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TO PREPARE, EVALUATE AND SUBMIT HERBAL GARGLES

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ABSTRACT

The oral cavity is the home of various bacterial species. All through some of the oral bacteria are harmless and there are certain species that are harmfull which may causes oral plaque, bad breath and mouth disease. Thus maintain a good oral hygiene is essential for healthy mouth and body. The importance of herbs are highly considered as effective in contrast chemical products. Medicinal plants play important role in curing diseases due to their antimicrobial and antifungal activity against human pathogen through decades. Herbal product help to control dental plaque, inhibit growth of bacteria, freshen breath, cleanse tooth. Herbal mouthwashes can be used as an adjunct to various oral hygiene practices like tooth brushing, flossing. They have effective antiinflammatory, anti-plaque properties and hence can be used in supportive periodontal therapy. Various herbal product and their extract such as Neem, Turmeric, clove, peppermint have shown significant advantages over chemical ones. Medicinal plants play a vital role in curing disease due to their anti-bacterial, antimicrobial, anti-fungal activity against human pathogen through decades. Natural mouthwashes may offer significant advantages over chemical ones. If such formulation can be formulated by which can be easily prepared and used safety by people at home using natural product. It may lead to improvement in the general dental health of population. Herbal mouthwashes are in high demand because they act on oral pathogen and relieve the pain instantly and are also less or no side effect. One of the most common infectious diseases encountered by many individuals are dental carries and periodontal disease at different stage of lifetime. This review is an attempt to outline such natural

substances can be used as a effective mouthwashes. The present study aimed to formulate polyherbal mouthwash that have antibacterial properties. Herbal mouthwashes are mouthwashes which are prepared from natural plant extracts. The use of Herbal mouthwash has grown advantage over chemical mouthwashes due to their nonirritant and Non-staining properties and it does not contain alcohol. The natural extracts present in these Herbal mouthwashes are obtained from various plant leaves, fruits, seeds and various tree oils. They have very minimal or no side effects and they are less harmful. Phytotherapeutic plant extracts and essential oils are used to create and produce herbal mouthwashes, which contain a variety of active ingredients such catechins, tannins, and sterols. Herbal mouthwash is used to promote better oral hygiene. It aids in reducing tooth plaque. It is applicable to gum diseases. Used to eliminate bacteria in the mouth. In this study the various natural ingredients and materials are used. Then the thin layer chromatography was done to check the quality of materials used. Then the physical evaluation, ph determination, stability study, thin layer chromatography, antimicrobial study was studied. By this study it was concluded that the developed herbal mouthwash possess significant, therapeutically efficacious, suitable vehicle for drug delivery in low cost but definitely with high potential. Hence there is need for increased usage of herbal preparation to avoid the adverse effects. This study is an attempt to outline such natural substances, which may be used as effective mouthwashes. Considering increasing antibiotic resistance and periodontal diseases incidence, the need of a safe, effective, and economical alternative mouthwash seems necessary. Combination of Persian oak husk of Quercus brantii (Jaft) with astringent and antibacterial properties of its tannins and Zataria multiflora leaves with anti-bacterial activity related to its essential oil seems to be more effective.

KEYWORDS: Materials and Methods, Macroscopic properties, Macroscopic Characteristics, chemical constituents, formulation, method of preparation, evaluation tests.

INTRODUCTION

The gargles are concentrated aqueous anti-bacterial solution that are used against oral microbes to counter oral infection, cleansing, to get rid of bad breath refreshing, antiseptic. The gargles plats an prominent role in the oral hygiene of an individual, it helps to relieve symptoms of inflamed gums gingivitis. And also it reliably used to destruct the pathogenic germs. The mouth washes are used by most of the dental patients to overcome sour mouth (xerostomia), ulcerated throat and sensitive teeth Gargles, an aqueous solution usually used to

