

# Formulation and Evaluation of Herbal Handwash

Varpe Seema B<sup>1</sup> and Rathod Kanchan K<sup>2</sup>

Lecturer, Valmik Naik College of Pharmacy, Telwadi, Kannad, Sambhajinagar, India<sup>1</sup>

Professor, Valmik Naik College of Pharmacy, Telwadi, Kannad, Sambhajinagar India<sup>2</sup>

**Abstract:** *Natural remedies are more acceptable in the belief that they are safer with fewer side effects than the synthetic ones. Herbal formulations have growing demand in the world market. The present work deals with the development & evaluation of the herbal hand wash containing using extract of ocimum sanctum leaves. Hand-wash is very important process in day to day life. Hands are major source through which microbial infections may occur thus proper hand was must be required using appropriate hand wash formulation. Herbs are known to have antimicrobial properties thus utilization of such herbs as antimicrobial agent is a common practice now. Present study involves formulation of herbal hand wash using extract of ocimum sactum (tulsi). Disc diffusion method was utilized for evaluation of the antimicrobial activity against skin pathogens of the prepared herbal hand. Its efficacy was checked and compared with the standard commercial hand wash. Results revealed that extract of ocimum sanctum (tulsi) formulation was more efficient in reducing the number of organisms from hands based handwash with less or no side effects. Thus, owing to higher antimicrobial activity efficacy these herbal extract can be used in the preparation of herbal hand wash on commercial scale*

**Keywords:** Herbal Handwash, herbal extract, ocimum sanctum, lemon, hygien , cleaning, foam

## I. INTRODUCTION

The herbal medicine is also known as phytomedicine or botanical treatment. The use of any plant's seeds, roots, leaves, bark, flowers, or aerial parts for medicinal purposes is known as herbal medicine. Since 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 for many diseases.[1] )Hand Washing removes visible dirt from hands and reduces the number of harmful microorganisms such as E. coli and S aureus can be carried by people, food, animal or equipment & transmitted. To protect the skin from harmful microorganism and to avoid spreading of numerous contagious diseases, hand washing is extremely important. Books on Ayurvedic medicine, written in the Vedic period (3500–1600 B.C.) describe practices, including the use of medicinal plants. In modern complementary and alternative medical practice, plants are the primary source of therapeutics because bioactive components present in each part of the plant, including the seeds, root, stem, leaves, and fruit. The benefits associated with the use of medicinal plants are like they are costeffectiveness and global availability. They safe as compare to synthetic compound. They are natural product so they are side effect free which is most important advantage of medicinal plant[2] Hand hygiene is the most crucial step to take in order to stop the spread of dangerous germs and diseases because hands are the primary means of transmission for bacteria and infections[3] Early in the 19th century is when the idea of washing hands with an antiseptic chemical presumably first came about. A French pharmacist proved in 1822 that solutions containing lime or soda chlorides might get rid of the unpleasant smells associated with human corpses and may be used as disinfectants and disinfectants. This pharmacist recommended that medical professionals and other people caring for patients with contagious disorders soak their hands with a liquid chloride solution in a paper that was published in 1825.[3] )Skin is first protection line of human body it covered the inner part of body and protect them protection from the pathogens. So protect the skin from harmful microbes and to prevent spreading of many contagious diseases hand washing is important precaution. Hands are primary mode of transmission of microbes and infections. Hand hygiene is therefore the most important measure to avoid the transmission of harmful germs and prevent the health care associate infection. Hand hygiene is the simplest, and least expensive measure to prevent infection. Now a day 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 the purpose of removing soil, dirt, pathogenic microorganisms and avoid transmitting of transient micro organism.[4]

Numerous chemical antiseptics, such as alcohol-based sanitizers and chlorhexidine products, are now available on the market. These soaps or solutions help prevent contagious disease 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[5]

## II. ADVANTAGES AND DISADVANTAGES OF HERBAL HANDWASH

### 2.1 Advantages of Herbal Hand wash :-

- No side effects.
- Bacteria on our hands can be minimized.
- It also helps to clear antiseptic and fungal problem faced by the skin.
- It also helps to remove dirt and oil effectively from the skin.
- Easier access compared to using soap and water.
- The easiest way to get rid of microorganism.
- Hand wash prevents germs from entering into our body [6]

### 2.2 Disadvantages of herbal Hand wash

- Chronic skin damage.
- Irritant contact dermatitis and eczema.

