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Formulation Development and Evaluation of Herbal Mouthwash

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ABSTRACT

The importance of mouth and teeth cleanliness has been recognized from the earliest days of civilization to the 21st century. Patients and oral health practitioners are faced with a multitude of mouthwash products containing many different active and inactive ingredients. Making informed decisions as to the suitability of a particular product for a particular patient can be a complex task. Although many popular herbal products have helped to control dental plaque and gingivitis, they have been used for a short time and only as an adjunct to other oral hygiene measures such as brushing and flossing. Various herbal products and their extracts such as Turmeric, Triphala, Neem, Tulsi, etc, have shown significant advantages over the chemical ones. Natural mouthwashes may offer significant advantages over the chemical ones. If such mouthwashes can be formulated 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. We have prepared formulation F1 to F5. Then according to antimicrobial activity and evaluation parameters optimized one formulation.

Keywords: Triphala, Turmeric, Menthol, Ethanol, Glycerin.

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INTRODUCTION

Various kinds of mouthwash have evolved following oral hygienic problems but apart from this mouthwash also serve to refresh breath, moreover mouthwash also contains some ingredients aids. Mouthwash can be chemical or herbal in nature. The importance of herbs are highly considered as effective in contrast to chemical products. Medicinal plants, plays vital role in curing diseases due to their antimicrobial and antifungal activity against human pathogens through decades. Periodontal diseases can lead to destruction of ligament, cementum, gingiva and alveolar bone. Plaque is the main etiological causes for the gingival inflammation. Thus the control of the plaque can be done by using instant herbal mouth wash.

Mouth washes have the ability to deliver the therapeutic ingredients and ingredients to access against the organism present on the surface of the mouth. The role of junk foods in affecting the oral cavity of an individual is high and unavoidable. The foods like Candies, chocolates, jellies and jams have high sugar content the children and adolescents are usually prone to consume this kind of sugar products but, the sugar content possess insoluble glucan which gets attached to the enamel of the tooth resulting in the formation of cavity in tooth. The carbonated drinks is other important destroyer of teeth enamel, as it erodes the enamel some may even results in depth eruption of dentine and results in tooth discolouration. Hence mouthwashes or mouth rinses are used to remove the retained food particles in a short period of time.

The mouth washes are concentrated aqueous anti-bacterial solution that are used against oral microbes to counter oral infection, cleansing, to get rid of bad breath refreshing ,anti-septic .The mouthwash plays a 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. Dentists always use mouthwash 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 mouthwash that contain fluoride can help prevent tooth decay, but don't use mouthwash (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 mouthwash, such as after.

Using mouthwash is more effective than brushing alone. Although brushing your teeth is effective against plaque, adding mouthwash to the mix can be more effective than just brushing alone. Using mouthwash is effective because it help kill plaque and bacteria on all surfaces of your mouth and in between your teeth. Herbal mouthwash contains a natural ingredients called phytochemical that

contains desired anti-microbial and anti-inflammatory effect. Herbal mouthwash becomes more popular they work without alcohol, artificial preservatives, flavor, or colors [5]. As it contains natural herbs that have natural cleansing and healing property to teeth and gums. Many herbal mouthwashes contain herbs with anti-microbial property such as Neem, Yavani satva, Nagavalli, Gandhapurataila, Pilu, Bibhitaka, Ocimum, Echinacea, Chameli leaves, etc . Some of the herbs that are used in mouthwashes are clove, which is traditionally used for oral health because of their antiseptic, antibacterial, and antiviral property, peppermint which gives cooling effect to the mouth, plantain has ability for speed wound healing and many of the herbs contains anti-microbial, anti-inflammatory, antioxidants, antiseptic properties such as neem clove, triphala with combination of amalaki, haritaki, vibhitaki, tulsi, celery, licorice, oak tree, bakula, katha, spearmint, turmeric, and Aloe vera.

Almost all chemical mouthwashes contain alcohol and fluoride which is toxic to our body in overdose. Hence, most herbal mouthwashes are safe alternative to pregnant women, people with dry mouth, diabetic and to children. Instead of artificial dyes, herbal mouthwash made of vegetable juices such as beetroot, tomato, carrot, and annatto to add color. Herbal mouthwashes are gentle enough for daily use and provide less abrasive alternative to more potent prescription formulations meant for short term use. Herbal mouthwashes do not contain any alcohol and other preservatives that cause dry mouth. Herbal mouthwashes are suitable for oral prophylaxis. As it contains herbs and its extracts, that can maintain good oral hygiene without causing any toxic effect to our body. For daily use, herbal mouthwashes are more preferable than chlorhexidine mouthwash considering its side effects on long term usage.