remove plaque, is held in the mouth and swished about by the perioral muscles to get rid of infections. An active approach is taken by herbal medicines. Due to the less side effects of herbal drugs, with their use documented to date, this natural herbs main benefit is that other than this, there is no sugar or alcohol in any gargles. Herbal medicines, derived from botanical sources, have been applied in dentistry for a long history to inhibit microbes, reduce inflammation, soothe irritation and relive pain. Dentists always use gargles as an antimicrobial agent before oral surgery of the patients, because they help to sterilize the surface of the inflamed gums and teeth, thereby the contamination of any other microorganisms can be avoided. Using a gargles that contain fluoride can help prevent tooth decay, but don't use gargles (even a fluoride one) straight after brushing your teeth or it'll wash away the concentrated fluoride in the toothpaste left on your teeth. Choose a different time to use gargles, such as after. Using gargles is more effective than brushing alone. Although brushing your teeth is effective against plaque, adding gargles to the mix can be more effective that just brushing alone. Using gargles is effective because it help kill plaque and bacteria on all surfaces of your mouth and in between your teeth. Herbal gargles contains a natural ingredients called phytochemical thatcontains desired anti-microbial and anti-inflammatory effect. Dental plaque is a complex biofilm that accumulates on the Dental plaque is a complex biofilm that accumulates on the surface of teeth, containing more than 500 bacterial species. The dental plaque is produced by initial colonizing bacteria in the salivary film of enamel, followed by secondary colonization through antibacterial adhesion. Prenominal diseases affect the supporting tissues of teeth. Gingivitis, the mildest form of prenominal disease is generally caused by insufficient oral hygiene. Gingivitis is characterized by inflammation and bleeding of the gum. The main cause of gingivitis is plaque that forms on the surface of teeth and gums. As a main stay of maintain oral hygiene, mechanical plaque control measures are used. Mechanical plaque control teeth. The dental plaque is produced by initial colonizing bacteria in the salivary film of enamel, followed by secondary colonization through antibacterial adhesion. Prenominal diseases affect the supporting tissues of teeth. Gingivitis, the mildest form of prenominal disease is generally caused by insufficient oral hygiene. Gingivitis is characterized by inflammation and bleeding of the gum. The main cause of gingivitis is plaque that forms on the surface of teeth and gums. As a main stay of maintain oral hygiene, mechanical plaque control measures are used. The dental plaque is produced by initial colonizing bacteria in the salivary film of enamel, followed by secondary colonization through antibacterial adhesion. Prenominal diseases affect the supporting tissues of teeth. Dental carries – It is the most typical oral infection and

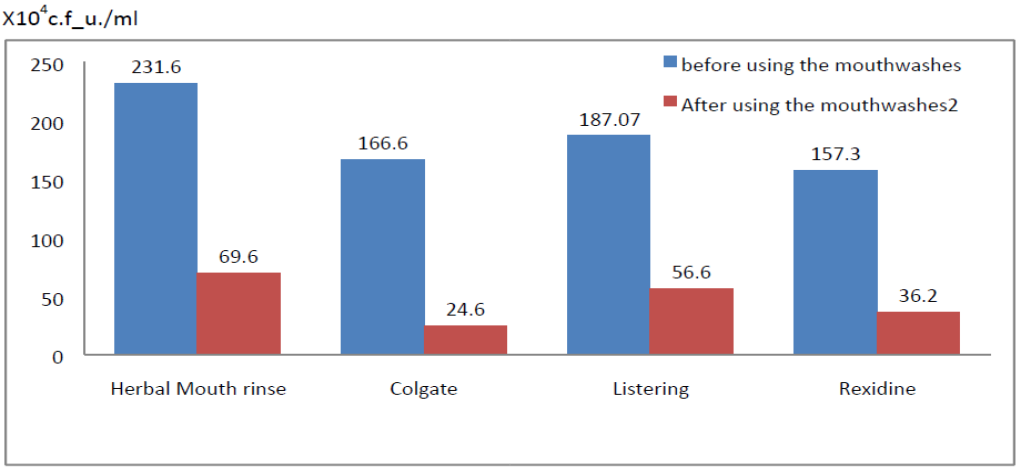
illness. A persistent, contagious illness called carries is brough on by bacteria that consume sugar to generate an acidic environment that erodes teeth. This process cause holes in tooth structure overtime. Carries risk factors are multiaffected and include both socioeconomic and physical variables. Candidiasis – A candida species infection of the oral mucosa is known as candidiasis. Candida albicans is the type of candida that affect most people frequently. They are most common in immunocompromised people such as elderly, young, childrens, cancer patients, HIV patients, diabetic patients, etc. Gingivitis – An reversible form of gingival inflammation is gingivitis. A gental form of periodontal disease. Mouth ulcer- This are the small sores that form a gums, lips, inner cheeks or palete. They are not contagious and they go away on their own. But there are treatment to help ease pain and discomfort. Maintenance of oral hygiene is imperative in preventing the buildup of plaque, a sticky film of bacteria and food that accumulates on teeth. Oral hygiene measures include mechanical aids such as toothbrushes, floss, interdental cleansers and chemotherapeutic agents such as mouthwashes, dentifrices and chewing gums. Mouthwashes (mouth rinses) are solutions or liquids intended to reduce the microbial load in the oral cavity. They provide a safe and effective chemical means of reducing or eliminating plaque accumulation. They also help in removing or destroying bacteria, relieving infection of oral tissues, preventing dental caries, masking bad breath, etc.

