

**REVIEW ON HERBAL HAND SANITIZER**

**S. Madhu Charan\*, G. Nagaraju, K. Ganesh, Pusam Kiran, A. Karthikesh and  
G. Praveen Kumar**

Dhanvanthari Institute of Pharmaceutical Sciences, Sujatha Nagar, Kothagudem, Bhadradi  
Dist -Telangana-507120.

Article Received on  
30 January 2025,

Revised on 20 Feb. 2025,  
Accepted on 12 March 2025

DOI: 10.20959/wjpr20256-35965



**\*Corresponding Author**

**S. Madhu Charan**

Dhanvanthari Institute of  
Pharmaceutical Sciences,  
Sujatha Nagar,  
Kothagudem, Bhadradi Dist  
-Telangana-507120.

**ABSTRACT**

The present study is based upon the herbal hand sanitizer. The herbal ingredients include i.e., neem extract, camphor, Tulasi extract, Aloe vera, Mint, clove extract, were studied by based upon the literature review. Hence, we have concluded that above ingredients have following therapeutic & prophylactic activities like anti-inflammatory, anti-viral, anti-bacterial, anti-fungalsmoothing effect. For futher investigation on different activities have to be done.

**KEYWORDS:** Herbal, Aloe vera, hand sanitizer, Antibacterial therapeutic and Prophylactic.

**INTRODUCTION**





Now a days, hand hygiene plays a vital role in maintaining a good health. Since, hands are becoming main reasons behind spreading the disease. Hence, Hand Hygiene is a vital principle and exercise in prevention, control and reduction of health acquired infections. Proper method of washing and drying hands stops the chain of transmission of deadly pathogens (from contaminated surface or site). since, chemicals used in Hand sanitizer and Handwash shows side effects like redness or rashes on hands. So, we using Herbal Hand Sanitizer and Herbal Handwash becomes must in recent circumstances. It was found that microbes had slowly developed resistance against various antibiotics. Since many decades Plants were the chief source of treating various diseases. Hence, this research highlights the use of various plants with antimicrobial activities.



The main reason of present study have to prepare herbal hand sanitizer incorporating the leaves extract of *Azadirachta indica* (Neem), *Ocimum tenuiflorum* (Tulsi), *Mentha* (Mint), *Aloe Barbandis* (Aloe Vera), *Syzygium Aromaticum* (clove), Camphor, Rose water. This is best herbal combination which gives multidimensional activities; and to evaluate these formulations for their antimicrobial efficacy and safety of hands.

## MATERIALS

Collection of plants: The various Herbal sources of materials were collected from the medicinal garden & Surroundings of Dhanvanthari institute of pharmaceutical sciences & authenticated by Shoba Rani madam department of botany m.sc, PhD Singareni women's college kothagudem with an authentication number 2025

### Overview of plant extracts

S. no.	Name of the extract	scientific name	Plant Images	Species	Uses
01	Neem Extract	<i>Azadirachta indica</i>		<i>Azadirachta indica</i>	Insecticide, skin care, Hair care, Oral health, Fungi side, pest control & cosmetic.
02	Tulsi Extract	<i>Ocimum sanctum</i>		<i>Ocimum sanctum</i>	Spiritual, Culinary, aroma therapy, Skin care, Hair care, insect repellent and Anti-oxidant.
03	Clove Extract	<i>Syzygium aromaticum</i>		<i>Syzygium aromaticum</i>	Dental, Culinary, Aroma therapy, skin care, Insect - repellent, Anti-Fungal and anti-Bacterial properties
04	Camphor	<i>Cinnamomum Camphora</i>		<i>Cinnamomum Camphora</i>	Pain relief, Respiratory issues, skin conditions, insect repellents, aroma therapy, anti-fungal and anti-bacterial properties

05	Mint	Mentha piperita		Mentha piperita	Culinary, Digestive aid, Oral health, skin care Aroma therapy, relieve headaches and natural therepy.
06	Aloe-vera	Aloe vera		Aloe barbidensis	Skin care, wound healing, Digestive health, oral health, anti-inflammatory, hair care, anti-microbial and cosmetics.

### **Neem extract (*Azadirachta indica*)**

**Scientific name:** *Azadirachta indica*

**Order:** Spindale

**Genus:** Azadirachta

**Family:** Miliaceae

### **Chemical constituents**

Triterpenoids: 10-20%, Flavonoids: 5-10%, phenolic acid: 2-5%, Essential oils: 1-3%, Saponins: 1-2%.

