



Formulation And Evaluation Of Herbal Mouthwash

1Girish R Ghatol, 2Dr Swati P Deshmukh, 3Swapnil S Kawarkhe, 4Ruturaj D Dhanokar, 5Vivek V Bawne

1Student, 2Principal , 3Professor , 4Student , 5Student

1Shraddha Institute of pharmacy kondala zambre washim,

2Shraddha Institute of pharmacy kondala zambre washim,

3Shraddha Institute of pharmacy kondala zambre washim,

4Shraddha Institute of Pharmacy ,

5 Shraddha Institute of Pharmacy

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 harmful which may cause 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 an important role in curing diseases due to their antimicrobial and antifungal activity against human pathogen through decades. Herbal products help to control dental plaque, inhibit the growth of bacteria, freshen breath, clean teeth. Herbal mouthwashes can be used as an adjunct to various oral hygiene practices like tooth brushing, flossing. They have effective anti-inflammatory, anti-plaque properties and hence can be used in supportive periodontal therapy. Various herbal products and their extracts 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, anti-microbial, anti-fungal activity against human pathogen through decades. Natural mouthwashes may offer significant advantages over chemical ones. If such a formulation can be formulated by which can be easily prepared and used safely by people at home using natural products. It may lead to improvement in the general dental health of the population. Herbal mouthwashes are in high demand because they act on oral pathogens 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 caries and periodontal disease at different stages of lifetime. This review is an attempt to outline such natural substances that can be used as effective mouthwashes. The present study aimed to formulate polyherbal mouthwash that have antibacterial properties.

Key Words:- Herbal Mouthwash, Herbs, Natural Extract

Introduction

History

The importance of mouth and teeth cleanliness has been recognized from the earliest days of civilization to the 21st century. As far as we have come in creating dental solutions that are effectively treat and prevent various types of oral diseases, the mouthwash rinses our ancestor used to maintain a healthy smile were just as widely used as some of the around today.

The first known references to mouth rinsing are in Ayurveda and Chinese medicine around 2700 BC. Mouthwash is a Chemotherapeutic agent used as effective home care system by the patient to oral hygiene. In the Greek and Roman periods, mouth rinsing following mechanical cleansing became common among the upper classes and Hippocrates recommended a mixture of salt, alum and vinegar.

Ancient Egyptians are known to be responsible for the first artistic drawing that emphasize the importance of beauty and hygiene. An unclean body was thought to be impure. Pedanius Dioscorides, A Greek physician and surgeon (40-90) whose writings served as a medical textbook, suggested for treatment of bad breath a mouthwash mixture of the following. Greek physician Pedanius Dioscorides, formulated a mouthwash mixture of decoct extracted from the olive tree leaves, milk, wine and oil, pomegranate peelings, nutgalls and vinegar, this was how ancient mouth washes were prepared using traditional methods and herbs.

The Romans included a secret ingredient in their mouthwash human urine. They imported urine from Portuguese people because they thought it had more strength. It is observed that in 18th century urine served as a key active ingredient due to the presence of ammonia that rendered the oral cavity free from oral pathogens especially sulphur producing organisms.

Before Europeans came to Americas, Native North American and Mesamerican cultures used mouthwashes, often made from plants such as *Coptis trifolia*.

In 1892, German Richard Seifert invented mouthwash product Odol, which was produced by company founder Karl August Lingner (1861-1916) in Dresden.

Mouthwash :-Mouthwash is an aqueous solution which is most often used for control of plaque and is a medicated liquid which is held in mouth and swished by the action of perioral musculature to eliminate the oral pathogens.

Herbal Mouthwash:-Herbal mouthwashes are mouthwashes which are prepared from natural plant extracts. The natural extract present in the herbal mouthwashes are obtained from various plant leaves, fruits, seeds and various tree oils.

Why should we prefer Herbal Mouthwash?

Herbal mouthwashes are high in demand, because they act on oral pathogens and relieve the pain instantly and are also less side-effect. Chemical mouthwashes have hydrogen peroxide and chlorhexidine as an immediate whitener, sterilizer and pain reliever of teeth, but they tend to produce discoloration of teeth and may produce side effect, meanwhile they are cost effective.

Advantages of Herbal Mouthwash

The use of herbal mouthwash has grown advantage over chemical mouthwashes due to their non-irritant and non-staining properties and it does not contain alcohol.

