

# Review on Various Medicinal Plants Used in Herbal Hand Wash

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**Abstract:** *In this review article we study the preparation of herbal hand wash for germ-free hand market there are many formulations available such as Hand Sanitizer, Handsoap, Soap paper, Hand wash Gel, Formulation of herbal hand wash by using extracts of Azadirachta indica (Neem), Ocimum tenuiflorum (Tulsi), Mentha (Mint), Sapindus mukorossi (Ritha), Fructus Limonis (Lemon), Aloe (Aloevera), Carbapol 940, Methyl paraben, Turmeric, Rose oil, Distilled Water. The ingredients involved in the preparation are various herbal plants as they have less side effects or impact on our skin. The herbal plants used are with specific medicinal uses. The Water based herbal handwash was specifically designed to encourage "personal hygiene". One of the most important steps in food preparation, feeding, housekeeping, and other areas of shelter care is hand hygiene. The results showed that herbal hand washing formulas are more effective in reducing the number of organisms on the hands than commercial anti-septic hand washing gels and can therefore be used as hand washing gel without side effects.*

**Keywords:** Azadirachta indica, Melia azadirachta, Curcuma longa, Citrus limon, Mentha spicata, Indian Soapberry, Ocimum tenuiflorum, Pole herbal hand wash

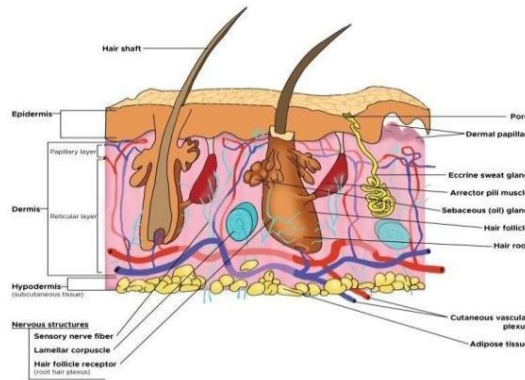
## I. INTRODUCTION

Since hand hygiene is the most important means of transferring bacteria and infections, it is the most important means of avoiding harmful bacteria and preventing infections. Hand hygiene is the only most important, easiest and expensive way to prevent nosocomial infection. [1] pathogens on the fingers of fitness care people (HCWs) are the primary routes of transmission of multidrug resistant pathogens and contamination to the patients. [2]. Hands are the essential route of microbe and contamination. Hand cleanliness is the most efficient way to save you the spread of dangerous germs and disease. Some of the chemical antiseptics are now to be had in the market as alcohol primarily based Sanitizers, chlorhexidine products etc. Hand Washing is a critical manner to help fight the spread of sickness. Hand washing eliminates visible dust from arms and reduces the range of dangerous microorganisms. dangerous bacteria and viruses consisting of, E. coli and Salmonella can be carried by humans, animals or gadgets transmitted to food. [3]

### Anatomy and Physiology body structure of skin:

The skin is the layer of often sensitive, flexible exterior tissue that covers the largest organ in the human body. It acts as a physical barrier between the internal and external environments, serving as a protective and homeostatic layer. The skin's pH ranges from four to six. The openings and three layers make up the skin.

Layers of skin, hair follicles, sweat glands



1. Dermis.
2. Epidermis.
3. Subcutaneous Tissue

#### A) Epidermis:

A thin layer of skin and pores is called the epidermis. It is by far the skin's outermost layer made up of tissue called epithelium. The epidermis has characteristics related to safety and touch. This flesh is Moreover, they are separated into 5 distinct layers.

- **Stratum corneum:** which is the outermost layer of the dermis, is composed of 10 to 30 thin layers of Keratinocytes that are constantly losing their usefulness.
- **Stratum Lucidum:** this layer, which is especially noticeable on the skin of the fingertip, palms and soles, consists of four to six rows of neat, flat, cleaved keratinocytes that contain a lot of keratins.
- **Stratum Granulosum:** This thin layer is situated between the strata Lucidum and spinosum.
- **Stratum spinosum:** - The stratum spinosum Layer observed in bet the stratum Basale and the Stratum granulosum
- **Stratum Basale:** - 8 of ten rows of many-sided Keratinocytes with bundles of Keratin intermediate filaments; includes challenge melanocytes and intradermal macrophage.
- **The Demis:** The dermis is a center Layer of skin beneath the epidermis. As there has been presence of blood vessels the skin become noun sh because of oxygen & vitamins and facilitates the cast off of waste products.
- **The Hypodermis/Subcutis/Subcutaneous Tissue:** It is the skin's deepest layer, composed primarily of connective tissue and fat. The subcutis serves as a layer of defense to protect the internal organs and muscle tissues from shock and changes in warmth.[4]

