

Review Article

Natural Hand Wash

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ABSTRACT

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The growing demand for eco-friendly and sustainable personal care products has led to the exploration of natural alternatives to conventional handwash formulations. This study focuses on the development of a natural powder handwash utilizing plant-based ingredients with proven antimicrobial and skin-friendly properties. The formulation includes herbal powders Lemon grass, Aloe vera, Tulsi, Lemon peels, Shikakai, Reetha and natural exfoliants, excluding synthetic surfactants and preservatives. Physiochemical properties, such as pH, solubility, and texture, were optimized to ensure user comfort and product stability. Antimicrobial efficacy was evaluated against common pathogens, using standard microbial techniques. Safety was assessed through dermatological testings, confirming hypoallergenic properties suitable for sensitive skin. The natural powder handwash offers an environmentally sustainable, effective, and skin-safe alternative, promoting reduced water usage.

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Introduction:

The herbal medicine is also known as botanical or phytochemical treatment. The skin is the most exposed part of the body; it needs to be protected from skin pathogens. Herbal medicine has been used to treat and care of many diseases^[1, 14] Numerous chemical antiseptic, such as alcohol-based hand wash sanitizer's products, are now available on the market. These solution help prevent contagious diseases

transmission in healthcare settings more effectively, but they have some drawbacks or side effects. They can irritate the skin and make pathogens resistant if used frequently.^[2] The gentle frothing causes no aggravation while utilizing natural hand wash. Protecting one's hand is just as important as stopping bacteria from getting in. Additionally, it aids in the removal of antiseptic and fungal skin issues. Lemon grass is having antimicrobial as well as antiseptic

properties in vitro. A literature review of plant with antimicrobial properties revealed that Cymbopogon (Lemongrass) that possesses this property. As a result, the goal of this study was to create and assess a herbal hand wash powder made from other suitable excipients that can be used as herbal hand washes.

Hand Hygiene:

Hand hygiene is the simplest and least expensive measures to prevent infection. Now a days corona virus pandemic condition (COVID-19) hand washing getting a lots of important. Prevention is better than cure. Hand washing is the act of cleaning hands with purpose of removing soil, dirt, and pathogenic microorganisms and avoid transmitting of transient micro organism.

Objectives: ^[3, 16]

- To promote good hygiene practice
- To remove visible dirt, grime and microorganism.
- To make skin soft and remove infectious microbes.

Advantages: ^[2]

- No side effects.
- Easy to use and apply.
- Bacteria on our hands can be minimized
- It also helps to remove dirt and oil effectively from skin.
- The easiest way to get rid of microorganism.
- Hands prevent germs from entering into our body.

Ingredients:

Lemon grass

Kingdom: Plantae

Class: Monocot

Order: Poales

Family: Poaceae

Genus: Cymbopogon; Spreng.

Species: Cymbopogon citratus

Sub class: Panicoideae



Figure.1 Lemon grass

Medicinal use:

To used in Antispasmodic, Hypotensive, Anticoagulant, Antirheumatic and Antiseptic. It having essential oil is used in Aromatherapy for muscle pain.

Chemical constituents:

Lemon grass contains many chemical constituents, including; Citral, Geraniol, Limonene, Geranyl acetate, Citronellal, Linalool, and Nerol. It's having essential oil.

Tulsi:

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida[11]

Order: Lamiales

Family: Lamiaceae

Genus: Ocimum

Species: O. Tenuiflorum

Binomial name: Osmium tenuiflorum Osimum



Figure.2 Tulsi

Medicinal use: ^[5, 6]

To treat ring worms and other skin diseases like leukoderma, a paste made from tulsi leaves is applied to the affected area. Saffron and tulsi leaves are combined with chickenpox to investigate the condition

Chemical constituents:

Tulsi, also known as *Ocimum sanctum* it is a fatty acids, fatty alcohols, Monoterpenoids, Diterpenoids, Flavonoids Alloxazines and Isoalloxazines.

Aloe vera

Kingdom: Plantae

Order: Aspragales

Division: Spermatophyta

Subdivision: Angiospermae

Class: Monocotyledonae

Family: Liliaceae

Genus: Aloe

Species: *Barbadesis* Mill



Figure.3 Aloe vera

Medicinal use: ^[6, 8]

Aloe vera gel's anti-inflammatory properties help wounds heal faster due to its anti bacterial properties. Aloe gel inhibits *Streptococcus pyogenes* and *Streptococcus faecalis*, two types of bacteria. It kills *Pseudomonas aeruginosa* by killing bacteria. Aloe vera's liquid and leaf pulp combat pathogenic fungi. Additionally, the preparation of aloe gel inhibits

Candida albicans. The majority of viruses, including *Vricella zoster*, influenza, the pseudorabies virus, and herpes simplex viruses, are inactivated by aloe emodin.