- 1) They have very minimal or no side effect and they are less harmful.
- 2) All herbal mouthwashes do not contain alcohol and or sugar
- 3) Herbal mouthwashes is gentle for even the most sensitive mouth.
- 4) Herbal mouthwashes has naturally antibacterial property.
- 5) It contain no harsh additives.
- 6) Herbal mouthwash doesn't come dry mouth.
- 7) It is highly in demand.
- 8) It keeps your mouth healthy.

Herbal mouthwash do not contain:

1. Alcohol
2. Sugar
3. Artificial colors
4. Stannous fluoride
5. Artificial sweeteners
6. Cetylpyridinium chloride (CPC)
7. Sodium Lauryl Sulphate (SLS)
8. Harsh chemical preservative
9. Dyes

-Use of Herbal mouthwash

Many conditions within the oral cavity require the use of a mouthwash.

This can vary from breath freshener to treatment of life threatening secondary infectious such as oral macositis in patient undergoing bone marrow transplant therapy. The use of mouthwashes requires a correct diagnosis of the oral condition and through knowledge of the product to achieve an effective treatment.

-Use of herbal mouthwash is to improve oral hygiene

- 1) It help to control dental plaque
- 2) It can be use in gum diseases.
- 3) Used for killing germs in oral cavity.
- 4) It freshen breath and covers bad breath
- 5) Using a mouthwash for gum disease prevention is very important.

-When Was Mouthwash Invented?

In the late 1800s, mouthwash was created. When toothpaste was created in the 1800s, oral care products as we know them now first entered the market. In the late 1800s, mouthwash was first mass-produced for commercial purposes. Most early mouthwash brands contained alcohol to stabilise the formulation, but nowadays, alternatives, such as cetylpyridinium chloride (CPC), offer germ-killing qualities without the requirement for alcohol stabilisation. Numerous health care products contain CPC; nevertheless, the effectiveness of each product's composition in eradicating germs that produce plaque and gingivitis varies.

-Who made mouthwash popular?

Dr. Lawrence invented Listerine, a mouthwash intended to sanitise surgical incisions and clean lips, in 1879. By 1895, Lambert Pharmaceutical Co. purchased Listerine, and dentists started using it. (9)

-Types of Mouthwash Guide to Mouthwash.

There are several types of mouthwash which all perform a particular function. There are fluoride mouthwashes which help to strengthen your teeth, antiseptic mouthwashes which deal with tooth decay and bad breath and herbal mouthwashes which do not contain alcohol. To re-iterate: the types of mouthwash available include:

- 1) Fluoride
- 2) Cosmetic
- 3) Antiseptic
- 4) Natural (herbal)
- 5) Total care

Herbal Products as Mouthwash:-

- 1) Tulsi

Synonyms:- Holy Basil, Sacred Basil, Tulashi or Tulsi, Vrinda

Tulsi consist of the fresh & dried leaves of *ocimum sanctum* L. And *Ocimum basilicum* L belonging to family Labiatae.

Family: Lamiaceae, Labiatae

Parts used: Leaves. Seeds and Roots.

Chemical constituents:-

Volatile Oil-0.8%

- i. Eugenol, nerol, eugenol methyl ether.
- ii. Caryophyllene, terpinene-4-ol-decylaldehyde
- iii. Camphor and carvacrol
- iv. Essential oils, ascorbic acid, carotene, calcium, phosphorus and insoluble oxalates.
- v. It also contains terpenes, mucilage, fixed oil and fatty acids.

Uses: Tulsi is a small plant, sub-shrub which has multiple uses ayurveda mentions the importance of medicinal uses of it.

1. The leaves are quite effective for the ulcer and infections in the mouth. A few leaves chewed will cure these conditions.
2. The herb is useful in teeth disorders.
3. Its leaves, dried in the sun and powdered, can be used for brushing teeth.
4. It can also be mixed with mustered oil to make a paste and used as toothpaste.
5. This is very good for maintaining dental health counteracting bad breath and for massaging the gums.
6. It is also used in pyorrhoea and other gum, disorders.
7. The anti-inflammatory and anti-infectious properties of tulsi make it a powerful treatment for gum disease.



Fig 1: Tulsi

2) Liquorice (*Glycyrrhiza glabra*):

About 20 natural species of Europe, Asia, North and South America, as well as Australia, can be found in the genus *Glycyrrhiza*. From "liquiritia," the English word "licorice" is derived. Liquorice is a tough herb or small shrub that erect grows to a height of approximately 2 metres. Long, cylindrical, substantial, and multibranching describe the roots. The plant's root and rhizomes are the parts that are used.

