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Review Article

AN OVERVIEW ON HERBAL DRUG MOUTHWASHES

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ABSTRACT:

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 non-irritant and Nonstaining 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. Phyto therapeutic 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.

Keywords: Herbal, Mouthwash, Plaque, Gingiva.

INTRODUCTION

The primary aim of this review is to find an alternative to chlorhexidine mouthwash - A gold standard mouthwash which is prescribed by most of the dentist during treatments like gingival inflammation and periodontal diseases. Susceptibility to dental and periodontal disease depends on risk factors includes genetics, systemic factors, and oral hygiene. Plaque is the primary cause for gingivitis. Most of the chemical products contain an antiseptic that plays an important role in controlling plaque accumulation. The vehicles for delivery of chemical agents with anti-plaque action are toothpaste, mouthwashes, spray, irrigators, chewing gums, and varnishes. However, mostly accepted method of delivering the anti-microbial agents after toothpaste is mouthwashes. Mouthwashes are an antiseptic solution which is used to reduce the microbial load in the oral cavity. Mouth rinses have the ability to deliver the therapeutic effect all over the tooth surface including interproximal areas in which even toothpastes are not much effective. Even though, chlorhexidine mouthwash is more effective in plaque control, it cannot be used for long duration because some of its unpleasant side-effects after long duration usage pays more attention toward herbal drugs. Plants and plant extracts demonstrate effects that are immune enhancing, anti-inflammatory, anti-cancer, etc. This review will discuss in detail about the benefits of herbal mouthwash in comparison with standard chlorhexidine mouthwash. [1]

HERBAL PRODUCT AS MOUTH WASH

Neem

Biological Source- The part of plant used are leaves of the plant Azadirachta indica belongs to the family Mheeliaceae.

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Chemical constituent- Nimbin, Nimbdin, Nimbinin. It inhibits the formulation of plaque and the growth of the bacteria. The leaves, twigs and seeds of neem have been used to clean the teeth and fight bacterial infection. Neem extract is appropriate for treating, gingivitis and oral infectious because it inhibits the formation of plaque and growth of bacteria. The leaves, twigs and seeds of neem have been used in India and South Asia for thousands of years to clean the teeth and fight bacterial and fungal infection. Neem extract is appropriate for treating gingivitis and oral infections because it inhibits the formation of plaque and the growth of bacteria. Neem has been shown to have significant effects on both gram-positive and gram-negative bacteria and other bacteria that cause a wide array of human and animal diseases including E. coli, streptococcus.[2]

Figure.1: Neem

Turmeric
Biological Source- It is dried rhizome of the plant Curcuma longa bangs to the family Zingiberaceae.
Chemical constituents-
Curcumin, curcuminoids, turmerone. It is anti-microbial and acts as bacteriostatic and bactericidal. Turmeric causes reduction in ulceration, burning sensation, reduce inflammation and also used as colouring agent.

Figure 2. Curcumin

Clove
Biological Source- Clove consist of dried flower bud of the plant Eugenia caryophyllus belongs to the family **Myrtaceae**.
Chemical constituents- Eugenol, caryophyllene, methyl amyl ketone. Clove is dental analgesic also it fights bad breath, effective at fighting cavities, stimulate circulation [3].

Figure 3: Clove

Peppermint
Biological Source- Leaves of the plant Mentha piperata, an aromatic hern belongs to family Lamiacea.
Chemical constituents-
Menthol, Menthone, cineole. Peppermint is the mint that is most often used commercially in mouthwash because of its strong, pure, qualities. Mint is good remedy for gingivitis. Peppermint gives fragrance. Peppermint oil is more effective to reduce cavities. It has healing properties as well as anti-viral and anti-bacterial properties, it is an analgesic. [4]

Figure 4: Peppermint

Liquorice

Biological Source- It is an extract from the plant Glycyrrhiza glabra belongs to the family Fabaceae.

Chemical constituent- Glycyrrhizin. Use of Liquorice, it is a natural sweetening agent as well as flavouring additive.

Figure 5: Liquorice

BENEFITS OF HERBAL MOUTH WASHS.