#### Handwash

The best defense against bacteria that can cause diarrhea, the flu, and most common bloodless infections is to wash your hands frequently. It is by far the most effective, least expensive method for encouraging self-hand hygiene in healthcare and the avoidance of infections-related illnesses. Commonly, the duration spans between 15 and 30 seconds. Arms are the principal means of massage, including the backs of arms, wrists, and between fingernails. microorganisms and the spread of infections.[5]

#### Herbal Hand Wash:

A lot of natural herbs that work wonders against some bacteria are included in this herbal hand wash. Herbal hand soap has advantages in terms of health and finances. Our hands are the main entry point for microbes into our bodies.

### **ADVANTAGES AND DISADVANTAGES OF HERBAL HANDWASH**

#### **Advantages of Herbal Hand wash:**

- No side effects. oBacteria on our hands can be minimized.
- It also helps to clear antiseptic and fungal problems faced by the skin.
- It also helps to remove dirt and oil effectively from the skin. oEasier access compared tousing soap and water. oThe easiest way to get rid of microorganisms.
- Hand wash prevents germs from entering our body.[6]

#### **Disadvantages of herbal handwash: -**

- Chronic skin damage.
- Irritant contact dermatitis and eczema.
- Frequent use can lead to pathogens becoming resistant to hand washing.
- Herbal cosmetics can have slower effects than allopathic dosage forms

#### **Objective:**

- Hand washing prevents the entry of harmful germs into our bodies, reducing the risk of illnesses like diarrhea, influenza, and bacterial infections.
- In developing countries, hand washing has been proven to lower infant mortality rates by up to 50%. oPeople with weakened immune systems greatly benefit from regular hand washingas it helps prevent infections. oRegular hand washing promotes children's health and enhances their ability to concentrate on their studies. oHand washing saves significant amounts of money and resources that would otherwise be spent on healthcare.
- The primary goals of hand washing are to clean contaminated hands, remove dirt, and minimize the presence of microorganisms on the skin.

#### **Benefits of Herbal Hand Wash:**

##### **Ease of availability.**

- Cheap cost of herbal plants is less as compared to chemically used in synthetic hand washes.
- Increased efficiency.
- Herbal hand washes are more efficient in promoting hand hygiene.
- Less side effects.
- Herbal hand washes have fewer side effects than other hand washes.[7]

#### **Different Medicinal Plants use in formulation of herbalHand wash:**

##### **NEEM**



**Kingdom:** Plantae

**Division:** Magnoliophyta

**Class:** Eudicot

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**Order:** Sapindales

**Family:** Meliaceae

**Genus:** Azadirachta

**Species:** A. indica

**Synonym:** *Melia azadirachta*, Hin. -Nira, nimb; Oriya- Nimba; Tam- Vembu. **Biological Source:**

Neem consists of the fresh or dried leaves and seed oil of *Azadirachta indica* Juss (*Melia Indica* or *M. azadirachta* Linn.).

**Family:** Meliaceae. **Geographical source:**

It is found in India, Pakistan, Sri Lanka, Malaya, Indonesia, Japan, Tropical regions of Australia and Africa. In India, it is found in Uttar Pradesh, Maharashtra, Tamil Nadu, Rajasthan, and M.P.

**Chemical Constituents:**

*Azadirachta indica* L. (neem) shows therapeutic role in health management due to the rich source of various types of ingredients. The most important active constituent is azadirachtin and the others are nimbolin, nimbin, nimbidin, nimbidol, sodium nimbinate, gedunin, salannin, and quercetin.[8] **Use:**

It is also used for preserving soil fertility.

