



Formulation and evaluation of herbal hand wash by using Natural Ingredients

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Abstract: The development of an herbal hand wash with a liquid base was done primarily to encourage "personal hygiene." One of the most important steps in the preparation of food, food service, housekeeping, and other day care facilities is hand hygiene. Current market Alcohol-based cleaning supplies, which are used in antibacterial hand washing, have a variety of drawbacks. To prevent the negative effects of synthetic hand wash preparations, such as itching, dryness, irritation, and dermatitis, and to avoid allergic reactions and any other adverse effects, consumers constantly look for cosmetics made from natural ingredients. It would be helpful to conduct more research before creating a hand wash with extra skin benefits. A liquid-based herbal hand wash was developed using extracts from Ocimum Sanctum Leaves and Moringa Oleifera Leaves. After formulation, it was evaluated and various parameters such as physical and chemical properties such as pH, color, odor, appearance, Texture, Spreadability, Grittiness, Skin irritancy, Foam height, Foam retention, Cleaning action, Stability, and other parameters were used to evaluate herbal hand wash, and the result was found to be within normal range with minimum no side effects.

Keywords: Herbal hand wash, Herbal extract, Ocimum Sanctum, Moringa Oleifera, Hygiene, Cleaning, Foam.

INTRODUCTION

Hygiene is described as the practice of maintaining cleanliness, which is nearly essential to maintaining health. The use of cleansers and maintaining personal cleanliness are necessary for healthy life. These ideas emphasize the significance of maintaining hygiene for illness prevention¹. The human body's first line of defense is its skin, which covers the interior and shields it from viruses. Therefore, hand washing is a necessary precaution to protect the skin from harmful bacteria and to stop the spread of many contagious diseases. Hands are the most common way for diseases and germs to spread. Therefore,

maintaining good hand hygiene is crucial if you want to stop the spread of dangerous pathogens and avoid healthcare worker infections. The simplest and least expensive method of infection prevention is good hand hygiene. With the current COVID-19 corona virus pandemic, hand washing is becoming increasingly crucial. Prevention is preferable to treatment. Cleaning your hands with the intention of removing dirt, grime, and pathogenic bacteria while avoiding². The concept of washing hands with an antiseptic chemical is thought to have originated in the early 19th century. A French chemist demonstrated in 1822 that solutions containing lime or soda chlorides might be employed as disinfectants and may be able to get rid of the disagreeable smells associated with human bodies. In an article that was published in 1825, this chemist suggested that medical personnel and other individuals caring for patients with contagious illnesses bathe their hands in a liquid chloride solution³.

The traditional Indian medical system known as Ayurveda is thought to have started more than 6000 years ago. It explains how to stay healthy and how to treat illnesses. The word meaning is "Knowledge (Veda) of life (Ayu)". Ayurveda is a whole system of healthy living in addition to being a science of medicine that focuses on cures¹⁴.

Herbs are the natural ingredients obtained by various species of plants that are beneficial to human health and hygiene. Different kinds of herbs are used in various preparations like drugs, cosmetics, food etc. In this herbal hand wash formulation it contains many natural herbs which have great effect against certain microorganisms. Herbal hand wash is beneficial in both economically and also regarding healthcare. Hands are the primary source to cause or through which microbes enter into our body. Washing hands with hand wash can prevent some sort of entry of bacteria. Along with the prevention of entry of bacteria, one should also protect their hand. Herbal hand wash maintains the hands/skin health when compared to the normal hand wash which contains some chemicals. Due to the presence of these chemicals, some may cause rashes, irritation or skin problems like itching. As this formulation contains some herbs like Tulsi and Drumstick leaves which are having a good anti-microbial attack, it prevents the attack of microbes. And also, lemon, which acts as a good anti-inflammatory and also moisturizes the skin by preventing dryness etc. washing our hands, is a very important process. The hands are the primary route by which an infection enters a human body. If they are not cleansed thoroughly, a person may experience numerous health problems. The usage of herbs in hand wash products will assist to eliminate germs and viruses as a result.

Advantages Herbal hand wash

- Safe to use; minimal to no negative effects.
- It is possible to reduce bacterial attack.
- It may be able to stop bacteria from getting inside of us.
- It makes our hands cleaner by removing grease and filth.
- Maintain proper hand hydration.
- It makes the skin feel supple.

- It keeps the skin hydrated.
- It contains no chemicals.
- It facilitates the skin's loss of suppleness⁴.
- The following are some advantages of using herbal hand soap: Easy accessibility Herbs are widely available in both urban and rural regions, making them suitable for usage by anyone.
- Compared to the chemical components found in synthetic hand wipes, herbal plants are less expensive.
- Improved effectiveness¹⁴.

