



# FORMULATION AND EVALUATION OF HERBAL HANDWASH

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## 1. ABSTRACT:-

The main aim to present work is to formulate and evaluate poly-herbal hand wash by using aloe-vera,lemon juice. Inorder to make formulation has less side effects and better cleaning of hands. The hands ara primary sites for the infection. Microbial infection is critical Issue in children and employer in pharmaceutical industry.So the use of hand wash is more in industrial site The formulated hand wash hacc found to be good in physical parameter with good cleaning of hands.Therefore it brings up the use of antiseptic for hand washing purpose.The prepared handwash evaluated by the diffrent parameter namely as colour, odour,ph,viscosity and stability.

Hands are primary mode of transmission of microbes and infections. Hand-washing is critical in food production, food service and also important in healthcare setting, homes and day care preparations. The present research was aimed to evaluate the antibacterial efficacy of various herbal oils such as Cinnamon oil, Eucalyptus oil, menthol oil and lavender oil and found that cinnamon oil showed better antibacterial activity. Also the research was carried out to formulate and evaluate the poly herbal Hand wash gel containing Cinnamon oil.

**Keywords:** Herbal hand wash, tulsi, vitamin c, Aloe vera, citrus Limon, essential oil.

## 2. INTRODUCTION

The herbal medicine is also known as botanical treatment or phytomedicine. Herbal medication refers to the uses of any plant seeds, root, leaves, bark, flower and aerial part for medicinal purpose. Herbal medicine have been the treatment and care of numerous disease. Skin being the most exposed part of our body requires protection from skin pathogen. To defend the skin from harmful micro-organism to avoid spreading disease. Hand washing is extremely significant precautions. Hand hygiene is the single most important simplest and least expensive mean of preventing nasocomial infection. Hand washing is main purpose of cleaning hands with removing soil, dirt, pathogenic microorganisms and avoid transmitting of transient microorganisms. Hygiene is basically defined as the branch of science which is involved in knowledge and practice related to promotion of health. The concept highlights the need of maintaining Hygiene in prevention of disease. Spread of infection (bacterial or viral) can be prevented hygiene practices.an herbal drug treatment gives healthy life.it was general used to furnish first line and common health provider. Since ancient time in India herbal medicine have been the basis of treatment and cure for various diseases.

Herbal medicine having various therapeutic uses like healing, wound, treating inflammation due to infection, skin lesion, leprosy, diarrhea, scabies venereal disease like, snake bite and ulcer. Plant have provided good source of antimicrobial activity and plant extract have potential as antimicrobial compound against several pathogenic microorganisms which cause infections disease and resistance toward synthetic drug.

Hands are the primary mode of transmission of microbes and infections. Hand washing is the act of germless hands to remove soil, dirt, pathogenic microorganisms, and avoid transmitting of transient microorganisms. Hand Washing removes visible dirt from hands and reduces the number of harmful microorganisms such as E.coli and salmonella may be carried by people, animals, or equipment & transmitted to food. To defend the skin from harmful microorganisms and to avoid spreading of various contagious diseases, hand washing is extremely important precaution.

The present study was aimed to formulate herbal hand wash gel with the help of neem (*Azadirachta indica*) ghito-kumari (Aloe vera), and citrus Limon (Citrus Limon (L.) Osbeck) belongs to the botanic family *Meliaceae*. All the parts of the Neem tree have been used as traditional Ayurvedic medicine in India. Neem oil, bark and leaf extracts have been used clinically to control leprosy, intestinal helminthiasis, respiratory disorders, and constipation. Neem leaves contain extensive antibacterial action against Gram-negative and Grampositive microorganism. Citrus Limon belongs to the family Rutaceae. It is traditionally used to clean due to its disinfectant properties. Lemon juice is additionally used as a short term preservative in some food preparations. Lemon juice is used in Indian medicinal systems because of the antimicrobial properties of lemon. Herbal medication is additionally known as Botanical treatment or Phytopathogens. Medicine. Herbal medication refers to the utilization of any plant's seeds, berries, roots, leaves, bark, or flowers for medicinal purposes. An herbal drug treatment offers a healthy life. It was generally used to furnish first line and common health supplier. Since ancient times in India, herbal medicines have been the basis of treatment and cure for numerous diseases. Physiological conditions et al in traditional methods were practiced such as Ayurveda, Unani, and Siddha.

