

# Formulation and Evaluation of Herbal Hand Wash

Tiya Prashant Vaidya<sup>1</sup> and Dr. Bhanupratap Patidar<sup>2</sup>

Student, Vardhaman College of Pharmacy, Karanja (Lad), Maharashtra, India<sup>1</sup>

Guide and Assistant Professor, Vardhaman College of Pharmacy, Karanja (Lad), Maharashtra, India<sup>2</sup>

**Abstract:** *In recent years, surprisingly, there has been a change in mentality. It means people are much more diverted to the herbal or natural things as compared to synthetic, chemically active products. As studies indicate, there are so many harmful and sometimes toxic side effects seen in the use of chemically active ingredients. Like lead, copper, arsenic etc. It's not 100% mandatory that all synthetic products and medicines are wrong, but the people literally give their interest in using natural products because of less than 1% or rarely side effects. The main motive to present this work is to formulate the herbal hand wash by using herbal (natural) raw material: neem, tulsi, aloe vera, rose extract, lemon juice. Dirty hands are the primary site for any viral microbial or bacterial infection. Therefore, it brings up the use of antiseptic as caring, nontoxic, safe and natural hand washing purpose*

**Keywords:** chemically active products

## I. INTRODUCTION

Approximately 525,000 children die every year from diarrheal diseases due to not washing their hands regularly, making it one of the top killers of children globally. Hygiene is very important for all to maintain health related diseases. Some easy and healthy habits that can save many lives. Washing hands has a direct related to good health. While not washing hands increases the chances of bacterial or viral infection when one unintentionally touches their eyes and mouth or eat with dirty hands. When you eat a meal without washing your hands, the germs on your hands go into your mouth and can cause severe infection condition. Generally speaking, hand hygiene refers to the practice of washing hands with water, soap. Hand washing has significant health benefits, including minimizing the spread of influenza COVID – 19 and other infections. WHO (world health organization) recommends washing hands for at least 20 seconds before and after certain activities. The herbal medicine is also known as botanical treatment or phytomedicine. There are many chemicals are invented by scientists to treat many conditions, but our India is a very advanced country in today's generation full of chemicals and harmful theories we can skip by used an herbal production that claims and lives about 1000s of years of experience that is "Ayurveda" herbs are the oldest and safest technique to maintain hygiene without any harm. Herbal medicines refer to the use of plant roots, seed flower, bark, leaves etc. It is safe for all. A December 2008 NIH survey reported 17.7% of adults in the United States used herbal products. In India this percentile is still running higher. About 65%. As noticed, we decided to develop an herbal product for our practice school work. That will be an herbal hand wash. Pure, hygienic, made with natural/ herbal ingredients (plant base).



Fig : Herbal Hand Wash

**HISTORY OF HERBAL HAND WASH :**

- 1) Ancient Civilizations: Ancient civilizations, including those in Egypt, Greece, Rome, China, and India, utilized various herbs and natural substances for skincare and hygiene. Plants with antimicrobial and skin-soothing properties were often incorporated into cleansing rituals.
- 2) Traditional Medicine Practices: Traditional medicine systems, such as Ayurveda in India and Traditional Chinese Medicine, have a long history of using herbs for overall health, including skincare. Herbal formulations were created for their cleansing, healing, and aromatic properties.[23]
- 3) Renaissance Period: The Renaissance period saw a revival of interest in herbalism and botanical knowledge. Herbal recipes for skincare and hygiene gained popularity in Europe during this time.
- 4) 19th to Early 20th Century: The use of herbs for personal care continued, with individuals often relying on homemade herbal preparations for cleansing. Bar soaps and liquid soaps with herbal extracts started to emerge.
- 5) Modern Herbal Cosmetics: In the latter half of the 20th century and into the 21st century, there has been a resurgence of interest in natural and herbal products. The demand for products with plant-based ingredients, including herbal hand wash, has grown.
- 6) Green Beauty Movement: The 21st century has seen a significant rise in the green beauty movement, with consumers seeking natural, organic, and herbal alternatives. This has influenced the formulation of herbal hand wash and other skincare products. [7] Today, herbal hand washes often include a variety of plant extracts, essential oils, and herbal ingredients known for their cleansing, moisturizing, and aromatherapeutic properties. The history of herbal hand wash reflects a timeless connection between humans and the botanical world, where plants have been valued not only for their medicinal properties but also for their role in promoting hygiene and well-being. [22]

