

Formulation and Evaluation of Herbal Handwash

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Abstract

A herbal handwash was created utilizing extracts from the neem, hibiscus, and reetha plants. The produced herbal handwash was tested for antibiotic sensitivity against skin infections using disc. Comparison between the diffusion method and outcomes and the antiseptic soap that goes for commercially. The main sites of infection are the hands. Microbiological infections have become a serious problem for both workers and children. Handwashing is very important in the home and healthcare sectors. There are many antiviral handwashes in the market, including ones using herbal ingredients as the base. This can have negative consequences like dermatitis, drying out, itching, and irritation. It is used to remove harmful bacteria from hand to counteract this negative impact of the production of chemical-based handwash. The main objective of the study presented is to formulate and assess a herbal handwash with shikakai, hibiscus, reetha, neem, guar gum, rose water, green tea, coffee, capoor for fragrance, and aloe vera to make sure that the herbal handwash formulation is less toxic and that hands are thoroughly washed. Hands are most affected by the condition, such as children and those employed in the pharmaceutical industry are particularly vulnerable to microbial infections. Handwashing is therefore more typical in industrial environments. It has been shown that the handwash formulation cleans hands well and is effective when thinking of physical metrics. It therefore calls into question the wisdom of washing hands with antiseptics. Several characteristics, including color, fragrance, pH, viscosity, and stability, were used to evaluate the prepared handwash.

Keywords: Herbal handwash, evaluation, formulation of shikakai, reetha, neem, hibiscus extract, foaming stability

INTRODUCTION

When our skin is the most exposed area of our body, it needs to be protected from skin infections. Infections with nosocomial have become apparent as a crucial factor in the outcomes of hospital care, leading to prolonged hospital stays as well as significant morbidity and mortality [1–3]. Health care workers' (HCWs') hands are the main places where patients might contract infections and multidrug-resistant bacteria. Thus, it raises the issue of using antiseptics when washing your hands [4–6]. Nowadays, the market offers many chemical antiseptics in the form of alcohol-based sanitizers, chlorohexidine preparations, etc. These soaps or solutions have certain drawbacks or negative effects, but they aid in reducing the spread of infectious diseases linked to healthcare more successfully [7, 8]. Using them frequently may cause skin irritation. Along with pathogen resistance [9, 10].

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Plant-Based Herbal Handwash or Sanitizers

India is referred to as the home of traditional Indian herbal medicine and pharmacy. One of the world's oldest medical practice systems is

ayurveda [11]. Consequently, the provision of healthcare services to human civilization has been made possible in large part by Indian herbal medicine [12–14]. For millennia, plant extracts and products have been utilized in traditional medicine, functional foods, cosmetics, natural colors, and illness treatment. Ayurveda, Yoga, Unani, Siddha, and homoeopathy are the only forms of traditional medicine that are officially recognized in India (Ministry of AYUSH, Government of India) [15–18]. All these systems have a holistic approach to fundamental treatment, and their pharmaceutical modalities are founded on natural materials derived from plants, animals, or minerals [19]. All these systems use a holistic approach to fundamental treatment, and their pharmaceutical modalities are founded on natural materials derived from plants, animals, or minerals [20–23]. All of these systems use a holistic approach to fundamental treatment, and their pharmaceutical modalities are founded on natural materials derived from plants, animals, or minerals. India is the world leader in the use of numerous native herbal plants from the Indian subcontinent to treat various medical conditions in people. For millennia, the Ministry of AYUSH (Government of India) has utilized numerous safe traditional herbal formulations that are well-known immune modulators to treat respiratory illnesses and allergy issues [24–26].

COMPOSITION OF HERBAL HANDWASH

- Plant extract.
- Solvent humectant.
- Flavouring agent.
- Preservative thickening agent.
- Emulsifiers.
- Surfactants.
- Detergent.

TYPES

The following are the types of hand hygiene:

- Routine handwash: Use of water and non-antimicrobial soap for the purpose of removing soil and transient microorganisms.
- Antiseptic handwash.
- Antiseptic handrub.
- Surgical antisepsis.