Herbal medicines having numerous therapeutic uses like healing wounds, treating inflammations because of infection, skin lesions, leprosy, diarrhea, scabies, venereal diseases, snake bite, and ulcers, etc. Hands are the primary mode of transmission of microbes and infections. Hand washing is the act of germless hands to remove soil, dirt, pathogenic microorganisms, and avoid transmitting of transient microorganisms.

Hand Washing removes visible dirt from hands and reduces the number of harmful microorganisms such as E.coli and salmonella may be carried by people, animals, or equipment & transmitted to food. To defend the skin from harmful microorganisms and to avoid spreading of various contagious diseases, hand washing is extremely important precaution. The present study was aimed to formulate herbal hand wash gel with the help of neem (*Azadirachta indica*), ghito-kumari (*Aloe vera*), and citrus Limon (*Citrus Limon (L.) Osbeck*) belongs to the botanic family Meliaceae.

All the parts of the Neem tree have been used as traditional Ayurvedic medicine in India. Neem oil, bark and leaf extracts have been used clinically to control leprosy, intestinal helminthiasis, respiratory disorders, and constipation.

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Hand washing with soap and water has been taken part of personal hygiene for hundreds of years and has been usually embedded in spiritual and cultural behavior. Although, the link among Hand washing and the spread of disease changed into set up simplest two centuries in the past, despite the fact that this can be considered as extraordinarily early with admire to the discoveries of Pasteur and Lister that passed off decades later. In the middle of 19th century, Ignaz Semmelweis in Vienna (Austria), and Oliver Wendell Holmes in Boston (USA), revealed that the hands of health care workers spread nosocomial infection. In 1847, observations of Semmelweis concluded that after performing autopsies by physician on their hands had a disagreeable odor despite hand washing with soap and water before entering the clinic. He hypothesized therefore that “cadaverous particles” were transmitted via the hands and caused the childbed fever. After a theory of disease offering developed by Pasteur, Semmelweis's findings goes worldwide acceptance after his death, when Pasteur developed the scientific theory of disease offering a theoretical explanation for Semmelweis's findings.

In 1980s remarkable evolution made in concepts of hand hygiene in health care. Simultaneously in the same year first national hand hygiene guidelines were published, furthermore several other countries also published the new guidelines in this array. In the year 1995 and 1996, the CDC/HICPAC within the USA recommended that besides antimicrobial soap or alcoholic antiseptic agent be used for washing hands.