**HERBS**

“Herbs” as name it directly indicates the nature. Herbs are any part of a plant that is used in cooking, directly applied as medicine (lep, mask, etc.), cosmetics, etc. These can be used fresh or dried or extracted. These are a part of nature but not like other ordinary plants, in short, these are those plants which have any medicinal qualities present in it. Herbs are crude drug of vegetable origin that are used in the treatment of disease state, often of a chronic nature, or to attain or maintain a condition of improved health. These herbs are used for medicinal purposes. Herbs are non-toxic and can be better fulfilled than harmful toxicities. [20] Herbal products are medicines derived from plants. Herbal medicines are also called botanical medicine or phytomedicine. According to a survey, many people believe that products labeled “natural” are always safe and good for them. It's not purely true but the side effects of natural or herbal products are very less as compared to synthetic and chemically treated products.[5] It's not necessary to suit all but the percentile is about less than 5% in case who have very sensitive or allergic skin. An herb is a plant or part of plant used for its scent, flavor, or therapeutic properties. It can prove one type of dietary supplements.[22]

They are sold as tablets, capsules, powders, teas, extracts, fresh or dried plants, creams, daily glossary (soap, shampoo, hand wash, juices, etc.) some herbal medicines have been translated into modern medicines we called it allopathy. But it was originally herbalism and the ayurveda which is the oldest system of medicinal plant species (approx. 60,000's and much more years ago). The history of the natural medicinal system is vast. [5]

**INGREDIENTS USED IN HERBAL HAND WASH****TULSI**

Binomial Name: *Ocimum tenuiflorum*, Holy basil [4]

Synonyms: *geniosporum tenuiflorum*, *Ocimum tomentosum*, *ocimum hirsutum* Surasa (Sanskrit) etc.

Kingdom: Plantae

Family: Lamiaceae

Organoleptic Characters:

Leaves: green or purple simple, they are petioled with an ovate blade.

Stem: many branched subshrubs, with hairy brown stem

odor: strongly aromatic, scented.

Copyright to IJARSCT

DOI: 10.48175/IJARSCT-22826

[www.ijarsct.co.in](http://www.ijarsct.co.in)



Flower: purplish flower placed in close whorls on elongated racemae.

Taste: sweet, astringent, pungent, warm.[2]

**Benefits Of Tulsi :**

Tulsi, or Holy Basil, provides strong anti-inflammatory and antioxidant benefits, boosts the immune system, and aids in stress management, contributing to overall health and well-being.[4]

**Chemical Constituent :**

The plant also contains alkaloids, glycosides, sapping, tannins an appreciable amount of vitamin c and traces of maleic and Tartaric acids.the fresh leaves,it's juice and volatile oil are used for various purposes.[3]

**PH :**

The pH of tulsi (holy basil) extract can vary depending on factors such as the extraction method and the specific formulation of the extract. Generally, tulsi leaves and extracts are slightly acidic in nature. The pH range is typically around 5 to 6, which is mildly acidic.[21]

**Uses :**

- 1) Used as expectorant.
- 2) It is also used as stimulant & flavoring agent.
- 3) It also used as carminative.
- 4) Good immunomodulator, Antibacterial.[16]

**History :**

- 1) Ancient Ayurvedic Practices: Tulsi has been a staple in Ayurvedic medicine, where it is considered a sacred herb with various health benefits. It is known for its antimicrobial, anti-inflammatory, and adaptogenic properties.
- 2) Cultural and Religious Significance: Tulsi holds deep cultural and religious significance in Hinduism. It is considered a sacred plant and is often grown near homes and temples. The leaves are used in religious rituals, and Tulsi is believed to have purifying and protective qualities.
- 3) Traditional Remedies: Over centuries, Tulsi has been used in various traditional remedies to address respiratory issues, promote digestion, and support overall well-being. [28]



**Fig : Tulsi**

**NEEM**

Binomial name : Azadirachta indica

Synonym : margosa, neem, nimtree, Indian lilac. Melia hasskarlii, [29]

Kingdom : Plantae

Family : Meliaceae

Genus : Azadirachta

Organoleptic Characters:

Height : 15 to 20 meters, rarely 35-40m it is evergreen tree.

Branches : wide and spreading. The dense crown is brownish.

Leaves : Pinnate leaves are 20-40 cm long, with medium to dark green leaflets.

Flower : white and fragrant flowers.