For the following reasons, herbal mouthwash has become more advantageous than chemical mouthwashes:

- Herbal mouthwashes are non-irritant and they have non-staining properties.
- They are less harmful and have very few or no side effects.
- Herbal mouthwashes are the better option for even the most sensitive mouth.
- Herbal mouthwashes have naturally antibacterial property as they have polyphenols.
- It doesn't contain any abrasive additives.
- Unlike chemical mouthwashes, herbal mouthwash does not cause dry mouth.[5]

USES

Herbal mouthwashes are used:

- To enhance oral hygiene.
- To control dental plaque.
- For eradicating bacteria present in oral cavity.
- To cover bad breath and refresh the breath.
- For gum disease prevention.
- To relieve pain and inflammation.
- To treat Mucositis (swelling and irritation in the mouth) and Halitosis (bad breath).[6]

PREPARATION OF HERBAL MOUTH WASH

Four different extracts of polyherbal mouthwash were developed.

The mouthwash formula made use of four main herbal ingredients: Neem, Turmeric, Clove, Peppermint.

Three minor ingredients added which are; Liquorice, salt, coco glucoside. The minor components were used for the preservation and for improving the taste.

In order to test the anti-bacterial activity of the mouthwash herbs, different percentage of the herbal extract were prepared.

For the formulation, the mouthwash herbal ingredients were ground to obtain their powder form.

10 grams of each Neem, turmeric, clove, peppermint was separately soaked into 100 mL of distilled water and incubated at 37oC for 48 hours.
After incubation, the herbal extract was filtered.
The extract was then boiled separately and left to cool.
Ten grams of each solid minor ingredients (sweetener, salt, coco glucoside) were added separately into100 mL of distilled water.
After the ingredients extracts cool down, the major and minor ingredients were mixed.[7]

MATERIALS AND METHODS OF HERBAL MOUTH WASH PREPARATION

Collection of Herbs:

Bark, leaves, and stem of Azadirachta indica (Neem), Buds of Eugenia Caryophyllus (clove), bark of Cinnamomum zeylanicam, and root of glycerrhizaglabra (Liquorice), were randomly collect from nature.

Extraction Process:

Above all collected plants materials washed with the help of sterile water. Dried in shadow and pulverized in to powder and collect separately. The aqueous extract of each plant material was prepared by soaking the powdered plant material in sterile water and incubated it at 37degree Celsius temperature for 72 hours. The herbal extract was filtered using Whatmann filter paper;marc was washed with 10 ml of sterile water and pressed.

Materials Used

Preparation of ocimum santum Extract

Tulsi extract for the study was obtained by washing the leaves clean and sundry them after that grinding that specific solution into mixer to get finely powdering the dried leaves. Then the powder was macerated with 100% ethanol for 48 Hr in the break, then filtered that solution with the whatmans Filter paper. The obtained extract used procedure.[8]

Figure 6: Ocimum santum extract

1. **Cinnamon oil:** Cinnamon oil, cinnamon extracts, and pure compounds show significant antimicrobial activities against oral pathogens and could be beneficial in caries and periodontal disease prevention, endodontics, and candidiasis treatment.
2. **Peppermint oil:** Peppermint oil appears to be safe when taken orally (by mouth) or applied topically in the doses commonly used. Peppermint oil has been safely used in many clinical trials. Possible side effects of peppermint oil taken orally include heartburn, nausea, abdominal pain, and dry mouth.
3. **Liquorice powder:** Liquorice powder is useful in managing sore throat, cough and excessive production of mucus in the respiratory tract. It also helps loosen mucus and coughing it out. Liquorice is good properties.
4. **Glycerol:** Helps prevent products from drying out, acts as a thickener and provides sweetness
5. **Sodium lauryl sulphate:** SLS (sodium lauryl sulphate) is an emulsifying and surface-cleaning ingredient found in toothpaste and mouthwash. One of the most often used synthetic detergents in toothpaste is sodium lauryl sulphate. The materialthat the dentifrice removes from the tooth is typically emulsified or suspended by surface active agents, which also penetrate and release surface deposits.
6. **Equipment used:** Conical flask, beaker, Test tube, pipette, Measuring cylinder, Autoclave, Incubators.[9]

Table 1. Formulation of herbal mouthwash

S. No	INGRIDIENTS	Botanical name	Plant Part	Functions	PERCENTAGE
1	Neem	*Azadiracta indica*	Bark, Stem	Antimicrobial	30%
2	Clove	*Eugenia caryophyllus*	Flowder Bud	Analgesic, Anti-inflammatory	30%
3	Cinnamon	*Cinnamomum zeylanicum*	Bark	Flavouring agent, Bactericidal	20%
4	Liquorice	*Glycyrrhiza glabara*	root	Demulscent, sweetwner	10%
5	Salt	-		Osmolytic preservative	10%
6	Sodium benzoate	-		Preservative	0.2%

Preparation of ocimum sanctum extract

Addition of the Herbal ingredients like Liquorice powder, Tulsi Extract, cinnamon oil, Mentha peprita oil, and Glycerol and SLS with alcohol with the constant string with the help of Mortal and pesal. 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.