### 3. AIM AND OBJECTIVE:

#### **Aim:**

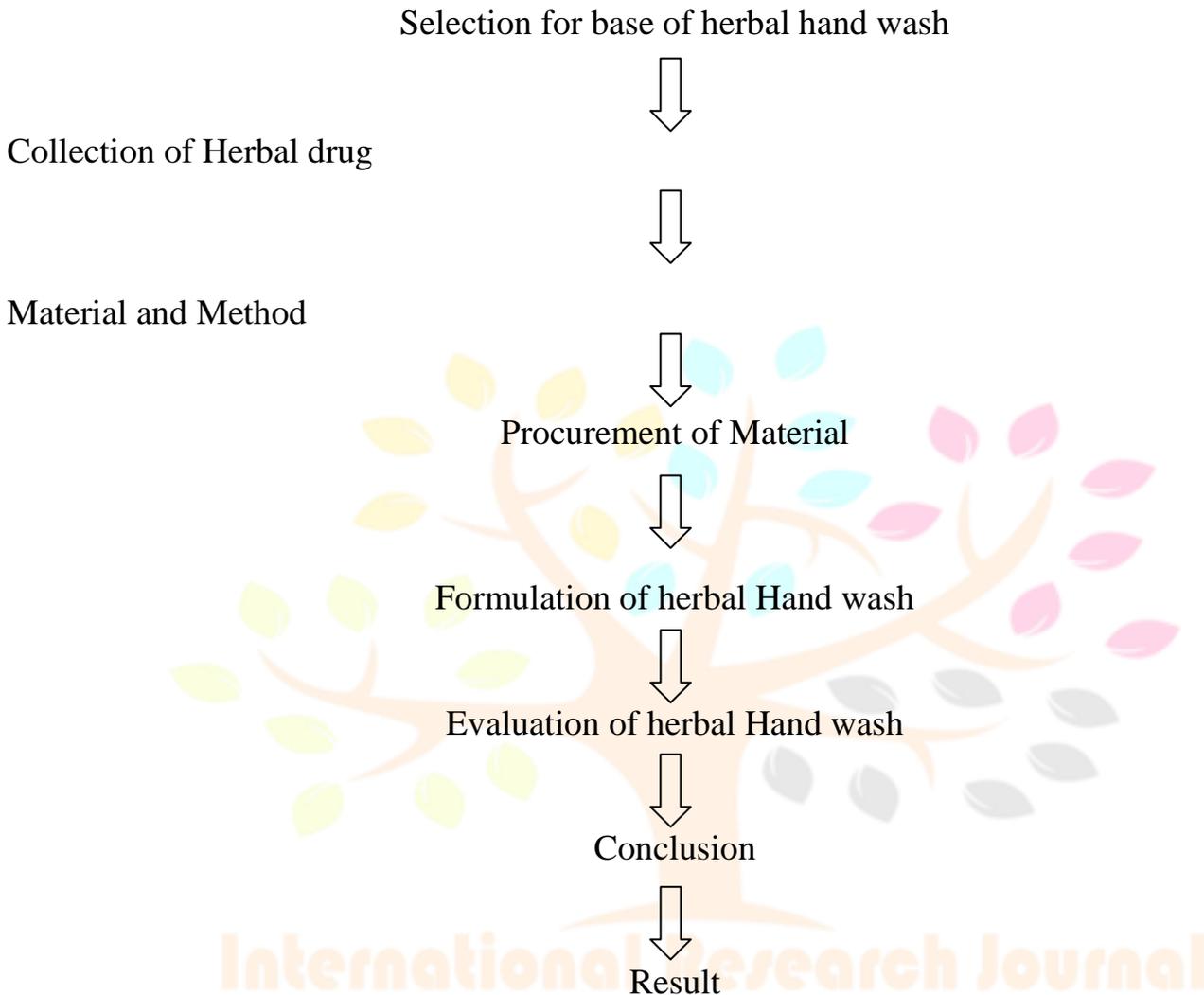
A Brief Review on Formulation and Evaluation of Herbal Hand Wash By Using Natural Ingredient.

#### **Objective of the study:**

1. To achieve sustained improvement in hand hygiene compliance ratio
2. To kill germs and microorganism that can harm our body
3. It will help to learn their illness are often caused by germs which travels from their hands to their mouth, eye, nose etc.
4. Reduces the rates of healthcare associated infections



#### 4. PLAN OF WORK



#### 5. REVIEW OF LITERATURE

**1. Sujit Das *et al* (2020)**

Formulation of herbal Hand wash. neem and citrus lemon hand wash is make in Through the lemon juice with methanolic extract and added glycerin and Dilute with proper amount of water

**2. Rohit jaysing bhor *et al* (2020)**

Formulation and evaluation of herbal neem hand wash by extracting neem leavesTulsi leaves lemon leaves phytochemical antibacterial activity

**3. Debjit bhowik *et al* (2010)**

In formulation and evaluation of herbal neem hand wash Neem elaborates a vast array of biologically active compound That are chemically diverse and structurally complex.

**4. Rudra prasd giri et al<sup>1</sup> (2019)**

In formulation and evaluation of hand wash it has antioxidant Activity of natural product neem is used in many hindurituals Neem is known for its antidiabetic anti inflammatory anticancer effect.

**5. Zeeshan Afsaret et al (2016)**

formulation and evaluation of poly herbal Hand wash The objective seen in this resech project was to prepare hand wash formulations using the extracts of Cassia fistula, Milletiapinnata and Ficus religiosa and to investigate the antimicrobial activity of the extracts against the common organisms which cause nasocomial infection.