Fruits : smooth olive like drupe which varies in shape from elongate ovate to nearly roundish.

Taste : Bittersweet. [6]

**Benefits Of Neem :**

Neem offers potent antibacterial properties for skin health, acts as a natural pesticide in agriculture, and contributes to dental hygiene by preventing gum disease.[25]

**Chemical Constituents :**

Neem's chemical constituents include azadirachtin, nimbin, nimbidin, limonoids, quercetin, beta-sitosterol, and fatty acids, providing antimicrobial, anti-inflammatory, and insecticidal properties for medicinal and agricultural purposes.[6]

**PH :**

The pH of neem, specifically neem oil or neem extract, can vary depending on the specific formulation and any additional ingredients used. Neem oil itself is typically slightly acidic, with a pH ranging from around 5.5 to 6.5.[31]

**Uses :**

- 1) Antibacterial and Antifungal Properties: Neem's natural compounds help combat bacteria and fungi, enhancing the hand wash's germ-fighting capabilities.
- 2) Skin Soothing and Anti-Inflammatory: Neem contributes to a gentle and soothing hand wash experience, suitable for sensitive skin, and helps alleviate inflammation.
- 3) Herbal Hygiene: The inclusion of neem in herbal hand wash aligns with natural and herbal approaches to hygiene, offering a chemical-free alternative with added skin benefits.[25]

**History :**

- 1) Ancient Ayurvedic Practices: Neem (Azadirachta indica) has been a fundamental part of Ayurveda, the ancient Indian system of medicine, for over 2,000 years. It is valued for its diverse therapeutic properties, including antibacterial, antifungal, and anti-inflammatory effects.[24]
- 2) Historical Medicinal Use: Neem has been traditionally used to treat a range of ailments, including skin conditions, infections, and inflammatory issues. Its applications in skincare are particularly noteworthy due to its ability to promote skin health. [18]



**Fig : Neem**

### **ALOEVERA**

Binomial Name: Aloe barbadensis miller

Synonyms: aloe chinensis, aloe vulgaris, aloe flava pers, etc.

Kingdom: Plantae

Family: Liliaceae

Genus: Aloe

Order: Asparagales

Division: Spermatophyta

Subdivision: Angiospermae

Class: Monocotyledoneae[1]

Organoleptic characters: Aloe vera is a stemless, very short, stemmed plant growing to 60-100cm tall, spreading by offsets.

Leaf: The leaves are thick and fleshy, green to grey green. It has sticky transparent gel inside.

The margin of leaf is serrated and has small white teeth.[6]

### **Benefits Of Aloe Vera :**

Aloe Vera offers versatile benefits, such as soothing and healing skin, providing effective hydration, and possessing anti-inflammatory properties, making it valuable for skincare and addressing various skin concerns.[6]

### **Chemical Constituents :**

Aloe Vera contains various chemical constituents, including polysaccharides, glycoproteins, anthraquinones, vitamins, enzymes, and minerals. These compounds contribute to its moisturizing, anti-inflammatory, and healing properties, making Aloe Vera widely used in skincare and medicinal applications.[12]

### **PH :**

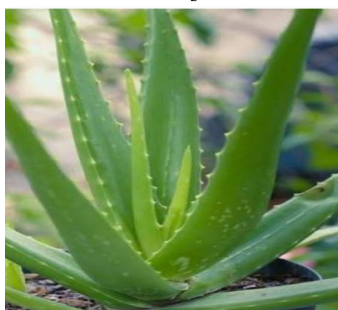
The pH of Aloe Vera gel typically falls in the range of 4.5 to 6.0, making it slightly acidic to neutral.[31]

### **Uses :**

- 1) Moisturizing: Aloe Vera provides natural hydration, preventing hands from drying out after washing.
- 2) Soothing: Its anti-inflammatory properties soothe and calm the skin, making it suitable for frequent hand washing.
- 3) Healing: Aloe Vera aids in skin repair, promoting recovery from minor irritations and maintaining overall skin health in herbal hand wash formulations.[15]

### **History :**

- 1) Ancient Civilizations: Aloe Vera has a history of use dating back thousands of years, with evidence of its presence in the ancient Egyptian, Chinese, Greek, and Roman civilizations. It was valued for its healing properties and was often referred to as the "plant of immortality" by the Egyptians.[26]
- 2) Traditional Medicine: Aloe Vera has been a staple in traditional medicine systems around the world. It was used topically to soothe and heal various skin conditions, burns, and wounds.
- 3) Cultural Significance: Aloe Vera has held cultural significance in various societies. It was commonly used in rituals, skincare routines, and as a symbol of protection and wellness.[22]