BENEFITS

1. Blended with natural ingredients.
2. Kill germs and leaves your hands clean, soft, and safe.
3. Suitable for all types of skin.
4. Soft and supple skin fragrance.
5. Skin brightening.
6. Skin moisturizer.
7. Pollution free.
8. No side effects.
9. Prevents the spread of skin infection: measles, chicken pox, rashes, and eczema.
10. Handwashing to reduce your risk of various diseases, including diarrhoea and pneumonia.
11. Reduces the risk of corona virus and other related transmitted disease.
12. Prevents the spread of Hepatic A.
13. Reduces the risk of eyes infection.
14. Decrease the infection.

IMPORTANT STEP FOR HANDWASHING

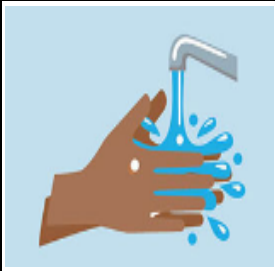


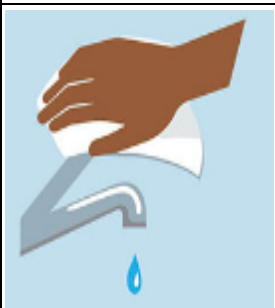
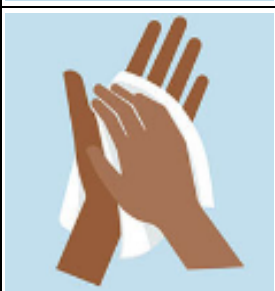
1. After coughing or sneezing.
2. When caring for the sick.

3. Before, during, and after you prepare food.
4. Before eating.
5. After toilet uses.
6. When hands are dirty.
7. After handling animals or animal waste.

HANDWASHING STEPS

There are 5 steps of handwash washing depicts in Table 1.

Table 1. Handwashing steps.

	1. Wet your hands with clean running water.
	2. Apply handwash and rub your hands together for at least 20 seconds.
	3. Rinse your hands until all the soap is gone.
	4. Turn off the faucets with a paper towel or your elbow.
	5. Dry your hands with a clean paper towel or hand towel.

AIM

The aim of the present investigation is formulation and evaluation of herbal handwash by using natural ingredients.

METHOD AND MATERIALS

Chemical

All is herbal products like

- *Hibiscus*: Softening and hydrating.
- *Reetha*: Used for cleaning and antiseptic.
- *Aloe vera*: Moistening agent.
- *Guar gum*: Thicking agent, foaming agent.
- *Neem*: Antibacterial agent.
- *Capoor*: Fragrance.

OBJECTIVE

The objective of the proposed work is

1. Preparation of herbal handwash by using double boiling method
2. The formulation is developed and evaluated for parameters such as,
 - Appearance.
 - Odour.
 - Visual inspection.
 - pH.
 - Foaming ability and foam stability.
 - Stability studies.

CONTENT OF THE HANDWASH

The ingredient and their quantity use in the handwash depicts in Table 2.

Table 2. Content of the handwash.

S. n.	Ingredients	Source	Quantity	Uses
1.	Hibiscus	Petal	3 g	Softening and hydrating
2.	Reetha	Extract of reetha	2 g	Used for cleaning and antiseptic
3.	Aloe vera	Gel	2 g	Moisturizer
4.	Guar gum	Seed extract	0.5 g	Foaming agent
5.	Neem	Leave extract	29 g	Act as antibacterial agent
6.	Capoor	Powder	0 g	Fragrance
7.	Water	Filters	25 ml	Making handwash
8.	Rosewater	Extract of rose	2–3 drops	Fragrance

PREPARATION OF HERBAL HANDWASH

Plant

The ingredients used in herbal handwash are shikakai, coffee, green tea, fenugreek seeds, capoor, reetha, aloe vera, hibiscus, neem, guar gum.

