

Formulation and Evaluation on Polyherbal Powder to Liquid Handwash

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Abstract

Alcohol-based sanitizers make up many of the antiseptic hand washes on the market, and they can cause some problems. To avoid these negative effects like dermatitis, itching, drying, irritation, One attempt has been made to create a polyherbal hand wash using extracts from the synthetic handwashes. The Cup Plate Method was used to test the effectiveness of the prepared poly-herbal hand wash against skin pathogens collected from volunteers. Due to the combined activity of phytoconstituents present in extracts, the Cup Plate Method revealed that hand wash prepared from alcoholic extract and aqueous extract of ginger rhizomes is effective. The outcomes from the current work support the fuse and use of spices in definitions to give an improved impact. Herbal hand wash was evaluated using tested parameters like color, fragrance, and chemical parameters like pH, viscosity, foam height, foam retention, antimicrobial activity, and skin irritation test, among other things. and the results that were obtained were within the acceptable limits and had little or no side effects. The appearance, pH, and viscosity of two handwash formulations were examined for their physical characteristics. The agar diffusion method was used to test the antimicrobial activity of prepared hand wash formulations against skin pathogens such as Staphylococcus, Pseudomonas aeruginosa, and Escherichia coli.

Keywords: Aloe vera, Antimicrobial activity, Herbal handwash, Hygiene, Organic handwash, Tulsi.polyherbal hand wash, hand hygiene, evaluation test, ingredients

INTRODUCTION

Since ancient times, washing hands with soap and water has been considered a vital component of personal cleanliness and is frequently ingrained in religious and cultural practices (Ravi et al., 2005). Although the connection between washing hands and the transmission of the disease was established only two centuries ago, this can be viewed as remarkably early compared to the findings made by Pasteur and Lister, who passed away decades later. Since the skin is considered among the body's most exposed parts, the skin needs to be protected from a spectrum of microorganisms. Moreover, various mammals are also susceptible to such infections. Hand washing is unquestionably an essential safety measure to safeguard the skin from

hazardous microorganisms and stop spreading numerous contagious diseases. The main method of spreading diseases and germs is through the hands. Therefore, maintaining good hand hygiene is crucial to restrict the spread of dangerous bacteria and nosocomial illnesses. Numerous medicinal herbs are frequently used to treat skin conditions and also have antibacterial properties. However, due to the complexity of their chemical makeup, plants' medicinal properties depend on specific active chemical components. Polyherbal powder hand wash is a natural, gentle, and effective cleansing product. It typically combines multiple herbs, each with unique benefits, to:

1. Cleanse hands thoroughly
2. Soothe and moisturize skin
3. Provide antimicrobial properties
4. Promote healthy skin

Some common herbs used include:

1. Neem (antimicrobial)
2. Tulsi (antioxidant)
3. Turmeric (anti-inflammatory)
4. Aloe vera (soothing alternative for daily hand hygiene).^[1,2,3,4]

Ingredients

1. Turmeric

Kingdom: Plantae

* **Subkingdom :** Tracheobionta

* **Superdivision:** Spermatophyta

* **Division:** Magnoliophyta

* **Subclass :** Zingiberidae

* **Order:** Zingiberales

* **Family:** Zingiberaceae

* **Genus:** Curcuma

* **Species :** longa

* **Scientific name:** Curcuma longa^[5,6]



Fig.1 Turmeric Powder

2. Clove

Synonyms:-Laung, Clavo, lavanga.

Biological Source:-Caryophyllus aromaticus (former botanical name)

Chemical Constituents:-Eugenol (70-80%), Eugenol acetate (5-15%), Beta-caryophyllene (5-10%), Vanillin.

Family:-Botanical Family - Myrtaceae

Uses

Insecticidal properties,

Natural and eco-friendly,

Coating incense sticks.^[7,8]



Fig. 2 Clove

3. Aloe vera

Kingdom :Plantae

Biological Source:Aloe barbadensis miller

* **Order :**Asparagales

- * **Division** : Spermatophyta
- * **Subdivision** : Angiospermae
- * **Class** : Monocotyledonous
- * **Family** : Liliaceae
- * **Genus** : Aloe
- * **Species** : barbadensis Mill

Chemical constituent : Glycosides, anthraquinone glycosides, aloe emodin, flavonoids, phenylpropanoids, coumarins, phytosterols, naphthalene analogs, lipids.^[9,10,11]



Fig .3 Aloevera

4. Orange peel

Synonym –santra

Biological Source: Citrus sinensis

Uses - food , skin care , medicine

Family - rutaceae

Chemical constituents - vit C , flavonoids, carotenoids.^[12,13,14,15]