### **Active constituents**

**Azadirachtin:** The most abundant active constituent in neem leaves.

**Nimbin:** A tetranortriterpenoid found in the bark of the neem plant.

**Beta-Sitosterol:** The polyphenolic flavonoid found in neem leaves. It has anti-bacterial and anti-fungal properties.

### **Therapeutic uses**

**Hair:** Neem oil can strengthen hair follicles and reduces hair loss.

**Skin:** Neem is used to treat acne, pimples and skin blemishes.

**Fungal infections:** Neem has anti-fungal properties.

### **Tulsi extract (*Osmium tenuiflorum*)**

**Scientific name:** *Osmium tenuiflorum*.

**Order:** Lamiales

**Genus:** Basil

**Family:** Lamiaceae

### Chemical constituents

Volatile oils: 0.5-1.5%, Phenolic compounds: 2-5%, Flavanoids: 1-3%, Alkaloids: 0.5-1.5%.

### Active constituents

**Eugenol:** A volatile oil with anti-inflammatory, anti-oxidant and anti-microbial properties.

**Rosmarinic acid:** A phenolic compound with anti-inflammatory, anti-oxidant and anti-microbial properties.

**Ursolic acid:** A phenolic compound with anti-inflammatory, anti-oxidant and anti-cancer properties.

**Quercetin:** Aflavonoid with anti-inflammatory, anti-oxidant and anti-microbial properties.

### Therapeutic uses

**Stress and anxiety:** Tulsi can help with stress and anxiety.

**Kidney stones:** Tulsi can help expel kidney stones.

**Diabetics:** Tulsi can help lower blood sugar.

### Mint extract (*Mentha*)

**Scientific name:** *Mentha*

**Order:** Lamiales

**Genus:** *Mentha*.

**Species:** *Mentha piperita*

**Family:** Lamiaceae

### Chemical constituents

Volatile oils: 1-3%, Phenolic compounds: 2-5%, Flavanoid: 1-3%, Terpenoids: 1-2%.

### Active constituents

**Menthol:** A volatile oil with analgesic, anti-inflammatory and cooling properties.

**Menthone:** A volatile oil with anti-inflammatory, anti-oxidant and anti-microbial properties.

**Rosmarinic acid:** A phenolic compound with anti-inflammatory, anti-oxidant and anti-microbial properties.

**Quercetin:** A flavonoid with anti-inflammatory, anti-oxidant and anti-microbial properties.

**Therapeutic uses**

**Culinary:** Mentha leaves and oils are used in cooking, baking and as a garnish.

**Skin care:** Mentha oils are used in skin care products to reduce acne, inflammation and itching.

**Insect repellents:** Mentha oils are used as a natural insect repellent.

**Clove extract (clovebuds)**

**Scientific name:** *Clove*

**Order:** Myrtales

**Genus:** Syzygium.

**Species:** syzygium aromaticum.

**Family:** Myrtaceae.

**Chemical constituents**

Volatile oils: 15-20%, Phenolic compounds: 5-10%, Flavonoids:2-5%, Terpenoids:1-3%.

**Active constituents**

**Eugenol:** A volatile oil with analgesic, anti-inflammatory and anti-microbial properties.

**Beta caryophyllene:** A volatile oil with anti-inflammatory, anti-microbial and anti-oxidant properties.

**Gallic acid:** A phenolic compound with anti-inflammatory, anti-oxidant and anti-microbial properties.

**Quercetin:** A flavonoid with anti-inflammatory, anti-oxidant and anti-microbial properties.

**Therapeutic uses**

**Dental:** Clove oil used in dentistry to relieve toothache pain and reduce inflammation.

**Traditional medicine:** Clove have been used in traditional medicine for centuries to treat various ailments, including digestive issues, respiratory problems and skin conditions.

**Insect repellents:** Clove oil is used as a natural insect repellent.

**Aloe vera extract**

**Scientific name:** *Aloe*

**Order:** Asparagales

**Genus:** Aloe

**Species:** Aloe Barbadense

**Family:** Asparagaceae

### Chemical constituents

Polysaccharides: 10-20%, Glyco proteins: 5-10%, Anthra quinones: 2-5%, Vitamins and minerals: 1-5%, Fatty acids: 1-5%.

### Active constituents

**Aloin:** An Anthraquinone with anti-inflammatory, anti-oxidant and anti-microbial properties.

**Aloe-emodin:** An anthraquinone with anti-inflammatory, anti-oxidant and anti-microbial properties.

**Lectins:** Glyco-proteins with anti-inflammatory and immunomodulatory properties.

### Therapeutic uses

**Wound healing:** Aloe vera gel accelerates wound healing by promoting collagen synthesis, improving tissue oxygenation and reduce inflammation.

**Immune system support:** Aloe vera is believed to have immunomodulatory effects, which can help to boost the immune system and prevent illnesses.