**Animal feed:** Neem leaves can be once in a while used as forage for ruminants and rabbits.

**Fertilizer:** Neem extract is brought to fertilizers (urea) as a nitrification inhibitor.

**Teeth cleaning:** Neem has traditionally been used as a type of teeth-cleaning twig.[9]

## TURMERIC



**Kingdom:** Plantae

**Subkingdom:** Tracheobionta

**Division:** Magnoliophyta

**Subclass:** Zingiberidae

**Order:** Zingiberales

**Family:** Zingiberaceae

**Genus:** Curcuma

**Species:** longa

**Scientific name:** *Curcuma longa*

**Synonym:** haldi (Hindi); Curcuma; Rhizoma cur-cumae.

**Biological source:**

Turmeric is the dried rhizome of *Curcuma longa* Linn. belonging to the family Zingiberaceae. o

**Geographical Source:**

The plant is a native to southern Asia and is cultivated extensively in temperate regions. It is grown on a larger scale in India, China, East Indies, Pakistan, and Malaya.

**Chemical Constituents:**

Brown explains that the active ingredient in turmeric is a natural compound (polyphenol) called curcumin, which has both antioxidant and anti-inflammatory properties. "Curcumin has many biological activities, not all of which are understood," says.

**MEDICINAL USE OF TURMERIC**

Inflammation.

Degenerative eye conditions.

Metabolic syndrome.

Arthritis

Hyperlipidemia (cholesterol in the blood) • Anxiety.

Muscle soreness after exercise.

Kidney health.[10]

**LEMON PEEL**



**Kingdom:** Plantae

**Division:** Tracheophyta

**Subclass:** Rosidae

**Order:** Sapindales

**Family:** Rutaceae

**Genus:** Citrus

**Scientific name:** Citrus limon o**Synonyms:** Fructus Limonis. o**Biological Source:** - Lemon peel consists of dried outer part of pericarp of citrus limonis and citrus medica.

**Geographical Source:** - It is indigenous to North India but cultivated on a very large scale in countries like Spain, Italy and California. In India it is cultivated in Uttar Pradesh, Maharashtra, m.p., punjab.

**Chemical Constituents:**

Limonene (90%)

Citral (4%) Hesperidin Neohesperidine Rutin

Pectin Vitamin C

Calcium oxalate Crystal

Use of lemon Peel:

Carminative.

Stimulant.

Oil is used as perfumes and flavoring agent.

Extraction of pectin and volatile oil.[11]

**MINT:**



**Kingdom:** Plantae

**Division:** Magnoliophyta

**class:** Magnoliopsida

**Order:** Lamiales

**Family:** Mint

**Genus:** *Mentha*

**Scientific name:** *Mentha spicata*

**Synonym:** Pudina, Garden mint, Mackerel mint, Green mint, o

**Biological Source:** Pudina consists of dried leaves and flowering tops of *Mentha spicata* Linn., belonging to family Labiatae.

**Geographical Source:**

It is originally a native of the Mediterranean region and was later introduced into Britain. o

**Chemical Constituents:**

Among monoterpenes, menthol is the major constituent (35–60%), followed by menthone (2–44%), menthyl acetate (0.7–23%), 1,8-cineole (eucalyptol) (1–13%), menthofuran (0.3–14%), isomenthone (2–5%), neomenthol (3–4%), and limonene (0.1–6%), whereas  $\beta$ -caryophyllene is the main sesquiterpene (1.6–1.8%)

**Use of Mint:**

- Mint leaf has man-effective properties; it may aid in gas relief from the stomach.
- It has shown benefits in diabetes, inflammation, and cancer in several animal trials.
- It may also help in enhancing memory and mood improvement.
- [https://en.m.wikipedia.org/wiki/Ocimum\\_tenuiflorum](https://en.m.wikipedia.org/wiki/Ocimum_tenuiflorum). Rich in Nutrients.
- May Improve Irritable Bowel Syndrome.
- May Help Relieve Indigestion.
- May Decrease Breastfeeding Pain.[12]

**RITHA:**



**Kingdom:** Plantae

**Order:** Sapindales

**Genus:** Sapindus

**Species:** S.mukorossi

**Scientific Name:** Indian Soapberry

**Family:** Sapindaceae

**Synonyms:** Reetha, Arishta o

**Biological Source:**

It consists of dried fruit of Sapindus Trifoliatus (S.I), Sapindus Mukorossi (N.I)

**Geographical Source:** sub-Himalayan region o**Chemical Constituents:**

Saponins: A major constituent of Retha. The plant contains three types of triterpenoids saponins: oleanane, dammarane, and tirucallane. Sugar (10%),Mucilage(10%), Fatty acids, Phenolic acid, Steroids, Carbohydrate, Flavonoids, Triterpenoids, Protein, Vitamin-E, Betasitosterol.