**6. Rina maskare et al(2019)**

formulation and evaluation of poly herbal hand wash . The objective of this project was to prepare herbal hand Wash and to investigate whether the formulation show an antimicrobial activity against the common organisms which cause nasocomial infections

**7. Mounika et al(2017)**

Formulation and evaluation of polyherbal hand wash gel containing essential oils. The objective seen in this research project was to evaluate the antibacterial efficiency of various herbal oils such as eucalyptus oil, cinnamon oil, geranium oil, pappermint oil, rosemary oil, clove oil and orange oil.

**6. DRUG PROFILE**

**6.1 Tulsi**



**Fig no 1: Tulsi (*Ocimum sanctum*)**

**Scientific Classification Of Tulsi:**

Taxonomical Rank	Taxon
Kingdom	Plantae -plants

Division	magnoliophyta
Class	Magnoliopsida
Order	Lameness
Family	Lamiaceae
Genus	<i>Ocimum</i> L
Species	<i>Ocimum tonuiflorum</i>
Biological name	<i>ocimum tenuifloram/Ocimum sanctum</i>
Nepali name	Tulsi

**Table no 01: Scientific Classification of Tulsi**

## Tulsi

*Ocimum sanctum* commonly known as holy basil or Tulsi. Tulsi consist of fresh and dried leaves of *ocimum sanctum* belonging to family *Lamiaceae*. Tulsi is an aromatic perennial plant.tulsi known for its detoxifying purifying and antimicrobial properties.tulsi helps to protect your hands by killing 99.99%of germs. Tulsi now,days cultivated commercially for its volatile oil.it is much branched small herb 30 to 75cm in height. All parts of tulsi are used in medicine especially fresh and dried leaves.leaves are ablong acute with entire sterolate margins pubescent on both sides and minutely gland dotted. The leaves are green in colour with aromatic flavors and slightly compressed. Seeds are reddish black and subglobose. The leaf is dorsiventral stomach are of dicyclic type. Particularly abundant on lower surface.

## Chemical Constituents:-

<b>Chemical constituents</b>	Eugenia 70%
	Carvacrol 3%
	Eugene methyl Ether- 20%
	Caryophyllin
	Alkaloids
	Glycosides

**Table no 02: Chemical constituents:**

## Uses:

- Stimulants

- Aromatic
- Spasmolytic
- Antifungal
- Antiviral agents
- Tulsi can cure fever
- Tulsi is used to treat insect bites
- Tulsi is also used to treat respiratory problems

## 7.2 ALOE-VERA



Fig no 2: Aloe vera (*Aloe barbadensis*) Scientific Classification Of Aloe vera :

Taxonomical Rank	Taxon
Kingdom	Plantae -plants
Division	magnoliophyta
Class	Liliopsida
Order	Aspargels
Family	Liliaceae . xanthorrhoeaceae
Genus	<i>Aloe L</i>
Species	<i>Aloe barbadensis mill</i>
Biological name	<i>Aloe barbadensis , aloe officinalis</i>

English name	Indian aloe , small aloe
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**Table no 03: Scientific Classification Of Aloe vera**

**ALOE-VERA**

Aloe is the dried juice collected by incision from the basis of the leaves of various Species of aloe. Aloe perry Baker, aloe vera linn, or Aloe barbandensis belonging to family liliaceae, Aloe perry Baker is found in socotra and zanzibar Islands and in their neighbouring areas and so the obtain from these Species is known as soothing and zanzibar. Aloe vera linn also known as vulgaris or Aloe barbandensis. Aloe is an perennial growing to 0.8 by 1 m at a slow rate. The plant prefers light (sandy) and medium soil. Can grow nutritionally poor soil. The plant prefer acid basic and neutral soil. It cannot grow in shade it requires dry or moist soil and can tolerate drought. They are xenophobic plant. It can be propagated by seeds. Seeds are shown in the spring in warm green house.