**Fig : Aloe vera**

### **ROSE EXTRACT/ OIL**

Binomial Name: Rosa rubiginosa

Synonyms: scarlet rose, crimson, rosy, brick, roseate, etc.[27]

Kingdom: Plantae

Division: Magnoliophyte

Class: Magnoliopsida

Family: Rosaceae

Genus: Rosa

Species: Centifoli

Order: Rosales [6]

### **Benefits Of Rose Extract / Oil :**

Rose has anti-inflammatory and antioxidant properties, promoting skin health, reducing redness, and combating signs of aging. Its fragrance has calming effects, aiding in stress relief and relaxation. Rose also possesses natural antibacterial properties, supporting oral hygiene.[9]

### **Chemical Constituents :**

Rose extract contains essential oils like citronellol and geraniol, phenolic compounds for antioxidant benefits, vitamins A, C, and E for skincare, polyphenols for anti-inflammatory effects, and terpenes contributing to its fragrance.[30]

### **PH :**

The pH of rose oil or rose extract can vary depending on the specific formulation and any additional ingredients used in the product. Generally, rose oil is neutral to slightly acidic, falling within a pH range of approximately 5.5 to 7.0.[31]

### **Uses :**

- 1) Hydration: Rose extract contributes to the moisturizing properties of the hand wash, preventing excessive dryness after repeated use.
- 2) Antioxidant Boost: The presence of antioxidants in rose water may provide additional benefits for maintaining skin health and combating oxidative stress.
- 3) Fragrance: Rose water imparts a pleasant and natural fragrance, enhancing the overall sensory experience of handwashing.[27]

### **History :**

- 1) Middle Ages: During the Middle Ages, roses were cultivated in monastic gardens for both medicinal and ornamental purposes. Rose water and rose oil were used for skincare and in perfumes.
- 2) Traditional Medicine: In traditional medicine, roses were employed for their astringent and anti-inflammatory properties. Rose oil was used topically for its potential benefits on the skin.
- 3) Persian and Indian Influence: The production of rose oil, particularly from *Rosa damascena*, has a rich history in regions influenced by Persian and Indian cultures. The extraction of rose oil through steam distillation became a well-established practice.[22]

### **VITAMIN - E**

#### **Benefits Of Vitamin- E :**

Vitamin E benefits include its role as a powerful antioxidant, promoting skin health by reducing signs of aging, supporting the immune system, contributing to heart health, protecting eye health, possessing anti-inflammatory properties, and aiding in wound healing.[20]

**Uses :**

- 1) Antioxidant Protection: Vitamin E in herbal hand wash provides antioxidant benefits, protecting the skin from oxidative stress caused by free radicals.
- 2) Skin Nourishment: Vitamin E helps nourish and moisturize the skin, contributing to a softer and smoother texture.
- 3) Anti-Aging Properties: Its presence can aid in reducing the appearance of fine lines and wrinkles, promoting a more youthful-looking complexion.
- 4) Wound Healing: Vitamin E supports the natural healing process of the skin, making it beneficial for minor cuts or irritations from frequent handwashing.
- 5) Skin Repair: The vitamin assists in repairing damaged skin cells, maintaining overall skin health.
- 6) UV Protection: Vitamin E may offer some protection against UV radiation, adding an extra layer of defense for the skin. [8]

**REETHA**

Binomial name: Sapindus mukorossi

Synonyms: Soapberry, Soapnut, Washnut, Dodan, areetha, dodani

Kingdom: plantae

Family: Sapindus

Genus: Sapindus

Organoleptic characters:

Fruit: brown in colour and small

Leaves: green to dark green color.