### 2.3 Benefits of using herbal hand wash :

Herbs are readily available in both urban and rural settings, making it simple for everyone to use them.  
Affordable: Herbal plants are less expensive than the chemical components found in synthetic hand wipes.  
Enhanced effectiveness: Herbal hand soaps work better to encourage good hand hygiene.  
Less adverse effect: Compared to other hand washes, herbal hand washes have fewer side effects [7]

## III. MATERIALS USED IN HERBAL HAND WASH

- 1) Tulsi
- 2) Lemon
- 3) Rose water
- 4) Sodium Lauryl Sulphate
- 5) Glycerine
- 6) Methyl Paraben
- 7) Distilled Water.



**Ocimum Sanctum (Tulsi):**  
**scientific classification of tulsi:**  
Kingdom : plantae  
Division : magnoliophyta  
Class : Magnoliopsida

Order : Lameness Genus : :

Ocimum Species : O.tonuiflorum

Bionomical name : ocimum tenuifloram/Ocimum sanctum

Nepali name : Tulsi

Ocimum sanctum commonly known as holy basil or Tulsi. Tulsi consist of fresh and dried leaves of ocimum sanctum belonging to family Lamiaceae. Tulsi is an aromatic perennial plant.tulsi known for its detoxifying purifying and antimicrobial properties.tulsi helps to protect your hands by killing 99.99%of germs.Tulsi now,days cultivated commercially for its volatile oil.it is much branched small herb 30 to 75cm in height. All parts of tulsi are used in medicine especially fresh and dried leaves.leaves are ablong acute with entire sterolate margins pubescent on both sides and minutely gland dotted[8]



#### **LEMON :**

##### **Scientific Classification of Citrus lemon:**

Kingdom : Planate

Family : Rutaceae

Order : Sapindales

Genus : Citrus

Species : c.lemon

Lemon was introduced into Spain and North Africa sometime between the years 1000 and 1200 CE. It was further distributed through Europe by the Crusaders, who found it growing in Palestine. In 1494 the fruit was being cultivated in the Azores and shipped largely to England. As a cultivated tree, the lemon is now grown to a limited extent in most tropical and subtropical countries. Lemon trees for commercial planting are usually propagated by grafting or budding the desired variety on seedlings of other Citrus species, such as the sweet orange, grapefruit, mandarin orange, sour orange, or tangelo. Seedlings of these species are superior to lemon seedlings as rootstocks because they are more uniform and less susceptible to the various crown and foot-rot diseases.[9]



#### **Rose water:**

Rose water is a liquid made from water and rose petals. It is used as a perfume due to its sweet scent, but it has medicinal and culinary values, as well. There is a long tradition of rose water being used in medicine, including in Iran and other parts of the Middle East, as far back as the 7th century. There is also evidence of North American Indian tribes using it to treat ailments.

**Fast facts on rose water:**

Rose water can usually be used without any side effects.  
 Rose water contains numerous, powerful antioxidants.  
 Recent research has found that it can help relax the central nervous system.[10]

**Sodium Lauryl Sulfate (SLS):**

Sodium Lauryl Sulfate (SLS) is a widely used surfactant in cleaning products, cosmetic, and personal care products. SLS's uses in these products have been thoroughly evaluated and determined to be safe for consumers and the environment. Sodium Lauryl Sulfate (SLS), also known as Sodium dodecyl sulfate, is a widely used surfactant in cleaning products, cosmetics, and personal care products. The sodium lauryl sulfate formula is a highly effective anionic surfactant used to remove oily stains and residues. It is found in high concentrations in industrial products, including engine degreasers, floor cleaners, and car wash products, where workplace protections can be implemented to avoid unsafe exposures. SLS is also used in lower concentrations in household and personal care products such as cleaning products, toothpastes, shampoos, and shaving foams.[11]

**Glycerine:**

Glycerine is an material of outstanding utility with many areas of application.