A variety of constituents of licorice have been identified, including a water-soluble, physiologically active compound that makes up 40-50% of the dry material weight. Triterpene saponins, flavonoids, polysaccharides, pectin, simple sugars, amino acids, mineral salts, and several other compounds make up this complex. The triterpenoid component glycyrrhizin is responsible for the sweet flavour of liquorice root. Glycyrrhizic acid is a natural saponin.



Fig 2: Liquorice

2) Cinnamon oil

The antibacterial action of cinnamon extracts, essential oils, and their constituents against Gram-positive and Gram-negative bacteria that cause infectious diseases in humans and degrade food or cosmetics is one of their most well-known qualities. Due to its antimicrobial properties, cinnamon is frequently used as a preservative. Indonesian native cinnamon is called Cinnamon burmannii. Its antibacterial effect is mostly due to the antimicrobial chemicals cinnamaldehyde and eugenol.



Fig 3: Cinnamon oil

4) Clove Oil :-

The importance of clove and clove oil and indicated that clove and clove bud oil can be used as an antimicrobial agent to cure dental caries. The antiseptic and germicidal benefits of cloves, they help fight infections like cold, flu, bronchitis, arthritic pain and athlete's foot. Clove and clove oil boost the immune system by purifying the blood and help to fight against various diseases



Fig 4. Clove oil

6) Neem:

Azadirachta indica commonly known as Neem. Since time immemorial it has been used by Indian people for treatment of various diseases due to its medicinal properties. It possesses anti-bacterial, anti-cariogenic, anti-helminthic, anti-diabetic, anti-oxidant, astringent, anti-viral, cytotoxic, and anti-inflammatory activity. Nimbidin, Azadirachtin and nimbinin are active compounds present in Neem which are responsible for antibacterial activity.

Parts of Neem which is used for oral care are neem leaves, bark, concoction, twigs. Neem bark is used as an active ingredient in a number of toothpastes and toothpowders. Neem bark has anti-bacterial properties, it is quite useful in dentistry for curing gingival problems and maintaining oral health in a natural way. Neem twigs are used as oral deodorant, toothache reliever and for cleaning activity. Neem used in the form of neem toothpaste, powder, oil, spray etc.

Neem has been extensively used in Ayurveda, Unani and Homoeopathic medicine and has become a wonder tree of modern medicine. It has been used traditionally for the treatment of

inflammation, infections, fever, skin diseases and dental problems. It is effective in several epidermal dysfunctions such as acne, psoriasis, eczema. Neem leaves have been reported to also possess antihyperglycemic, Immunomodulatory, anti-inflammatory, antimalarial, antioxidant, antiviral, antimutagenic and anticarcinogenic properties. Neem also exhibits antibacterial, antifungal, hepatoprotective, anti-ulcer, anti-fertility and anti-nociceptive activity. Neem twigs are used as oral deodorant, toothache reliever and for cleaning of teeth. Neem bark possesses antibacterial and deodorant activity.

Sr No	Ingredients	Role
1	Tulsi	Antibacterial, Antiseptic
2	Liquorice Powder	Sweetning Agent, Extortant
3	Glycerol	Coserfactant
4	Sodium Iorial Sulphate	Surfactant
5	Water	Vehicle
6	Cinnamon oil	Antibacterial, Flavouring
7	Neem	Antimicrobial
8	Methyl Paraben	Preservative

PREPARATION OF HERBAL MOUTHWASH :

Sufficient quantity of all ingredients are taken and measure. All the dry powder are triturated with The help of mortar and pestle. Methyl paraben was dissolved in hot water. Then addition of the Herbal ingredients like Liquorice powder, Tulsi Extract, cinnamon oil, and Glycerol and SLS with The constant stirring. Until we get the clear solution of that of preparation. Then Filtration of that specific solution with the whatmans filter paper to get clear appearance of That specific Mouthwash solution.

Storage condition: At room temperature in Airtight container.