**Chemical Constituents:-**

<b>Chemical constituents</b>	Aloins
	Barbaloins
	Isobarbaloins
	Aloetic Acid
	Anthracene (11 -40%)
	Aloinosides A, B

**Table no 04: Chemical constituents:**

**USES:**

- Relieves the burned skin caused by skin.
- Smooth and glowing skin can be achieved with the help of Aloe.
- It is an outstanding skin moisturizer.

**7.3 CITRUS LEMON**



**Fig no 3 : Citrus Lemon ( *Citrus Limonis* )****Scientific Classification Of Citrus Lemon:**

Taxonomical Rank	Taxon
Kingdom	Plantae -plants
Division	Mangoliophyta
Class	Mangolioosida
Order	Sapindales
Family	Rutaceae
Genus	<i>Citrus L</i>
Species	<i>C. Limon</i>
Biological name	<i>Cirus lemon</i>
English name	<i>Citrus limon</i>

**Table no 05: Scientific Classification Of Citrus Lemon:****LEMON**

The Limon citrus Limon is a species of small evergreen tree in the flowering plant Family Rutaceae native to South Asia, primarily eastern India.

It is obtained from the ripe or nearly ripe fruit of citrus Limon belonging to the family rutaceae. The main raw material of citrus Limon is the fruit particularly essential oil and juice is obtained from it. Citrus Limon fruit juice has traditionally been used as a remedy for survey before the discovery of vitamin c

**Chemical Constituents:-**

	Terpenes oil
	90% Limonene

Chemical constituents	Terpenolene
	Citral and Citonellal
	Linolool

**Table no 06: Chemical constituents:**

**USES:**

- The oil used in pharmacy and cosmetic formulation as, a flavour or aroma Corrigan as, well as natural preservative
- Flavouring agent and in perfumery.
- Terpeneless lemon oil is 20 times stronger than Lemon Oil.

**8. FORMULATION TABLE**

Ingredients	Quantity	Action
Tulsi Extracts	8ml	Antimicrobial Agents
Citrus Lemon	4ml	Antiseptic
Aloe-vera gel	6ml	Healing Agents
Eucalyptus Oil	0.5ml	Cooling Agents
Glycerin	12ml	Moisturizing Agents
Methyl paraben	0.3ml	preservatives
Reetha	2 gm.	Foaming Agent
Water	Upto 60ml-	

**Table no: 7 formulation table**

**8.1 Procedure:-**

- 1) Methonolic extract of tulsi leaves is mixed with 4ml citrus Limon juice in 20ml.of water.
- 2) Then add aloevera twice and add extract of sapindus mukorosis to produce sufficient foaming capacity.
- 3) Then add desired quantity of glycerin and eucalyptus oil with moderate stirring.
- 4) At the end add preservative in sufficient quantity.
- 5) Add Reetha in powder form as a foaming agent.
- 6) The solution is mixed, made homogeneous under room and further utilized for screening of the activity.

## 9. EVALUATION PARAMETERS

### 9.1 Physical Evaluation:-

- a) Appearance: - It was determined visually.
- b) PH :- The ph was determined using digital ph meter and the ph of herbal wash was found to be 5.2
- c) Colour:- It was determined visually.
- d) Odour :- it was,determined manually.
- e) 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 colour and no phase separation were observed in the formulated hand wash.

### 9.2 Foam height:-

- a) 1ml of sample of herbal hand wash taken and dispersed in 50ml distilled water.
- b) Then transferred it into 500ml stoppers measuring cylinder, volume make up to 100ml with water.
- c) 25 stroke was given and stand till aqueous volume measured upto 100ml and measured the foam height.

### 9.3 Foam Retention:-

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

## 10. CONCLUSION

Hands are the primary source of disease related to skin, respiration, gastro intestinal tract etc. due to various disease and germs, the bar soap get contaminated which may lead to spread of germs. In this sophisticated world liquid hand washes are used much more frequently than the bar soap, the additional Advantages is the soap in the liquid hand wash is untouched leading uncontaminated. Hand wash with every new pump.

In market, there are various type of hand washes are available, claiming that they kill the harmful germs at considerable rate at minimum time.

To determine this, it is necessary to determine the efficiency of hand wash. Average percentge reduction and log reduction of the organisms determined for hand wash performing viable count.

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