**Use Of Ritha:**

- helps reduce stress.
- Protects from coronary heart sicknesses.
- manipulate headaches, cough and bloodless.
- reduce the hazard of cancer and coronary heart illnesses
- remarkable mouth freshener.
- beneficial in treating allergies.[13]

**ROSE WATER:**



**Kingdom** – Plantae

**Division** – Magnoliophyta

**Class** – Magnoliopsida

**Order** – Rosales

**Family** – Rosaceae

**Genus** - Rosa

**Species** – Centifolia. o**Synonym:** Attar of roses o**Biological Source:**

Rose oil is extracted from the flowers of Rosa damascene. o

Geographical Source:

Asia: Most rose species are native to Asia. North America, Europe and northwest Africa. o

Chemical Constituents:

Citronellol: 34–55%

Geraniol: 14%

Nerol: 7% Paraffin:16%

Polyethyl alcohol: 2.8%

Farnesol: 1.2%

Rose oxide: A terpenoid ether, 0.5%

Eugenol: Around 1.2% o

Medicinal uses of Rose water:

It may be used effectively to reduce anxiety, stress, depression and pain. It has healing property, Moisturizes the skin.

It improves skin tone and brightness.

It helps to reduce blemishes, acne scars and dark spot.[14]

#### **TULSI:**



**Kingdom:** Plantae

**Division:** Magnoliophyta

**Class:** Magnoliopsida

**Order:** Lamiales

**Family:** Lamiaceae

**Genus:** Ocimum

**Species:** O. Tenuiflorum

**Biological Name:** Ocimum tenuiflorum Ocimum or Ocimum sanctum.[15]

**Synonyms:** Sacred basil, Holy basil.

**Biological Source:** Tulsi consists of fresh and dried leaves of Ocimum sanctum Linn. Belonging to the family Labiatae.



**Geographical Source:** It is an herbaceous, much branched annual plant found throughout India; it is considered as sacred By Hindus. The plant is commonly cultivated in gardens and also grown near temples. It is Propagated by seeds.[16]

**Chemical Constituents:**

There are many chemical constituents are present in Tulsi such as fatty acids 4.71 %, fatty alcohols 26.70%, organic acids and ketones, enone, aldehyde, ester organic nitro alcohols, dialkyldithiophosphates 21.91%, Monoterpenoids, Diterpenoids, Sesquiterpenoids, Triterpenoids, Phenylpropanoids, Flavonoids Alloxazines and isoalloxazine.[17] o

**Use of Tulsi:**

- It is also a good anti-oxidant
- It acts as a blood purifier.
- It helps in indigestion and gastric disorders.
- It helps in reduce stress
- It protects from heart diseases
- Beneficial in treating asthma
- Used as anti-ulcer property
- Tulsi leaves are used for relief from cough and cold.
- Leaf extract is effective to treat skin disorders.[18]

**ALOEVERA –**



**Kingdom:** Plantae

**Division:** Spermatophyta

**Class:** Monocotyledonous

**Order:** Asparaguses

**Family:** Liliaceae

**Genus:** Aloe

**Species:** Barbadesis Mill

**Synonym:** Aloe, Hindi -Musabbar, Marathi -Korphad.

**Biological Source:**

Aloe is the dried juice collected by incision, from the bases of the leaves of various species of Aloe. Aloe perryi Baker, Aloe vera Linn or Aloe barbadensis Mil and Aloe ferox Miller., belonging to family Liliaceae. **oGeographical Source:** It grows mainly in the dry regions of Africa, Asia, Europe and America. In India, it is found in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra and Tamil Nadu. **oChemical Constituents:**

Aloe vera contains 75 potentially active constituents: vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids. Vitamins: It contains vitamins A (betacarotene), C and E, which are antioxidants. It also contains vitamin B12, folic acid, and choline. o

### MEDICINAL USES

- Improve skin integrity.
- Anti-inflammatory
- Skin protection
- Anti-bacterial
- Anti-viral
- Antiseptic
- Wound healing properties.[19]

### II. CONCLUSION

In recent times there is a lot of demand for herbal formulations inside the marketplace because of their cost effectiveness and shortage of any side effects. From the above experimental information it is clear that a polyherbal hand wash components with herbal ingredients including *Azadirachta indica*, *Melia azadirachta*, *Curcuma longa*, *Citrus limon*, *Mentha spicata*, Indian Soapberry, *Ocimum tenuiflorum*, Turmeric Rose Water and *Azadirachta indica* has correct characteristics and additionally possesses a terrific antimicrobial interest against *Bacillus subtilis*, *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Escherichia coli*.