1. *Ocimum Sanctum*

Plant Profile

Kingdom	:	Plantae
Division	:	Magnoliophyta
Class	:	Magnoliopsida
Order	:	Lameness
Genus	:	Ocimum
Species	:	Ocimumtonuiflorum
Binomial name	:	OcimumTenuifloram/ Ocimum sanctum
Nepali name	:	Tulsi

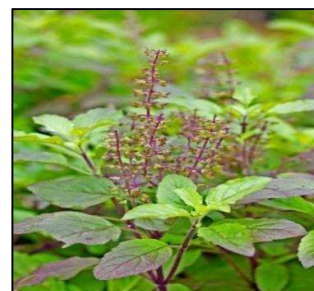


Fig 1: *Tulsi*

Chemical constituents: present in *Ocimum Sanctum* such as oleanolic acid, rosmarinic acid, ursolic acid, eugenol, linalool, carvacrol etc.

Uses: leaf extract is effective to treat skin disorders and it is also a good anti-oxidant. Or beneficial in treating asthma⁴.

2. *Moringa Oleifera*:

Plant Profile

Kingdom	:	Plantae
Class	:	Tracheophytes
Order	:	Brassicales
Family	:	Moringaceae
Genus	:	Moringa
Species	:	M. Oleifera

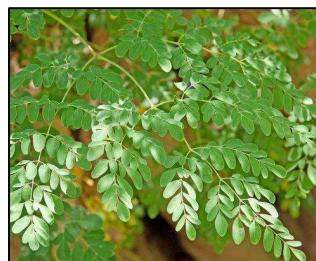


Fig 2: *Moringa Oleifera*

Chemical Constituents: Extracts from leaves contain various alkaloids, glycosides, flavonoids, saponins, hydrocarbons, phytosterols, fatty acids, alcohols, esters, and phenols.

Use: It is use for anti-oxidant agent, anti-inflammatory, anti-cancer agent and abundant source of Nutrition's⁵.

MATERIALS &METHODS

Chemicals: Sodium lauryl Sulphate, Glycerin, Propyl Paraben, (purchase from “Thermosil Fine Chem. Industries plot no 19 Sr.no 305/2/1, charoli (khurd), Tal. Khed, Dist. Pune, Maharashtra, India. Lavender Oil (Purchase from RK Aroma 420/421, Ajay industries EstateAnjirwadi.B, Mazgaon, Mumbai)

Plant Collection and Authentication: Plant leave of *Ocimum Sanctum* (Tulsi) And *Moringa Oleifera* (Drumstick Tree) Collect from JES’s College of pharmacy (Campus), Waghoda shivar, Nandurbar.

Preparation of herbal leaf extracts: The collected plants *Ocimum Sanctum* L and *Moringa Oleifera* A leaves are taken and coarsely powdered. 10 grams of coarsely powdered leaves of both plants were soaked in 200 ml of methanol 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 wash⁶.



Fig 3: *Tulsi* extract

Fig 4: *Moringa Oleifera* extract

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 and *Moringa Oleifera* leaves. To this filtrate 6g of SLS, glycerin 40 ml, 0.3 g of Propyl Paraben, 5ml of lavender oil is added and the volume is made up to 100 ml with purified water⁶.

Table 1: Formulation and evolution of herbal hand wash by using natural ingredients

Ingredients	Quantity	Actions
Extract of <i>Ocimum Sanctum</i> and <i>Moringa Oleifera</i>	20 ml	Antibacterial agent
Lemon Water	20 ml	Antiseptic agent
SLS	6 ml	Foaming agent
Glycerine	40 ml	Moisturizing agent
Propyl Paraben	0.3gm	Preservative
Lavender Oil	5 ml	Perfuming agent
Distilled Water	Up to 100ml	

Evaluation of prepared Hand wash

Physical Evaluation: The color, texture, odor, appearance, and Homogeneity of the herbal hand wash were evaluated by physical test⁷.

Spreadability: On a glass slide, there was one drop of herbal hand wash gel. Another glass slide was kept over it and left aside for 5 minutes. The diameter up to which the formulation was spread, was measured in cm the same procedure was followed for the marketed formulation.

pH: 1 ml of herbal hand wash was mixed with 100 ml distilled water. This solution was then analyzed using a previously calibrated digital pH meter; the pH of the marketed formulation was analyzed in the same manner.

Irritancy The herbal hand wash 1 was applied to the hands till absorbed. The skin was observed for 1 hour for any signs of irritancy, redness, itching or discomfort, etc. The same process was repeated for the marketed formulation⁸.

Foam Height: A 500 ml measuring cylinder was filled with 1 ml of herbal hand wash that had been dissolved in 100 ml of purified water. The mouth of the measuring cylinder was tightly covered with the help of the palm, and the cylinder was shook 25 times. The measuring cylinder was kept still and the height of the foam formed inside the measuring cylinder was noted

Foam Retention: In a 500 ml measuring cylinder, 1 ml of herbal hand wash gel was diluted in 100 ml of purified water. Foam height was recorded after every minute for the first five minutes after the cylinder had been shaken for 25 strokes. An ideal formulation should have a foam retention time 5min⁹.

