

Development and evaluation of neem herbal hand wash

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Abstract

Hands are the main transmission route for microorganisms and infectious diseases. Hand washing is very important in food health, home cooking, and day care. The purpose of hand washing in the health care is to remove pathogenic microorganisms ("germs") and avoid transmitting them. Hand washing removes visible dirt from hands and reduce the number of harmful microorganisms. In the present study herbal handwash was developed using ethanolic extract of *Azadirachta indica* (Neem). This plant is historically known to have many therapeutic uses. Herbal handwash was developed by using Carbopol-930 as Jelling agent, methyl paraben used as neutralizer and Sodium lauryl sulphate as surfactant. The Hand wash showed a multipurpose effect and all these herbal ingredients showed significant different activities. The ingredient use in herbal hand wash having properties cleaning, remove dirt as well as promote healing. The prepared formulation were evaluated based on number of criteria including consistency, pH test, spread ability, stability test, cleansing test, foam ability and grittiness.

Keywords: Herbal drug; Herbal Neem Extract; Herbal Hand wash; Evaluation

1. Introduction

1.1. Hand washing

It refers to washing hands with plain or antimicrobial soap or water [11]. In actual practice, it can vary considerably from a brief rinse of hands to extensive scrubbing. The purpose of hand washing in the health care setting is to remove pathogenic microorganisms ("germs") and avoid transmitting them. Skin is one of the most exposed part of the body requires protection from the pathogens. To protect the skin from harmful micro organisms and to prevent spreading of many contagious diseases hand washing is absolutely an important precaution.



Figure 1 Hand Wash

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2. Material and methods

Neem Leaves extract, Aloe Vera gel, sodium lurylsulphate, Carbopol 934, glycerine, Lavender oil and Methyl Paraben.

2.1. Extraction of Neem

- Fresh neem leaves are collected and dried for 3-4 weeks in room temperature.
- The dried leaves put in a mortar and pestle and to form powder
- Weighing the 20gm of Neem powder put in a beaker containing 100 ml of methanol.
- This mixture was heated on water bath for 1 hour. The content was filtered filter paper in order to get particle free extract.
- Excess solution is evaporated using a rotary evaporator.



Figure 2 Extraction of Neem

2.2. Formulation Table

Table 1 Formulations

Sr. No	Name of Drug	Formulations			Properties
		Formulation 1	Formulation 2	Formulation 3	
1	Neem extract	4.5ml	5ml	5ml	Antibacterial and Anti-inflammatory
2	Aloe Vera gel	5gm	5gm	5gm	Soothing Properties
3	Carbopol 934	2gm	2gm	2gm	Gelling Agent
4	Glycerin	3gm	3gm	3gm	Moisturizing Agent
5	Lavender oil	2-3 drops	2 drops	3 drops	Flavoring agent
6	Sodium lauryl sulphate	2gm	2gm	2gm	Foaming Agent
7	Methyl paraben	0.3 gm	0.2gm	0.3 gm	Preservative
8	Distilled water	q.s	q.s	q.s	Vehicle

2.3. Preparations of Herbal Neem Hand wash:

- Take a beaker add methanolic neem extracts in glycerin with continuous stirring.
- In second beaker take Carbopol 934, add sufficient amount of distilled water, and stir it continuously to form gel
- Add carbopol gel in extract beaker, then sodium lauryl sulphate, methyl paraben, flavoring agents was added as per the requirement of standard procedure for preparation of hand wash.
- The hand wash was made homogenous using homogenizer under room temperature.



Figure 3 Herbal Neem Hand Wash (F1,F2&F3)

2.4. Evaluation parameters

Physical evaluation of the Herbal Hand wash was visually carried out. The sensory characters such as Texture, Color and fragrance were determined.

2.4.1. Appearance

- Physical evaluation: It was determined visually.
- Color: It was determined visually.
- Odor: It was determined manually

2.4.2. PH

The PH was determined using digital P^H meter and the P^H of herbal hand wash was found to be in between 5.5 to 6.

2.4.3. Stability studies

The stability of herbal hand wash gel was carried out by storing measured amount of gel at different temperature i.e., 25°C, 37°C, 40°C for one week during stability studies no change in color and no phase separation were observed in the formulated hand wash.

2.4.4. Foam height

1ml of sample of herbal hand wash was taken and dispersed in 50 ml distilled water. Then transfer into 500ml stoppers measuring cylinder volume make-up to 100 ml with water. 25 stroke was given and stand till aq. volume measured unto 100ml and measured the foam height.

2.4.5. Foam Retention

10 ml herbal hand wash was taken into 100 ml graduated cylinder and shaken 10 times. The volume of foam at 1min. Interval for 1 min was recorded foam retention should be stable at least 5 min.

2.4.6. Skin Irritation

The herbal hand wash was tested for skin irritability by applying on hand and washed off with water.

2.4.7. Viscosity

Viscosity was determined using a Brookfield digital viscometer.



Figure 4 PH of Herbal Neem Hand Wash



Figure 5 Viscosity of Herbal Neem Hand Wash

2.5. Evaluation Table

Table 2 Evaluation Parameter

Sr.No	Evaluation Parameter	Observation		
		Formulation 1	Formulation 2	Formulation 3
1	Color	Light green	Greenish-yellow	Light green
2	Odor	Pleasant	Pleasant	Pleasant
3	Texture	Smooth	Smooth	Smooth
3	PH	5.60	6.04	5.85
4	Foam height	3.4 cm	3.2 cm	4 cm
5	Foam retention	12 ml	14ml	10ml
6	Skin irritation	No irritation	No irritation	No irritation
7	Viscosity	1840cP	17820cP	1680cP
8	Stability	No colour change	No colour change	No colour change

3. Results and discussion

The organoleptic evaluation results, such as odor, pH, viscosity, foam height, foam retention, stability studies and irritability test observed that the herbal hand wash showed light green and greenish-yellow in color with a bitter smelly

light lemony fragrant. The pH of these formulations ranged between 5.6 - 6 that's means suitable for the skin and non-irritating. The viscosity of these formulations was recorded. During the stability tests, there was no colour change or phase separation in the prepared herbal hand wash.

4. Conclusion

The neem extract herbal handwash was successfully developed with antibacterial properties and enhanced quality with aloe vera juice as soothing agent, carbopol 934 as gelling agent. Sodium laurylsulphate as surfactant, glycerine as moisturizing agent, Rose oil for fragrance. The formulated hand wash was evaluated for different parameters like pH, color, foaming efficiency, viscosity and stability. The hand wash was found to be stable in terms of physical parameters with good cleansing property.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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