Most of the mouthwashes available in the market contain alcohol and other chemicals such as chlorhexidine gluconate and triclosan. These chemicals cause various side effects ranging from taste disturbance to allergic contact stomatitis. To overcome such side effects, nontoxic herbal mouthwashes using various herbs and plant extracts have been introduced. Various studies have been conducted to show the effectiveness of herbal mouthwashes. Among these herbal products, the green tea extract has gained much importance. Nowadays, oral diseases are known to be a big issue worldwide. Among numerous oral diseases, periodontal disease is one among the significant oral health condition. The quality of life is affected by oral health. Periodontal diseases are known to be chronic inflammatory conditions characterized by loss of connective tissue, alveolar bone resorption, and formation of periodontal pockets as a result of complex interaction between pathogenic bacteria and the host's immune response.

Dental plaque is being one of the primary etiologic factors in periodontal disease. Various plaque control measures are used to prevent or control the progression of periodontal diseases. One among it includes mechanical plaque control measures to maintain proper oral

hygiene. A variety of different chemical plaque control measures are available in the market, which includes mouthwash, dentifrices, chewing gums, and gel. But they have some undesirable side effects, like vomiting, diarrhea, and tooth staining. Mouthwashes may serve as a measure in controlling dental plaque and periodontal disease for mentally or physically handicapped patients who are incapable of brushing their teeth themselves or other individuals who are lacking dexterity, skill, or motivation for mechanical plaque removal. Thus, instead of using them solely, mouthwashes should always be used in association with mechanical plaque control measures.

Ideally, it is required that any antimicrobial/antiseptic agents used should be able to modify the oral environment by being specifically effective against the pathogens without altering the normal flora. There are a number of mouthwashes available in the market today worldwide. Many of these mouthwashes have not been tested adequately, and the information is lacking as to when and how to use these agents for maximum benefit." Chlorhexidine digluconate has been the agent of choice as an antiplaque agent when compared to others and is considered the gold standard. However, due to its side effects, its acceptance by patients can be limited, especially when a longer period of use is recommended. Nowadays, the majority of people are choosing natural herbal products for the prevention or treatment of diseases. Plants beingan abundant source should be considered in various pharmacological formulations. Ayurvedic medicinal plants are used in various treatments, as there are no or minimal side effects. For long-term use of mouthwashes, numerous mouthwashes have been tested in vitro and in vivo.7-13 Ayurvedic medicines give a holistic approach toward entire human beings. It can maintain the balance between general and oral health as well as an environment which is in this era necessary for the well-being of humans.



Maintenance of oral hygiene is imperative in preventing the buildup of plaque, a sticky film of bacteria and food that accumulates on teeth. Oral hygiene measures include mechanical aids such as toothbrushes, floss, interdental cleansers and chemotherapeutic agents such as mouthwashes, dentifrices and chewing gums. Mouthwashes (mouth rinses) are solutions or liquids intended to reduce the microbial load in the oral cavity. They provide a safe and effective chemical means of reducing or eliminating plaque accumulation. They also help in removing or destroying bacteria, relieving infection of oral tissues, preventing dental caries, masking bad breath, etc. Most of the mouthwashes available in the market contain alcohol and other chemicals such as chlorhexidine gluconate and triclosan.