MATERIALS AND METHOD

Materials:

A mixture of Triphala which content behara, harda, amala was taken also turmeric and some amount of alcohol, water, and menthol.

Preparation of the formulation:

Weigh the exact quantity of ingredient i.e. Triphala, turmeric, glycerine, and alcohol. Then take sufficient quantity of water then add this above ingredient in water in beaker and heat it on the burner for few min up to boil it and cool it then add the glycerine and alcohol in proper amount and filter it.

Formulation Table:

Name of ingredient	F1	F2	F3	F4	F5
Triphala	0.01gm	0.02gm	0.03gm	0.04gm	0.05gm
Turmeric	0.01gm	0.01gm	0.01gm	0.01gm	0.01gm
Glycerine	-	-	0.25ml	0.5ml	1ml
Alcohol	0.5ml	0.5ml	0.25ml	0.25ml	0.25ml
Thymol	0.2ml	0.2ml	0.2ml	0.2ml	0.2ml
Water	q.s.	q.s.	q.s.	q.s.	q.s.

EVALUATION OF FORMULATION:

For the evaluation purpose we do pH test, Antimicrobial test and stability study. For the pH test we check pH of formulation by pH meter and for the stability study we check the formulation at room temperature and in refrigerator for specific time period. And in antimicrobial test we take the nutrient agar in that we add the few drops of formulation and kept in incubator for 24 Hrs. and after that we can easily see the zone of inhibition. By which we can decide the antimicrobial activity.

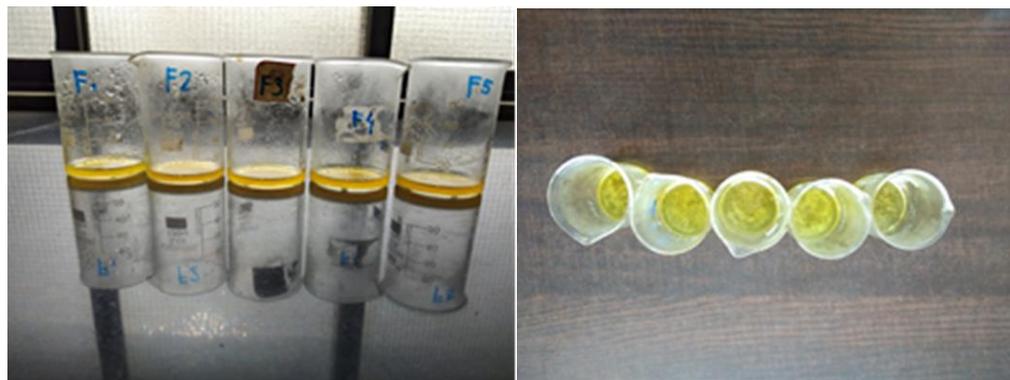
pH:

To check the pH of the formulation take the formulation and dip the glass rod of the pH meter in that formulation then pH meter will show the accurate reading of the formulation.



Stability study:

We prepare about 5 formulation & to check their stability. so we put this formulation 1st in the normal temperature for several days and after that put in the refrigerator for some interval of days and after that we conclude that all this formulation will stable at room as well as cool temperature.



Antimicrobial test:

To check antimicrobial activity of the formulation we take the nutrient agar and add some amt. of water in that and then take this agar in the sterilized petri plate then add bacteria in that like E – coli and stand it for solidification after solidification make hole in the petri plate and add some few drops of formulation in that and enclosed it & put in the incubator for 24 hrs after that we will gate a zone of inhibition according to that we conclude the antibacterial activity.

Sr . No.	Bacteria	Formulation	Zone of inhibition (mm)
1	E- coli	F4	18
2	Subtilis	F4	20



Sr . No.	Bacteria	Formulation	Zone of inhibition (mm)
1	E- coli	F5	26
2	Subtilis	F5	23



CONCLUSION:

The herbal mouthwash generally made up of herbal ingredient which give the best result as compared to another chemical mouthwash. In which we used the all natural ingredient so they can cause less harmful effects. It was cause less side effects. The use of herbs in dentistry should be based on evidence of effectiveness and safety. The anti-bacterial activities could be enhanced if active components are purified and adequate dosage determined for proper administration. The present results therefore offer a scientific basis for traditional use of herbal mouth wash. In this study, the mouthwash formulations, F4 and F5, which contained equal amount of alcohol i.e. ethanol(0.25%) , were the best formulations with adequate stability. The results also showed anti-microbial activity in both mouthwash formulations. Therefore, these two preparations can be used for further studies to establish their efficacy and safety as antibacterial and freshener herbal mouthwashes.

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