**Methylparaben:**

Methyl and Propyl Parabens Uses Parabens are antimicrobial chemicals used as preservatives in packaged foods, pharmaceuticals, cosmetics, and personal care products. Methyl and propyl parabens are commonly found together in paraben mixtures used in consumer products. [12]

INGREDIENTS	QUANTITY	ACTIONS
Ocimum Sanctum (Tulsi):	20ML	Antibacterial agents
Lemon	20ML	Antiseptic agents
Rose water:	5ML	Perfuming agents
SLS	6ML	Foaming agents
Glycerine	40ML	Moisturising agents
Methylparaben	0.3 gm	preservative
Distilled water	Up to 100 ML	Vehicle

**Table 1: Formulation and Evaluation of Herbal Handwash by using natural ingredients .**

**Material Method:**

Collection of plant materials: The plants Ocimum sanctum L were collected from the garden area of Valmik naik college of pharmacy, Telwadi , kannad, sambhajinagar.

Preparation Ocimum sanctum herbal leaf extracts: The collected plant ocimum sanctum L. A leaves are taken and coarsely powdered. 10 grams of coarsely powdered leaves of plant were soaked in 90 ml of methanol (9:1). And kept for maceration for about 3-4 days.

After maceration the extract is filtered and the filtrate was collected and used for making hand wash.

Leaves of plant were soaked in 90 ml of methanol (9:1). And kept for maceration for about 3-4 days. After maceration the extract is filtered and the filtrate was collected days.

Preparations of herbal hand wash formulations. This formulation was prepared by adding 20 ml of lemon juice to 20 ml of methanolic extract filtrate of Ocimum sanctum L A leaves. To this filtrate 6g of SLS, glycerin 40 ml, 0.3 g of Methyl paraben, 5ml of rose water is added and the volume is made up to 100 ml with purified water.

**IV. PROCEDURE**

- 1) Methanolic extract of tulsi leaves is mixed with 4ml citrus Limon juice in 20ml.of water.
- 2) Then add extract of sodium lauryl sulphate to produce sufficient foaming capacity.

- 3) Then add desired quantity of glycerin and eucalyptus oil with moderate stirring.
- 4) At the end add methyl paraben as preservative in sufficient quantity .
- 5) The solution is mixed, made homogeneous under room and further utilized for screening of the activity.

#### **V. EVALUATION TEST FOR HERBAL HAND WASH :-**

##### **Foam height:**

One gram of sample of hand wash gel was taken and dispersed in 50ml distilled water. Dispersion was transferred to 500ml measuring cylinder. Volume Was made up to 100ml with water. 25 strokes were given and kept it aside. The foam height above the aqueous volume was noted.[13]

##### **PH test:**

In 100 millilitres of distilled water, 1 gm of gel-based herbal hand wash was mixed. The pH of the mixture was examined using a previously standardised Digital pH metre.[14]

##### **Stability Test :-**

The Stability studies were carried out for Polyherbal Hand wash Gel formulation by storing at different temperature conditions like 40°C, 25°C, and 37°C For 1 week. During the stability studies no change in colour and no phase separation were observed in the formulated hand wash.[15]

##### **Spreadability test :-**

A sample of 0.5 g of each formula was pressed between two slides and left for about 5 minutes where no more spreading was expected Diameters of Spreaded circles were measured in cm and were taken as comparative values for spread ability. The results obtained are average of three Determinations.

**Viscosity :-** The viscosity of hand wash was determined by using digital Brookfield viscometer. Measured quantity of herbal hand wash was taken into a beaker and The tip of viscometer was immersed into the hand wash gel and the viscosity was measured in triplicate.[16]

#### **VI. CONCLUSION**

Due to various diseases and germs, bar soap can become contaminated, which may lead to the spread of germs. In today's sophisticated world, liquid hand washes are used much more frequently than bar soap. The additional advantages of liquid hand washes include the fact that the soap in the liquid hand wash is uncontaminated and hand wash with each new pump. In the market, various types of hand washes are available, claiming to kill harmful germs at a significant rate in a short amount of time. In order to ascertain this, it is necessary to ascertain the handwash's efficiency—the average percentage reduction and log reduction of the organisms found during the viable count performed by hand.

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