and Public Health, 2018; 15(12): 2660-2660. Available from: 10.3390/ijerph15122660 J.

15. Mohire N, Yadav A. Chitosan-based polyherbal toothpaste: As novel oral hygiene product. Indian Journal of Dental Research, 2010; 21(3): 380-380. Available from: 10. 4103/0970-9290.70808.
16. Al-Kholani Al. Comparison between the Efficacy of Herbal and Conventional Dentifrices onEstablished Gingivitis. Dental Research Journal, 2011; 8(2): 57-63.
17. Mealey BL, Rose LF. Diabetes mellitus and inflammatory periodontal diseases. Current Opinion in Endocrinology, Diabetes and 1097/med.0b013e3282f82467. Obesity, 2008; 15(2): 135-141. Available from: 10.
18. Gupta N, Patel AR, Ravindra RP. Design of Akkalkara (Spilanthes acmella) formulations for antimicrobial and topical anti-inflammatory activities. International Journal of Pharma andBio Sciences.
19. Saliasi I, Llodra J, Bravo M, Tramini P, Dussart C, Viennot S, et al. Effect of a Toothpaste/Mouthwash Containing Carica papaya Leaf Extract on Interdental Gingival Bleeding: A Randomized Controlled Trial. International Journal of Environmental Research and Public Health, 2018; 15(12): 2660-2660. Available from: 10.3390/ijerph15122660.
20. Mohire N, Yadav A. Chitosan-based polyherbal toothpaste: As novel oral hygiene product. Indian Journal of Dental Research, 2010; 21(3): 380-380. Available from: 10.4103/0970-9290.70808.