Preparation of Extract

About 100 g of each plants material and the powdered was extracted with distilled water by boiling for 4 hours up to in the form of ash. To remove the solvent, the entire extract was combined, filtered, and heated. After that, it was dried and stored for later use in a desiccator. The extract of each plant's material was separated and evaporated.

EVALUATION OF HERBAL HANDWASH

Objective

- *Appearance* – color: brown (Figure 1).
- *Odour*: Using a capoor fragrance.



Figure 1. Formulated handwash.

VISUAL INSPECTION

Transparency

Non transparent.

Consistency (Figure 2)

- The consistency of the formed cream was determined by hand.
- Take a pinch of handwash and rub it with your finger.



Figure 2. Consistency of handwash.

Foaming Stability (Figure 3)

The stability of foam was determined using the cylinder shake method. Shake 50 ml of 1% prepared handwash in a 250 ml measuring cylinder for 10 minutes. Foam volume was recorded after 1 minute, and stability was verified by monitoring foam volume throughout a 4-minute period.



Figure 3. Foam stability.

Stability Studies

Glass tubes were used to test the formulations' thermal stability, and they were kept in a humidity room at a temperature of 45°C and a relative humidity of 75%. At one-month intervals, their physical stability and appearance were examined for three months [27–30].

pH

The pH of formulated handwash was determined by using paper as well as the pH of formulated handwash was determined by using pH meter by dissolving 1 gm of handwash in 100 ml of water [32–34].

Dirt Dispersion (Figure 4)

A test container containing 10 millilitres of distilled water was filled with two drops of handwash. Once the test tube has one drop of India ink added, shut it and give it 10 vigorous shakes. None, light, moderate, or heavy ink concentrations had been found in the foam [35].



Figure 4. Dirt dispersion test.

Skin Irritation Test

After applying the made handwash solution, the skin was examined for redness and irritation five minutes later. The skin did not exhibit any red coloration or irritation.

RESULT AND DISCUSSION

In this work, gel bases were used as carriers to create a handwash based on *Calotropis gigantea*. Generally recognized excipients that work well with any formulation identical to this one were used to produce the formulation. In vitro antimicrobial testing was done to demonstrate the product's effectiveness against infectious bacteria obtained from volunteers, and organoleptic evaluation was conducted to guarantee product stability.

PHYSICAL PARAMETERS

- *Color*: Green color of the formulation was inspected visually.
- *Odour*: The odour of the formulation was like that of a capoor.
- *Viscosity (dyne/cm)*: The viscosity was carried out by Brookfield viscometer.
- *pH*: The pH was determined by using digital pH meter.

The pH of formulation 1 is 6.87 and the pH of formulation 2 is 7.0 and the pH of formulation 3 is 7.5.

The observations are listed in Table 3, where pH of formulation 1 was found to be the best for herbal handwash.

Table 3. Evaluation parameter and formulation.

S. n.	Evaluation Parameter	F1	F2	F3
1.	Color	Brown	Brown	Brown
2.	Odour	Capoor like	Capoor like	Capoor like
3.	pH	6.87	7.0	7.5

Stability

The study was carried out for 7 days and no change was noticed. The observations are listed in Table 4.

Table 4. Measurement of stability.

S. N.	Appearance	pH
F1	No change	6.87
F2	No change	7.0
F3	No change	7.5

DISCUSSION

In this formulation of herbal handwash we make from all herbal ingredients from handwash and generally recognized excipients that work well with any formulation identical to this one were used to produce the formulation. In vitro antimicrobial testing was done to demonstrate the product's effectiveness against infectious bacteria obtained from volunteers, and organoleptic evaluation was conducted to guarantee product stability.

CONCLUSION

The combination of neem, aloe vera, hibiscus, reetha, guar gum, rosewater, and capoor in the creation and assessment of the herbal handwash was successful. The handwash had all the right physical attributes, such as a pleasing scent, pH that was appropriate, and foaming stability.

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