Sr No	Ingredients	Formula for F1	Formula for F2	Formula for F3
1	Tulsi Extract	10ml	10ml	14.5ml
2	Liquorice Powder	2g	1.8gm	1.5gm
3	Glycerol	6.5ml	6.5ml	6ml
4	SLS	2.5gm	2.5gm	2gm
5	Distilled water	Q.S	Q.S	Q.S
6	Cinnamon oil	0.2ml	0.1ml	0.2ml
7	Neem Powder	2.5gm	2gm	2.5gm
8	Methyl Paraben	0.3gm10ml	0.1gm	0.3gm

Evaluation:-

1. Colour and Odour: Physical parameters like odour and colour were examined by visual examination.
2. Taste: The taste based on sweetness and sourness.
3. pH: pH of prepared herbal mouthwash was easured by using digital pH meter. The pH meter was calibrated using standard buffer solution about 1 ml of mouthwash was weighed and dissolved. In 50ml of distilled water and its pH was measured.
4. Viscosity: The state of being thick, sticky, and semi-fluid in consistency, due to internal friction. The viscosity of the ointment was done by using brooke field viscometer.
5. Preservative content: A substance that is used for keeping oral formulations, etc. In good condition.
6. Test for microbial growth: The formulated mouthwash was inoculated in the plates of agar media by streak plate method and a control was prepared. The plates were placed in the incubator and are incubated at 37°C for 24 hours. After the incubation period plates were taken out and checked for microbial growth by comparing it with the control.
7. Test for microbial growth in formulated mouthwash: The formulated mouthwash was inoculated in the plates of agar media by streak plate method and a control was prepared. The plates were placed in the incubator and are incubated at 37°C for 24 hours. After the incubation period plates were taken out and checked for microbial growth by comparing it with the control.

Summery and Conclusion:-

An attempt has been made to outline some of the commonly available herbs and plants, which are readily available and can be used as effective mouthwashes by all. If people can use and promote such cost effective measures of maintaining the oral health which are also devoid of any untoward side effects, it may help in overcoming some common dental problems. Herbs which are powerful healing agents, must be used appropriately. The use of herb in dentistry should be based on evidence of effectiveness and safety. They will improve the immunity and help in healing of oral infections.

Furthermore, the best mouthwash formulation was observed to be more stable when maintained at 25 °C. Given its stability and antibacterial properties, the polyherbal mouthwash formulated in this study has the potential to be optimized and commercialized for maintaining oral health.

Reference:-

1. Pharmaceutical manufacturing handbook production and processes, Shyne Cox Gad.
2. International journal of science and research ISSN:2319-7064 Index Copernicus Value (2015):78.96
3. Biosaintifika Journal of Biology and Biology Education 12 (3) (2020): 288-296
4. World Journal of Pharmacy and Pharmaceutical Sciences Vol 7, Issue 9, 436-445
5. International Journal of Current Microbiology and Applied Sciences Vol5 Number 11 (2016)pp.205-221
6. European journal of molecular and clinical medicine ISSN 2515-8260 Vol 07, Issue 2,2020
7. Journal of Dental Research 75(2):816-822, February, 1996
8. Galore International Journal of Health Sciences and Research Vol.3 Issue; Oct-Dec. 2018
9. Bulgaria scientific paper, Vol 36 book 5, 2008- chemistry
10. A Horticulture Information article from the Wisconsin Master Gardner Website, posted 27 Jan 2003.
11. Journal of the American Oil Chemists' Society/ Volume 64, Issue 9/ p. 1348-1351.
12. Indo Global Journal of Pharmaceutical Sciences,2018;8(2): 37-40
13. Sandhya R. Herbal Product as mouthwash- a review. Int J Sci Res. 2017;6(7):1334-7.
14. International Journal of pharma and Bio Sciences Vol3/Issue 2/ April- June 2012.
15. Badria FA, Zidan OA. Natural products for dental caries prevention. J Med Food. 2004; 7(3):381-384.
16. Journal of south African Academy of family practice/primary care- August 2014.
17. The yellow Emperor's Classic of International Medicine, Williams and Wilkins.
18. The effect of indigenous Neem *Azadirachta indica* [correction of (*Adirachta indica*)] mouth wash on streptococcus mutans and Lactobacilli growth. Ind J Dent Res, 2001; 12(3): 133-144.
19. The history of mouthwash by Mark.G.Miller.
20. Phytochemistry and pharmacological activities of *Psidium guajava*: A Review. Int J Pharm Sci Res 2010; 1(9): 9-19.
21. L.G.Vijayaalakshmi et al /J. Pharm. Sci. & Res, 2015; 7(7): 485-486.
22. Dr. Bhavna Jha Kukerja, Dr. Vidya Dodwad, Herbal mouthwash- a gift of nature.
23. Activity and biological effects of neem products against arthropods of medical and veterinary importance. J Amer Mosquito Contr Assoc 1999; 15: 133-152.