These chemicals cause various side effects ranging from taste disturbance to allergic contact stomatitis. To overcome such side effects, nontoxic herbal mouthwashes using various herbs and plant extracts have been introduced. Various studies have been conducted to show the effectiveness of herbal mouthwashes. Among these herbal products, the green tea extract has gained much importance. The present study compared the effectiveness of an herbal mouthwash containing red ginseng extract (Dr. Dental care liquid) with different brands of commercially available mouthwashes (Colgate Plax, Listerine and Rexidine) in reducing the oral bacterial count. The composition of Dr. Dental care liquid.

AIM

To Prepare, Evaluate and Submit Herbal Gargle.

OBJECTIVE

- The main objective of formulation of herbal gargles is to maintain oral hygiene.
- To prevent the mouth ulcer.
- To clean and refresh the oral cavity.
- To study and destroy the oral microbial population.
- To reduce the throat infection.
- To study the reducing or eliminating plaque accumulation on the teeth enamel.
- To study and prevent the dental carries.
- To mask the bad breathe.
- To reduce the swelling of throat.
- To remove and destroy the bacteria.
- To cure the viral respiratory infections.
- To overcome the gum diseases.

- To treat mucositis and halitosis.
- To treat periodonatal diseases.

MATERIALS AND METHODS

• Ingredient

1) Neem
2) Turmeric
3) Honey
4) Ginger
5) Black Salt
6) Rose Water
7) Distilled Water

NEEM

Biological Source

- Neem consists of almost all the part of the plant which are used as drug of Azadirachta indica.
- It is belong to family Meliaceae.

Macroscopic Properties

Macroscopy of leaf:- Apex:- Ovate – Lanceolate

Base :- Unequal

Colour :- Smooth and dark green

Odour :- Typical

Taste :- Bitter

Microscopic Characteristics of leaf

- Dorsiventral Leaf
- Covering and glandular trichome on both surface
- Glandular trichomes are short, unicellular stalk and bi cellular or Uni cellular head
- Anomocytic Stomata

Chemical Constituents

- Various parts of the plant is used for various therapeutic and commercial purposes due to presence of different type of chemical in different parts of this plant. Some of them being:
- Leaf :- quercetin, nimbosterol, nimbin
- Flower :- nimbosterol, kaempferol
- Bark :- nimbin, nimbidin, nimbosterol
- Seeds :- Azadirachtin,Azadiradione, nimbin, vepinin

Uses

- All parts of neem tree used as anthelmintic, anti fungal, anti diabetic, anti bacterial, anti viral, contraceptive and sedative.
- Oil of neem used in soap, shampoo,balms and Cream as well as toothpaste.
- Neem gum is used as a bulking agent and for the preparation of special purpose food (For diabetic).

TURMERIC

Synonyms

Saffron Indian; haldi (Hindi); Curcuma; Rhizoma cur-cumae.

Biological Source

Turmeric is the dried rhizome of Curcuma longa Linn. (syn.C.domestica Valeton)., belonging to family Zingiberaceae.

Geographical Source

The plant is a native to southern Asia and is cultivated extensively in temperate regions. It is grown on a larger scale in India, China, East Indies, Pakistan, and Malaya.

Chemical Constituents

- Turmeric contains yellow colouring matter called as curcuminoids (5%) and essential oil (6%).
- The chief constituent of the colouring matter is curcumin I (60%) in addition with small quantities of curcumin III, curcumin II and dihydrocurcumin.
- The volatile oil contains mono- and sesquiterpenes like zingiberene (25%), α-phellandrene, sabinene, turmerone, arturmerone, borneol, and cineole. Choleretic action of the essential oil is attributed to β-tolylmethyl carbinol.
- The volatile oil also contains α- andβ-pinene, camphene, limonene, terpinene, terpinolene, caryophyllene, linalool, isoborneol, camphor, eugenol, curdione, curzerenone, curlone, ARcurcumenes, β-curcumene, γ-curcumene. α- and β-turmerones, and curzerenone.