### REFERENCES

- [1]. Ravi K, Pratibha MD, Kolhapure.S.A. Evaluation of the antimicrobial efficacy and safety of Pure Hands as a hand sanitizer: Indian Journal of Clinical Practice, 15(10), 2005, 19- 27.
- [2]. Mashood AH, Satheesh B, Natarajan, Gousuddin M. Formulation, Evaluation and Antibacterial Efficiency of Herbal Hand Wash Gel. Int J Pharm Sci Rev Res, 2014
- [3]. Yang CH, Huang YC, Chen YF, Zhang MX. Foam properties, detergent abilities and longterm preservative efficacy of the saponins from *Sapindus mukorossi*. J Food Drug Anal, 2010; 18: 155-160.
- [4]. The skin "boundless anatomy and physiology"[online]. Available: <https://courses.lumenlearning.com/boundlessap/chapter/theskin/#:text=The%20epidermis%20is%20a%20thin,divided%20into%20five%2C%20separate%20layers.>
- [5]. Bahuguna M, Kashyap S. Formulation and evaluation of hand wash. World Journal of Pharmaceutical Research, 2016 May 19; 5(7): 1559-77.
- [6]. Mr. Bhise Akash Bhagwan, Formulation & Evaluation of Herbal Hand Wash By using Natural Ingredient By simple Method, IGCRT,9(12),2021 page no.b629.
- [7]. Bahuguna M, Kashyap S. Formulation and evaluation of hand wash. World Journal of Pharmaceutical Research, 2016 May 19; 5(7): 1559-77.
- [8]. Shakib Uzzaman pharmacological activities of neem (*Azadirachta indica*) : A review International Journal of pharmacognosy and life science (1) ,2020,page no.38.
- [9]. [https://en.m.wikipedia.org/wiki/Azadirachta\\_indica](https://en.m.wikipedia.org/wiki/Azadirachta_indica).
- [10]. Sayantani Chanda, etal phytochemical and pharmacological importance of turmeric (*curcuma longa*): A Review, RRJoP,9(1),2016 page no.1.
- [11]. The changes in growth parameters, qualities, and chemical constituents of lemon balm (*Melissa officinalis* L.) cultivated in three different hydroponic systems
- [12]. Yang-Ju Son, Jai-Eok Park, Junho Kim, Gyhye Yoo, Chu Won Nho Industrial Crops and Products 163, 113313, 2021.
- [13]. [https://en.m.wikipedia.org/wiki/Ocimum\\_tenuiflorum](https://en.m.wikipedia.org/wiki/Ocimum_tenuiflorum).
- [14]. [https://en.m.wikipedia.org/wiki/Rita\\_rita](https://en.m.wikipedia.org/wiki/Rita_rita).
- [15]. Agarwal et al., 2005; Dobрева, Dincheva, and Nenov, 2018.
- [16]. Rakesh kumar Joshi, Phytoconstituents, traditional, medicinal & bioactive uses of Tulsi (*osmium sanctum* linn): A Review, journal of pharmacognosy and phytochemistry,6(2) ,2017, page no.263.
- [17]. Shah B, Seth AK. Textbook of Pharmacognosy and Phytochemistry. Elsevier India, 2010; First edition: pp 305-306.

- [18]. Review Ocimum Species: A Review on Chemical Constituents and Antibacterial Activity Hendra Dian Adhita Dharsono 1,\*, Salsabila Aqila Putri 2, Dikdik Kurnia 2, Dudi Dudi 3 and Mieke Setiawati Satari.
- [19]. Lalam R, Kumari V, Likitha KS, Rakesh Y, Bhavani M, Madhuravani V, Dr.Panda J. Formulation and evaluation of herbal hand wash. World Journal Of Pharmacy And Pharmaceutical Science. 2022 Nov 06; 11(12): 192- 197.
- [20]. Sanjit Kumar Kar etal, phytochemical constituents of aloe vera & their multifunctional properties: A comprehensive Review IJPSR ,9(4), 2018