Taste: Bitter [6]

**Benefits Of Reetha :**

The incorporation of reetha (soapnut) as a foaming agent in herbal hand wash provides benefits such as natural cleansing, gentle care for sensitive skin, eco-friendliness due to biodegradability. This makes reetha a valuable and holistic choice for those seeking a natural and effective handwashing experience.[32]

**Chemical Constituent :**

Reetha, or soapnut, contains various chemical constituents, with the primary active compounds being saponins. Saponins are natural detergents that create a soapy lather when mixed with water. These compounds make reetha effective for cleansing purposes. Additionally, soapnuts may contain other phytochemicals, tannins, and secondary metabolites that contribute to their mild and natural cleaning properties.[32]

**PH :**

The pH of reetha, or soapnut, can vary depending on the specific formulation, extraction method, and any additional ingredients present in the product. The pH of a soapnut solution or product may fall within a slightly acidic to neutral range.[31]

**Uses :**

- 1) Natural Cleansing: Reetha contains saponins, natural detergents, providing effective cleansing and removing dirt and impurities from the hands.
- 2) Gentle on the Skin: Known for its mild properties, reetha is gentle on the skin, making it suitable for individuals with sensitive skin.
- 3) Foaming Agent: Reetha creates a natural foaming action, contributing to the lathering effect in herbal hand wash without the need for synthetic foaming agents.
- 4) Traditional Cleansing: Reetha has a long history of use in traditional practices for its natural cleaning abilities, and its inclusion aligns with herbal traditions.[23]

**History :**

- 1) Natural Cleansing in Traditional Societies: In various cultures, including those in South Asia, the Middle East, and parts of Southeast Asia, people have used reetha as a natural soap. The fruit's natural saponins create a soapy lather when mixed with water, making it suitable for cleaning hands.
- 2) Mild and Gentle Cleansing: Reetha gained popularity for its mild and gentle cleansing properties, particularly beneficial for individuals with sensitive skin. It became a preferred choice for those seeking natural alternatives to harsh chemical soaps.[6]

**Methyl Paraben :**

In order to stop germs and mold from growing, methylparaben is a synthetic preservative that is frequently used in cosmetic and personal care products, including some hand wash formulations. Methyl paraben, however, can be found in a variety of "herbal" and "natural" products. Some herbal or natural hand wash formulations may incorporate synthetic preservatives like methylparaben for extended shelf life and stability, while others may rely on the inherent antibacterial qualities of specific herbal components or employ other preservatives.[20]

**Glycerin :**

- 1) Moisturizing Properties: Glycerin helps to hydrate the skin by attracting water and preventing moisture loss. This makes it effective in maintaining skin hydration and preventing dryness.
  - 2) Skin Softening: The moisturizing properties of glycerin contribute to softer and smoother skin. It helps improve the texture of the skin and can be especially beneficial in hand wash formulations to counteract the drying effects of cleansing agents.
  - 3) Non-Irritating: Glycerin is generally non-irritating and suitable for various skin types, including sensitive skin. It is often used in herbal and natural formulations to provide a gentle and soothing effect.
  - 4) Enhancing Texture: Glycerin can enhance the texture of the hand wash, giving it a smoother and more pleasant feel during application.
  - 5) Ingredient Compatibility: Glycerin is compatible with herbal extracts and essential oils commonly used in herbal formulations. It can complement the herbal ingredients, contributing to a well-balanced product.[11]
- Machinery for the herbal hand wash unit includes
1. Mixer tank
  2. Filler machine[19]

**PREPARATION OF HERBAL HAND WASH :**

**EXTRACTION METHOD OF HOLY BASIL: (tulsi)**

- 1) Simple tulsi leaves were separated and washed with water and dried properly.
- 2) dried leaves were separated.
- 3) By crushing the leaves, the powder of tulsi leaves is formed.
- 4) Methanolic extract was prepared from the tulsi powder.
- 5) A total of 20gm of finely powder of tulsi was diluted with 80ml of methanol for 4 to 6 days.
- 6) The alcoholic decoction was subjected to filtration to obtain a clear filtration.[3]

**EXTRACTION METHOD OF AZARDIRACHTA INDICA: (Neem)**

1. Fresh neem leaves are collected and shed dried for 15 days.
2. The dried leaves then powered using mortar and pestle.
3. The powered neem leaves are weighed 25gm and macerated in a beaker using 100ml of methanol.
4. The prepared mixture is kept covered with aluminium foil and kept for 3 days for maceration while stirring in between, and then the mixture was filtered using a filter paper.
5. The excess solvent is evaporated using a Rotary evaporator and then the remaining mixture was dried on a hot water bath.
6. The dried extract was collected and kept in desiccator for cooling.