Cleaning Action: A piece of wool weighing 10 g was taken and dipped in oil. A solution of 1 ml herbal hand wash gel and 100 ml water was prepared and the prepared piece of wool was placed in this solution. After that, the mixture was shook for four minutes. The piece of wool was taken out gently, dried, and weighed¹⁰.

Stability: One sample of the herbal hand wash gel was added to small containers, and it was then maintained at three different temperatures for a week: 25°C, 37°C, and 40°C. The samples were then subjected to evaluation to all the parameters mentioned above¹¹.

Grittiness: The formulation was tested after 1ml of gel was applied to a fingertip and rubbed between two fingertips¹².

Dirt dispersion: The largest test tube, which held 10 ml of distilled water, had two drops of herbal hand wash added to it. 1 drop of Indian ink was added; the test tube was stopper and shaken for 10 times. None, Light, Moderate, or Heavy were the estimated levels of ink in the foam¹³.

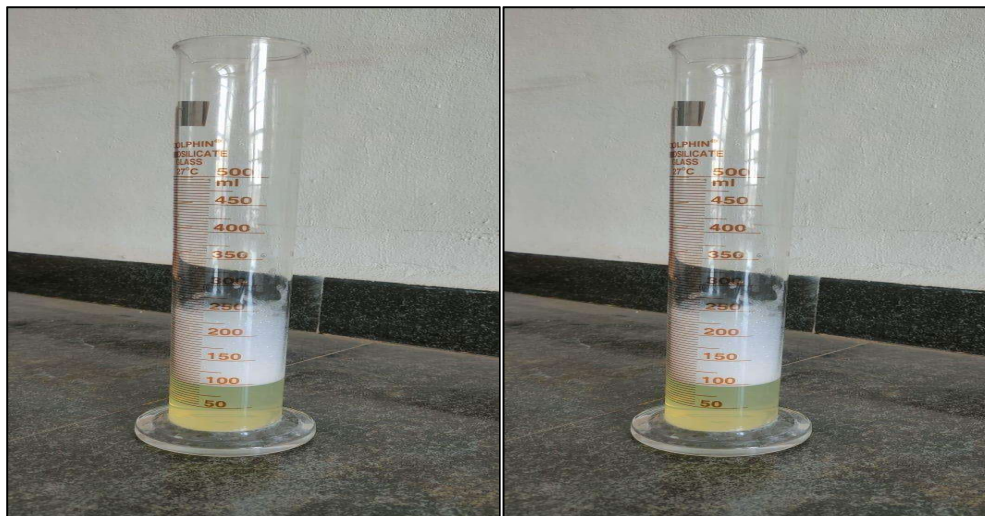
RESULT & DISCUSSIONS

We identified the physicochemical properties of the prepared herbal hand wash. Testing was done on variables such pH, color, and odor. The formulations had good visual characteristics, and the pH, which was in the specified range 6.38 pH, was also determined to be present. Additional criteria such as cleaning action percentage, foam height, foam retention, grittiness, Spreadability, and high temperature stability were also identified; the findings are given.

Table 2: Evaluation parameter of herbal hand wash

Sr no.	Evaluation Parameter	Formulated Herbal Hand Wash
1.	Colour	Dark Green
2.	Texture	Smooth
3.	Odour	Aromatic
4.	Appearance	Opaque
5.	Homogeneity	Yes
6.	Spreadability	3.8 cm
7.	pH	6.38
8.	Irritancy	No
9.	Foam Height	5 cm
10.	Foam Retention	Stable
11.	Cleaning Action	40%
12.	Stability	Stable
13.	Grittiness	No
14.	Dirt dispersion	Moderate

**Fig 5:** Prepared Herbal Hand Wash**Evaluation Parameter:****Fig6:** Spreadability test**Fig7:** Irritation test

**Fig8:** Foam Height**Fig9:** Foam Retention**Fig10:** Cleaning Action

CONCLUSIONS

Better to prevent than to treat. Hand washing is crucial to preventing the transmission of several dangerous diseases and protecting the skin from harmful microorganisms. Given that they are believed to be safer and have less adverse effects than synthetic drugs, herbal medicines are more acceptable. The herbal hand wash containing Tulsi extract and drumstick tree leaves extract was therefore prepared in an attempt. In order to prevent any kind of irritation, its formulation is made in accordance with how delicate the skin is. The study's findings led to the conclusion that formulation has good uniformity and appearance. In volunteer samples, herbal ingredients containing hand wash formulation were as efficient against pathogenic microorganisms while causing no negative skin reactions. In light of this, it may be said that this herbal hand wash is safe, effective and the best cleaning action hand wash.

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