EVALUATION OF MOUTH WASHES

Colour and odour: Physical parameters like colour and odour are examined by the visual examination.

pH: The pH value of the herbal mouthwash was measured by using the pH meter. The pH meter was calibrated with the standard buffer solution about 1ml of mouthwash was weighed and dissolved in the 50ml of distilled water and pH was measured**.**

Microbial growth test: The prepared mouthwash was taken at a agar plate, and the plate were placed in the incubator at 37ºC for 24 hour. After the incubation period the plate was checked for microbial growth and compare with control.[10]

RESULT AND DISCUSSION

Physical and colour stability analysis

- Six different formulations were prepared. Each formulation was then split in half and incubated at two different temperatures: in the refrigerator at12oC and at room temperature at around 25ºC.
- Two different temperatures were chosen to determine the optimum storage conditions for the mouthwash formulation in which they were able to maintain their activity for the longest time possible. The visual appearance phase separation and homogeneity of each formulation were monitored by ocular examination.
- Expectantly, the colour of the mouthwash should be maintained throughout the experimental phase to ensure that the mouthwash formulations were acceptable. Mouthwash formulations that were stored in refrigerator (12OC) rendered a light brown colour throughout the experiment, whereas those kept at room temperature (25oC) maintained at dark brown colour.
- As indicated in the Table 7.1, the original colour of the mouthwash was dark brown following the preparations and prior to storage. The dark brown colour is dure to the influence of clove extract within the formulations.
- The formulations stored at 25ºC did not experience changes in colour, unlike the formulations stored at 12oC where there is colour shift from dark brown to light brown. The change in colour might be attributed to the oxidation of the mouthwash ingredients.
- Although the herbs that were used in mouthwash ingredients have natural anti- oxidants, the low storage temperature might have disabled their antioxidant machinery leading to a change in coloration thus lower temperature storage might affect the colour stability of the mouth wash formulation. Phase separation in the mouth wash was not observed.[11]

Table 2. Results of Stability study of herbal mouth wash

TEMPERATURE	EVALUATION PARAMETERS	OBSERVATION (Months)			
		0	1	2	3
3 – 5°C	Visual Appearance	Light brown	Light brown	Light brown	Light brown
	Phase Separation	Nil	Nil	Nil	Nil
	Homogeneity	Good	Good	Good	Good
Room Temperature (25°C RH=60%)	Visual Appearance	Light brown	Light brown	Light brown	Light brown
	Phase Separation	Nil	Nil	Nil	Nil
	Homogeneity	Good	Good	Good	Good
40°C±2°C RH=75%	Visual Appearance	Light brown	Light brown	Light brown	Light brown
	Phase Separation	Nil	Nil	Nil	Nil
	Homogeneity	Good	Good	Good	Good

Figure 7: Formulated herbal mouth wash

pH of formulation:

Since the scheme has an acidic pH of about 5.5, the pH of the for mutation was discovered to be 6.1. Oral problems are appropriate for this pH range of formulation. The greatest way to maintain a healthy pH level in the mouth is through the foods you eat. The pH level in the mouth has a direct impact on the health of our teeth and gums. Your chance of developing cavities, gum disease, and tooth decay will reduced by controlling the pH in your mouth.[12]

Figure 8: pH Formulation

CONCLUSION:

The formulated herbal mouth washes can significantly work in long way to help people in eradicating dental issues such as decay, gingivitis, sensitive teeth, root infection, bad breath, enamel erosion sand many other oral problems. Further more, we can assure that no harmful ingredients are present in mouth wash formulations. The herbal mouth wash is better than chlorhexidine mouth wash as it does not cause negative side effects, such as staining of the natural teeth, altered taste perception to prolonged use and dry mouth. The phytochemical tests confirm the presence of flavonoids, phenolic compounds, tannins, alkaloids and terpenoids. It has been

medically demonstrated that the natural herbs utilized in the current formulations may prevent the other problem of oral cavity such as tooth decay and gum diseases. This herbal mouth wash makes it impel for a person to rinse their mouth and avoid variety of oral health problems. The present study is crucial for developing an affordable, efficient herbal oral health intervention for low socio-economic communities. However, since this study was brief, longer studies with larger ample sizes are necessary.

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