7. The prepared extract is weighed.[25]

**EXTRACTION METHOD OF ALOE BARBADENSIS MILLER: (Aloe Vera)**

- 1) Mature Aloe Vera leaves are selected for harvesting. Typically, the outer leaves are chosen.
- 2) The harvested leaves are thoroughly washed to remove any dirt or contaminants.
- 3) The outer green rind of the Aloe Vera leaf is removed, leaving only the inner gel.
- 4) The inner gel is carefully separated from the leaf, ensuring that only the clear gel is collected and any yellowish latex close to the rind is avoided.[17]

**EXTRACTION METHOD OF ROSA RUBIGINOSA: (Rose Oil)**

- 1) Roses are harvested when they are in full bloom.
- 2) The harvested rose petals are cleaned to remove any dirt or debris.
- 3) The cleaned rose petals are placed in a still or distillation apparatus. Steam is then passed through the petals, causing them to release their essential oil. The steam carrying the rose essential oil is then condensed back into liquid form.
- 4) The collected liquid is a mixture of water and rose essential oil. The essential oil, being lighter than water, floats on the surface and can be separated from the water. [9]

**EXTRACTION METHOD OF SAPINDUS MUKOROSI: (Reetha)**

1. Fresh reetha fruit is collected; seed is removed and chopped finely using a clean knife.
2. The chopped fruit is shed dried for 3 weeks.
3. The dried fruit is then powdered using a mixer grinder; the prepared powder is sieved so as to remove any large pieces of the fruit.
4. The fine powder is then weighed 8.6gm.
5. Macerated in 100 ml of methanol in a beaker.
6. Stir the mixture and cover it with an aluminium foil and macerate it for 3 days.
7. After that the macerated mixture is filtered using a filter paper and the filtrate is then kept on hot water bath for drying.
8. The completely dried extract is then collected and kept in desiccator for cooling.
9. The cool extract is then weighed on a digital weighing machine.[32]

**PROCEDURE:**

- 1) Methanolic extract of tulsi leaves is mixed with 4ml of neem in 20ml of water.
- 2) Then add aloe vera gel twice and add sapindus mukorossi (Reetha) to produce sufficient foaming capacity.
- 3) Then add desire quantity of vitamin E.
- 4) Then add up to 10 ml of glycerin and rose oil with moderate stirring.
- 5) At the end add preservative methyl paraben in sufficient quantity.
- 6) The solution is mixed, made homogeneous under room and utilized for screening activity.[13]

**EVALUATION TEST FOR AN HERBAL HAND WASH:**

**a. Foam Height**

1gm of sample handwash was taken and dispersed in 50ml of distilled water. Dispersion was transferred to 500ml measuring cylinder. The 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.

**b. Stability test**

The stability studies were carried out for hand wash formulation by storing at different temperature conditions for 7 days.

**c. PH test**

1 gm of handwash was mixed with 100ml of distilled water. The PH of mixture was examined using a PH meter.[14]

d. Foam retention

50ml of herbal hand wash was taken into 250ml graduated cylinder and shaken ten times. The volume of foam at 1 minute interval for minute was recorded foam retention should be stable at least 5 min.

e. Spreadability test

A sample of 0.5g 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.

f. Viscosity

The viscosity of hand wash was determined by using viscometer. Measured quantity of herbal hand wash was taken into beaker and the tip of viscometer was immersed into the hand wash.

g. Odour

Standard : aromatic

Sample : aromatic [10]

**ADVANTAGES OF HERBAL HAND WASH:**

- 1) No toxic side effects.
- 2) It helps to remove dirt and oil from skin.
- 3) Minimized the formation of bacteria.
- 4) Easier access compared to using soap.
- 5) It prevents germs by washing hands regularly.
- 6) Helps to get rid of microorganisms.
- 7) It is a better option compared to synthetic handwashes with antiseptic and anti-fungal properties.
- 8) Totally herbal ingredients.
- 9) Animal testing not required.
- 10) Safe to use.
- 11) Soften and nourishes skin naturally.
- 12) Less expensive.
- 13) Increased efficiency. [11]