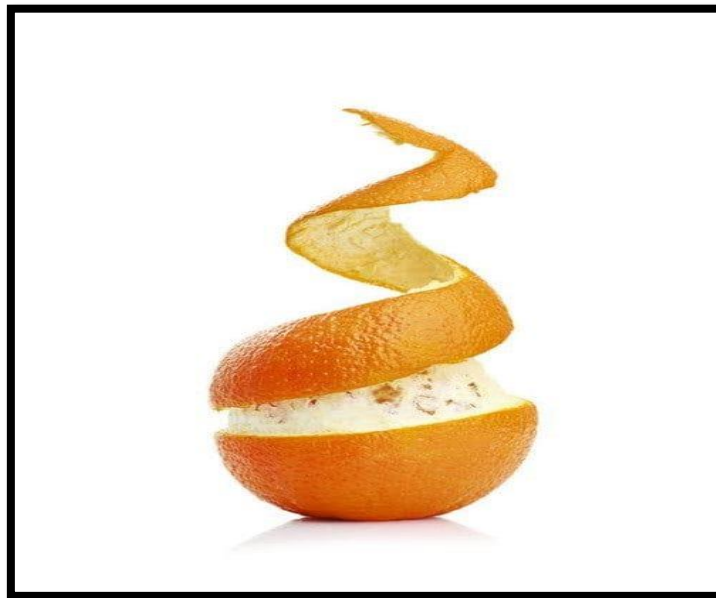


Fig.4 Orange peel

5. Ritha

Synonym –soapnut

Biological Source:Sapindusmukorossi

Family - sapindaceae

Uses - natural soap , health care

Chemical constituents - saponins , steroids, flavonoids.^[16,17,18,]



Fig. 6 Ritha

6.Honey

Synonym –Honeycomb

Biological Source: Nectar collected by bees from flowers, transformed into honey through regurgitation

Family –Apidae

Chemical Constituents –Sugars , phenolic acids , flavonoids

Uses – Skincare ,food ,medicine.^[19,20,21]



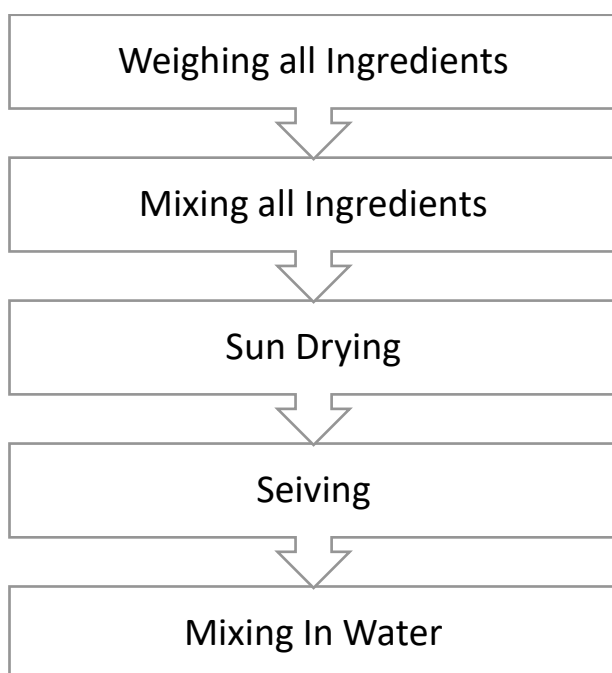
Fig.6 Honey

Experimental work

A)Formulation table

Sr no	Name of ingredients	Quantity taken (25gm)
1	Turmeric	4gm
2	Clove	2gm
3	Aloevera	4gm
4	Orange peel	5gm
5	Ritha	7gm
6	Honey	3gm

B) Method



Evaluation Parameters

A) Physical Appearance

Colour – Brownish Colour



Fig.7

B)Skin irritation test

The non-irritancy test results for anpolyherbal hand was formulation was assessed. No irritation or redness were visible during preparation. The condition was observed for 24 hours and 28 minutes .

C)Swelling index

Swelling index value is near the approximate value of the ideal value.

Result:-Swelling index

Initial volume	Final Volume
14 mcm	22 mcm



Fig.8

D) Foaming Index:-

Height of foam

Foaming Index = _____

Total volume of test tubes

Result :-Foaming index

Initial Volume	Final Volume	Volume of test tube	Foaming Index
1 ml	0.2	17	0.011
2 ml	0.7	17	0.041
3 ml	1.6	17	0.094
4 ml	1.9	17	0.111
5 ml	2.0	17	0.117
6 ml	2.2	17	0.129
7 ml	2.6	17	0.152
8 ml	2.8	17	0.164
9 ml	2.8	17	0.164
10 ml	3.9	17	0.229



Fig.9

E) PH Test:**Fig.10****Discussion:**

The polyherbal powder formulation exhibited significant antimicrobial activity against tested microorganisms.

The liquid hand wash preparation showed improved solubility, stability, and ease of use compared to the powder form.

Physicochemical analysis revealed acceptable pH, viscosity, and foam stability.

The polyherbal formulation's antimicrobial properties can be attributed to the synergistic effects of its individual herbal components.

The liquid hand wash preparation's improved solubility and stability enhance its potential for commercial applications.

The study suggests that the polyherbal liquid hand wash could be a viable alternative to conventional hand wash products, offering benefits such as natural ingredients, gentle skin care, and antimicrobial efficacy.

Conclusion:-

Skin, respiratory, gastrointestinal, and other diseases are primarily spread through the hands. Due to numerous illnesses and bacteria, the bar soap becomes contaminated, which could cause germs to spread. Soaps are typically used to clean and remove dirt and microorganisms from the skin's surface. Each person has a different preference for soap, but the soap must not irritate skin that is already sensitive and must be effective in removing skin-infecting germs. Compared to available commercially manufactured hand washes, this formulated hand wash is more efficient. As a result, these substances can be isolated and added to bases to create superb antibacterial hand soap with little to no negative effects. Thus, a novel approach for overcoming antibiotic resistance in pathogenic organisms can be developed, allowing for the provision of safe and healthy living through germ-free hand techniques.

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