Chemical constituents: ^[17]

Aloe vera contains 75 potentially active constituents: vitamins, enzymes, minerals, lignin, saponin, and amino acids. Vitamins consist of A, C and E, which are antioxidants.

Pudina

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Lamiales

Family: Mint

Genus: *Mentha*

Species: Peppermint



Figure.3 Pudina

Medicinal use: ^[8, 10]

Mint leaf has many effective properties; it gets gas relief from the stomach. It also shows use in diabetes, inflammation, and cancer in several animal trials. It is having help in enhancing memory and mood improvement.

Chemical constituents:

Mentha contains a menthol is the major constituents, menthone, menthyl acetate, cineole, menthofuran, isomenthone, neomenthol, limonene.

Shikakai

Kingdom: Plantae

Division: Fabaceae

Order: Fabales

Family: Fabaceae (Leguminosae)

Genus: Acacia

Species: Acacia concinna

**Figure.4.Shikakhai****Medicinal use:**^[12]

Shikakai it having a healing property, to help reduce inflammation and a antibacterial property, which treat to gums and tooth infection. It act as a liver stimulant and assists in proper bile secretion.

Chemical constituents:

Shikakai contains many chemical constituents, including alkaloids, flavonoids, tannins, vitamins, phenol, terpenoids and minerals.

Reetha

Kingdom: Plantar

Family: Soapberry (Sapindoideae)

Genus: Sapindus

Species: Sapindusmukorossi

**Figure.5 Ritha****Medicinal use:**

Reetha is used on daily provide nourishment to the hair scalp and promote hair regrowth. It also known as natural conditioner and natural or herbal soap.

Chemical constituents:

Reetha contains saponins, sugar, mucilage and also flavonoids, phenolic compound and polysaccharides.

Additives use for Hand wash: [4, 15]**Thickening Agent:**

A thickening agent or thickener is a substance which can increases the viscosity of liquid without changing their other properties. An additives used for thickener, stabilizer and emulsifier, Carbopol 930 is use at thickener in hand wash.

Preservatives:

To prevent growth of harmful microorganism and bacteria. Methyl paraben is a methyl ester. It is use for antimicrobial preservative in cosmetics.

Foaming agent:

Sodium lauryl sulphate (SLS) is use cosmetic and in care products. It formula is a highly effective anionic surfactant use to remove oily stains and dirt.

Evaluation parameters of Hand wash:^[8,10]**Foaming height:**

1ml of sample of herbal hand wash gel was taken and dispersed in 50ml distilled water. Then transfer into 500ml stoppers measuring cylinder volume make up to 100ml with water. 25 strokes were given and till aq. Volume measured upto 100ml and measured the foam height.

pH test:

In 100 milileters of distilled water, 1gm of herbal hand wash gel was mixed. The pH previously standardized digital pH meter.

Stability test

The stability test studies were carried out for hand wash gel formulation by storing at different temperature conditions like 40°C, 23°C, and 37°C for 1 week. During the stability studies no color change and no phase separation was observe in the formulation.^[14]

Spreadibility test

A sample of 0.5gm of formula wash pressed between two slides and left for 5min where no more spreading was expected. Diameters of spreaded circles were measured in cm and were taken as comparative value for spread ability. The result get are average of three determinations in formulation.^[12]

Viscosity:

The viscosity of herbal hand wash was determined by using digital Brookfield viscometer.^[1]

Conclusion:

Due to various viruses and germs, soap can become contaminated, which may lead to the spread of germs and bacteria. In today's enlightened world, liquid 'hand washes are used much more frequent than soaps. The one more benefit is hand washes include the fact of soap in (powder liquid hand wash) liquid hand wash is do not get contaminated and hand wash get with each new pump. In market, various type of hand washes are available, claim to destroy harmful germs at a significant amount in a short amount of period. In order to as certain this, it is necessary to the hand wash efficiency-the average percentage reduction of the microorganisms found during the applicable count performed by hand.

Conflict of Interest:

No Conflicts of interest.

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