**II. CONCLUSION**

Due to various diseases and germs, bar soap can become contaminated by touching it naked, which may lead to the spread of germs. Liquid handwashes are used much more frequently than bar soap. Hands are the primary source of disease related to skin, respiration, gastrointestinal tract etc. Additional advantages are the soap in the liquid hand wash is untouched leading uncontaminated. Hand wash with every new pump is hygienic and safe. herbal hand wash offers a natural and holistic approach to hand hygiene by incorporating plant-derived ingredients known for their cleansing, moisturizing, and soothing properties. The historical use of herbs in traditional medicine and skincare, combined with modern formulations, reflects a synergy between traditional wisdom and contemporary preferences for natural and sustainable products. Key herbal ingredients like Aloe Vera, Neem, Tulsi, and Rose bring their unique benefits, while avoiding harsh chemicals. The inclusion of glycerin and the exclusion of synthetic preservatives contribute to a gentle and eco-conscious handwashing experience. As consumers increasingly seek natural alternatives, herbal hand wash stands at the intersection of tradition and innovation, providing a nourishing and environmentally friendly option for daily hand care. There are many handwash are available claiming that they kill 98 to 99% harmful germs. And the herbal hand wash is always the best choice because of less side effects.

**REFERENCES**

- [1]. Warriar, P K (1995). Indian Medicinal plants. Orient Longman. Pg. 168.
- [2]. *Ocimum tenuiflorum* (holy basil) CABI invasive Species compendium. 23 August 2014.
- [3]. Holy basil drugs.com. 1 February 2022.
- [4]. *Ocimum tenuiflorum* L. Kew, royal botanic gardens.
- [5]. Textbook of Phytomedicine and phytochemistry, Biren shah and A.K. Seth, pg. No, 238-239.
- [6]. C. K. Kokate, A.P. Purohit, S. B. Gokhale Pharmacognosy book by Nirali Prakashan. Pg. no. 44.8 forty second edition.
- [7]. Pritam v. Chindarkar formulation and evaluation of herbal hand wash.
- [8]. Marvin. S. Balsam and Edward Sagarin: Cosmetics science and technology,) 2nd edition, page no. 179-152.
- [9]. Flowers extract Rasool Bazigha Kadhim et.al, JRAP 2011-12
- [10]. Mr. Bhise Akash Bhagwan, Formulation and Evaluation of herbal hand wash by using natural ingredient by simple method, IGCR, (12),2021-page no. B629.
- [11]. Mr. Bhise Akash Bhagwan, Formulation and Evaluation of herbal hand wash by using natural ingredient by simple method, IGCR, (12),2021-page no. B637.
- [12]. Priyanka V. Bagde et al, Formulation and evaluation of gel based herbal hand wash using extracts of argemone Mexicana, Int. Journal of pharmaceutical science and medicine (IJPSM), 6(6),2021, page no.31.
- [13]. Megha Bahuguna, et al, formulation and evaluation of hand wash, world journal of pharmaceutical research (WJPR), 5(7),2016, page no. 1567.
- [14]. Niraj Terkar, et al, formulation and evaluation of polyherbal hand wash (gel), IJSR, 10(8), 2021, page no. 1216.
- [15]. P.A. Jumma, hand hygiene – simple and complex International Journal of Infectious Disease,9,2005-page no.4.
- [16]. Rakesh Kumar Joshi, Phytoconstituents, traditional medicinal and bioactive uses of tulsi.
- [17]. Priyanka Sharma, et al, A review on pharmacological properties of aloe vera, International Journal of Phytomedicine and life science 1(1), 2020, page no. 38.
- [18]. Shakib Uzzaman pharmacological activities of neem (*Azadirachta indica*): A review International Journal of Phytomedicine.
- [19]. Rohit Jaysingh Bhor, et al. Formulation and evaluation by phytochemical analysis of herbal hand wash AJPER, 7(1), 2018, page no. (111-121).
- [20]. www.Google.com
- [21]. A review, research Journal of pharmacy and technology, 2013; 6(5): 496-505 and functional food.
- [22]. www.wikipedia.org
- [23]. Brewer M. Natural antibacterial, antifungal sources, compounds, mechanism of action, and potential application.
- [24]. India wins landmark patent battle BBC news. 9 March 2005.
- [25]. Neem cake Fertilizer, uses, application, benefits Agri farming www.agrifarming.in. 9 August 2020.
- [26]. Newton LE (1979). In defense of the name aloe vera. The cactus and succulent journal of Great Britain.41: 29-30.
- [27]. Rose flower uses, synonym, extract 20 July 2016.
- [28]. Compact Oxford English Dictionary (2013) neem, page 679, third edition 2008.
- [29]. Compact Oxford English Dictionary (2013) rose, page 608, third edition 2008.
- [30]. Chat GPT.com
- [31]. *Sapindus Mukorossi* (Reetha) : an overview, Suhagia et.al, URSR , 2011, vol 2