Uses

- Turmeric is used as aromatic, anti-inflammatory, stomachic, uretic, anodyne for billiary calculus, stimulant, tonic, carminative, blood purifier, antiperiodic, alterative, spice, colouring agent for ointments and a common household remedy for cold and cough. Externally, it is used in the form of a cream to improve complexion.
- Dye-stuff acts as a cholagogue causing the contraction of the gall bladder.
- It is also used in menstrual pains.
- Curcumin has choleretic and cholagogue action and is used in liver diseases.
- Curcumin is a nontoxic authorized colour, heat resistant and sensitive to changes in pH.
- Curcuminoids have antiphlogistic activity which is due to inhibition of leukotriene biosynthesis. arTurmerone has antisnake venom activity and blocks the haemorrhagic effect of venom.

HONEY

Synonyms

Madhu, Madh, Mel, Purified Honey.

Biological Source

Honey is a viscid and sweet secretion stored in the honey comb by various species of bees, such as Apis mellifera, Apis dorsata, Apis florea, Apis indica and other species of Apis, belonging to family Apideae (Order: Hymenotera).

Chemical Constituents

The average composition of honey is as follows: Moisture 14–24%, Dextrose 23–36%, Levulose (Fructose) 30–47%, Sucrose 0.4–6%, Dextrin and Gums 0–7% and Ash 0.1–0.8%. Besides, it is found to contain small amounts of essential oil, beeswax, pollen grains, formic acid, acetic acid, succinic acid, maltose, dextrin, colouring pigments, vitamins and an admixture of enzymes, for example, diastase, invertase and inulase**.**

Uses

Honey shows mild laxative, bactericidal, sedative, antiseptic and alkaline characters. It is used for cold, cough, fever, sore eye and throat, tongue and duodenal ulcers, liver disorders, constipation, diarrhoea, kidney and other urinary disorders, pulmonary tuberculosis, marasmus, rickets, scurvy and insomnia. It is applied as a remedy on open wounds after surgery. It prevents infection and promotes healing. Honey works quicker than many antibiotics because it is easily absorbed into the blood stream.

GINGER

Synonyms

Zinziber; Guj. – Soonth; Hin. – Saunth.

Biological source

Ginger consists of the rhizomes of Zingiber officinale, Roscose and dried in the sun.

Family

Zingiberaceae.

Chemical Constituents

Ginger contains 1 to 2% volatile oil, 5 to 8% pungent principle, resinous mass and starch. Volatile oil is responsible for the aromatic smell and consists of zingiberene 6% sesquiterpenes hydrocarbon zingiberol a sesquiterpenes alcohol and besaabolene. Gingirol is a yellow pungent oily liquid and yields gingirone a ketone and aliphatic aldehyde. Shagaol is formed by loss of water from gingerol. Shagaol and gingirone are less pungent. The pungency of gingerol and ginger is destroyed, when boiled with 5% potassium hydroxide or other alkalies.

Uses

1. Ginger is stomachic, stimulant and aromatic carminative.
2. It is used more as a spice.
3. Ginger oil is used in mouth washes, ginger beverages and liquors.
4. It is used as Flavouring agent.
5. Ginger powder has been reported to be effective in motion sickness.

BLACK SALT

Kala namak or black salt is a kiln-fired rock salt with a sulphurous, pungent smell used in the Indian subcontinent. It is also known as "Himalayan black salt", Sulemani namak, bit noon, bire noon, bit loona, bit lobon, kala loon, sanchal, kala meeth, guma loon, or pada loon, and is manufactured from the salts mined in the regions surrounding the Himalayas.

Uses

Kala namak is used extensively in South Asian cuisines of India, Pakistan, Bangladesh and Nepal as a condiment or added to chaats, chutneys, salads, fruit, raitas and many other savory snacks. Chaat masala, a South Asian spice blend, is dependent upon black salt for its characteristic sulfurous egglike aroma. Those who are not accustomed to black salt often describe the smell as resembling flatulence.

ROSE WATER

Rose water is a flavoured water made by steeping rose petals in water.[1] It is the hydrosol portion of the distillate of rose petals, a by-product of the production of rose oil for use in

perfume. Rose water is also used to flavour food, as a component in some cosmetic and medical preparations, and for religious purposes throughout Eurasia.