**Anti-inflammatory:** Aloe vera has anti-inflammatory properties, which can help reduce inflammation and alleviate conditions such as arthritis, fibromyalgia, and gout.

### Camphor (*Cinnamomum camphora*)

**Scientific name:** *Cinnamomum camphora*

**Order:** Laurels

**Genus:** *Cinnamomum*

**Species:** *Cinnamomum camphora*

**Family:** Lauraceae.

### Chemical constituents

Mono terpenoids: 80-90%, Sesquiterpenoids: 5-10%, Phenolic compounds: 2-5%.

### Active constituents

**Camphor:** A mon terpene with analgesic, anti-inflammatory and anti-microbial properties.

**Borneol:** A mono terpene with anti-inflammatory, anti-oxidant and anti-microbial properties.

**Cinnamol:** A sesquiterpene with anti-inflammatory, anti-oxidant properties.

**Therapeutic uses**

**Pain relief:** Camphor is used topically to relieve pain & reduce inflammation, ease a muscle spasm.

**Insect repellents:** Camphor is used as a natural insect repellent to ward off mosquitoes and other pests.

**Decongestant:** Camphor is used as a decongestant to relieve nasal congestion and sinus pressure.

**Rose water (*Rosa damascena*)**

**Scientific name:** *Rosa damascena*.

**Order:** Rosales.

**Genus:** *Rosa*.

**Species:** *Rosa damascena*.

**Family:** Rosaceae.

**Chemical constituents**

Volatile oils: 0.5-2%, Phenolic compounds: 0.5-2%, Flavonoids: 0.52%, Minerals: 0.5-2%.

**Active constituents**

**Geraniol:** A volatile oil with anti-inflammatory, anti-microbial and anti-oxidant properties.

**Quercetin:** A flavonoid with anti-inflammatory, anti-microbial and anti-oxidant properties.

**Gallic acid:** A phenolic compound with anti-inflammatory, anti-microbial and anti-oxidant properties.

**Linalool:** A volatile oil with anti-inflammatory, anti-microbial and sedative properties.

**Therapeutic uses**

**Cosmetics:** Rose water is used in cosmetic products, such as perfumes, creams, lotions due to its fragrant and moisturizing properties.

**Haircare:** Rose water is used in hair care products to promote healthy hair growth, reduce dandruff and soothe and itchy scalp.

**Aromatherapy:** Rose water is used in aromatherapy to promote relaxation, reduce stress and improved mood.

**Skin care:** Rose water is used in skin care products due to its anti-oxidant, anti-inflammatory and anti-bacterial properties, which can help soothe and calm the skin.

**Medicinal uses:** Rose water has been used in traditional medicines to treat various ailments, including digestive issues, respiratory problems and skin conditions.

**Religious and cultural significance:** Rose water is used in various religious and cultural rituals, such as weddings, festivals and spiritual ceremonies.

### *Solvents*

#### **Alcohol (Ethyl alcohol)**

**Chemical Formula:**  $C_2H_5OH$

#### **Chemical constituents**

Ethanol: 95-100%, Water: 0-5%, Impurities: 0-1%.

#### **Active constituents**

**Ethanol:** A psycho active substance with central nervous system (CNS) and depressant properties.

#### **Therapeutic uses**

**Solvent:** Ethyl alcohol is used as a various industry, including pharmaceutical, cosmetics and cleaning products.

**Beverages:** Ethyl alcohol is active ingredient in alcoholic beverages, such as beer, wine and spirit.

**Medicines:** Ethyl alcohol is used as a disinfectant and antiseptic in medicine.

**Laboratory:** Ethyl alcohol is used as a laboratory solvent and reagent.

**Food industry:** Ethyl alcohol is used as a food additive and preservatives.

### **CONCLUSION**

Hands are the primary mode of spreading various infections. Proper methods of washing and drying hands can prevent infection. Hence, it was proved that the Herbal Hand sanitizer and Herbal Handwash are very effective against various bacteria, viruses and microbes in recent studies. As compared to synthetic Hand sanitizer and Hand washes, Herbal Hand sanitizer and Herbal Handwash is very effective, environment friendly, biodegradable and inexpensive. Herbal Handwash is much better than the plain soap due to their ingredients effective on our skin & hands as well as suitable for all type of skin types. Mostly herbal Hand wash protect us from many bacteria's & viruses adhere on our skin. As per our deep review on various herbal extracts we suggest that the constituents of the various extracts of



and their combination are capable of giving superficial anti-microbial, antibiotic as well as antibacterial activity and they capable to inhibit the many pathogens when compared to Synthetic Sources.

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