Uses

- Soothing effect
- Clinsing effect
- Antibacterial effect
- Anti inflammatory effect

EQUIPMENT

- Beaker
- Burner
- Tripod stand
- Wire gauze
- Stirrer
- Filter paper

FORMULATION TABLE

Formulation Table

Sr.No	Ingredient	Quantity (1000 ml)	Quantity (100 ml)
1	Neem leaves	30 ml	3 ml
2	Turmeric	80 ml	8 ml
3	Honey	250 ml	25 ml
4	Ginger	40 ml	4 ml
5	Rose Water	60 ml(q.s)	6 ml(q.s)
6	Black Salt	40 ml	4 ml
7	Dst. H2O 9.5	500 ml	50 ml

METHOD OF PREPARATION

1) Neem leaves, ginger and turmeric are extracted the process of decoction.

Extraction of neem

I. Take 8-10 dried neem leaves.
II. Grind them coarsely.
III. Take 30 ml of water.
IV. After boiling the water add powdered neem

V. Boil it for 15-20 minutes on medium to low flame.

VI. Let it cool down for 30 minutes

VII. Strain the solution with the help of filter paper.

VIII. Neem extract is obtained.

EXTRACTION OF GINGER

I. Take dried ginger.

II. Grind them coarsely.

III. Take 30 ml of water.

IV. After boiling the water add powdered ginger

V. Boil it for 15-20 minutes on medium to low flame.

VI. Let it cool down for 30 minutes

VII. Strain the solution with the help of filter paper.

VIII. ginger extract is obtained.

EXTRACTION OF TURMERIC

I. Take dried turmeric.

II. Grind them coarsely.

III. Take 30 ml of water.

IV. After boiling the water add powdered turmeric

V. Boil it for 15-20 minutes on medium to low flame.

VI. Let it cool down for 30 minutes.

VII. Strain the solution with the help of filter paper.

VIII. turmeric extract is obtained.

2) Take 50 ml of water.
3) Add 8 ml of neem extract and turmeric extract
4) Mix it well.
5) Add 4 ml of rose water.
6) Then add 6 ml of rose water.
7) Take 1 gm of black salt, mix it in 10 ml of distilled water, filter it and then add 4 ml of it to the solution.
8) Add 20 ml honey to the solution.
9) Mix all the ingredients properly.
10) The herbal gargle is well prepared.

EVALUATION TEST

EVALUATION

1. Physical stability

This test included recording the visual appearance, physical separation and homogeneity of the formulated mouthwash. The different mouthwashes then kept in different temperature; 12^{o}C and 25 ^{o}C and the appearance is then checked in different temperature and the sample is found to be stable.

2. Clarity Test

The sample is taken in a beaker and then it is checked against white and black backgrounds. During the test on traces of any particles are observed in the sample. Hence, the gargle is found to be clear.

3. Viscosity Test

The viscosity of prepared herbal gargle is found to be 3.1 which indicates that the preparation has low viscosity and it is easily flowable.

4. **Antibacterial assay**

Inoculate all the six formulated mouthwash in the different plates of agar media by streak plate method and prepare a control. Place the plates in incubator and incubate at 37^{o}C for 24 hrs.

After the incubation period take out the plates and check microbial growth in all the plates. Microbes were not found in any plates, that indicates the test is successful.

5. pH Stability analysis

Here I used pH paper for measuring pH value. In 5ml of mouthwash a pH paper dipped into it. It showed a color which detected the pH range between 6-7 by cpmparing it with standard pH color range. Thus, pH value found is between 6-7.

OBSERVATION TABLE

PHYSIOCHEMICAL PARAMETERS

Parameters	Observation
Colour	Pale yellow
Odour	characteristic
Taste	Sweet
Smoothness	Smooth

RESULT AND CONCLUSION

CONCLUSION

From the above project we can conclude that the prepared herbal gargle show various properties. That show its effectiveness. The neem content show anti- microbial Activity. The turmeric show healing properties for the various infection like mouth ulcer. The honey provides sweetness to the preparation. Ginger to used to relieve that throat infection. The black salt increases its shelf life. The preparation and formulation of the herbal Gargle we were able to discuss stability, clarity, viscosity anti microbial activity and pH of the gargle. In which we came to know that the sample has passed all the above tests.

RESULT

- Formulation of herbal gargle was prepared successfully and it shows anti-microbial property.
- Evaluation test of herbal gargle was performed successfully.

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