

A review on formulation of herbal soap

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Date of Submission: 08-02-2024

Date of acceptance: 23-02-2024

Abstract:

The prominent cultivation of lemongrass (*Cymbopogon spp.*) relies on the pharmacological incentives of its essential oil. Lemongrass essential oil (LEO) carries a significant amount of numerous bioactive compounds, such as Citral (mixture of geranial and neral), isoneral, isogeranial, geraniol, geranyl acetate, citronellal, citronellol, germacrene-D, and elemol, in addition to other bioactive compounds. These components confer various pharmacological actions to LEO, including antifungal, antibacterial, antiviral, anticancer, and antioxidant properties. These LEO attributes are commercially exploited in the pharmaceutical, cosmetics, and food preservations industries. Furthermore, the application of LEO in the treatment of cancer opens a new vista in the field of therapeutics. Although different LEO components have shown promising anticancer activities in vitro, their effects have not yet been assessed in the human system. Hence, further studies on the anticancer mechanisms conferred by LEO components are required. The present review intends to provide a timely discussion on the relevance of LEO in combating cancer and sustaining human healthcare, as well as in food industry applications.

❖ Keywords:

- Antimicrobial
- Antioxidants
- Cancer Signaling
- Citral
- Cymbopogon

the three primary layers. Each layer contributes in a unique way to how the skin works as a whole. As skin imparts a specialized function to body wellbeing, it is necessary for us to keep it away for skin diseases and alignments. Skin conditions are a prevalent illness. It harms people of all ages, including newborns and the elderly, and does so in several different ways. Infections, allergies, sun exposure, injuries, and other factors can all lead to skin issues. Ever since the earliest times, people have employed medicinal plants as a form of treatment. Various medicinal plants' leaves, stems, and roots have been used as a natural cure to treat a diversity of maladies and afflictions. The anti-oxidant, anti-bacterial, cytotoxic, anti-microbial, hypotensive, anti-diuretic, anti-inflammatory, anti-spasmodic, anti-diabetic, anti-hemorrhagic, and anti-helminthic qualities of numerous herbs are discovered with high nutritional value. Owing to their high medical value, cost-effectiveness, availability, and compatibility, incorporation of natural products to a preparation helps in treating practically all diseases and skin issues. The active compounds which provide these plants their therapeutic benefits are isolated and used topically in creams, soaps, oils, and ointments to treat skin conditions like acne, eczemas, wounds, and ringworms as well as for cosmetic and anti-microbial purposes. The therapeutic benefits of plants are used in a variety of formulations for both medical and cosmetic purpose.

I. Introduction

Skin is the largest sensory organ in the body. It serves as a barrier that protects the body organs and gathers sensory data from the surroundings. Additionally, it aids in keeping the body's temperature at a healthy level. Diverse distinctive cells and structures can be found in the skin. The hypodermis, dermis, and epidermis are

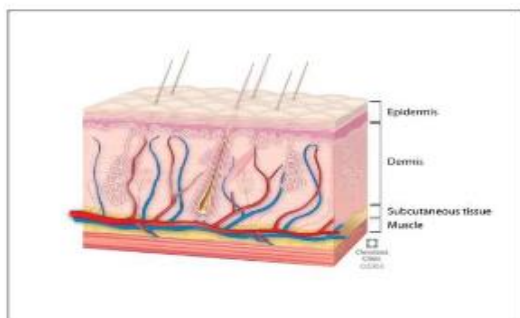


Fig no 1. Skin layer

Herbal soap preparation is a medicine or drugs it contains Antibacterial & antifungal agents which e mainly uses of part of plants such as like leaves, stem, roots & fruits to treatment for an injury or disease or to achieve good health. This preparation possess antimicrobial property are administered topically and available to apply various forms like creams, lotion, gel, soap, solvent extract or ointment. the variety of creams & soap properties have been used to treat various skin disorders. Ethanol medically, juice& extract from leaves of the plants are topically applied as antimicrobial and anti-inflammatory agents in treatment of skin disease including eczemas, ringworm and pruritus. The succulent gel form is used to disorders of psoriasis. Crude preparation of soapy plants are able to soften the skin epidermis enhance greater penetration and cleaning acne and also promote healing and resolution in quickly in time. In this review article herbal soap containing neem, Tulsi, Shikakai and Reetha as natural plant ingredients and this content gives or shows antibacterial antifungal & anti-inflammatory activity. In this soap, neem is main compound, and shows medicinal properties. Neem leaf and its extract exhibit immunomodulator anti-inflammatory, antiulcer antimalarial, antifungal antibacterial antioxidant anticarcinogenic property. Tulsi has got the greatest medicinal value. Tulsi to be effective for diabetes they reducing blood glucose level Tulsi also used in severe acute respiratory syndrome. Juice of its leaves gives relief in cold fever bronchitis and cough. Tulsi reduces stress, enhance stamina relief inflammation and also shows antifungal activity so

Tulsi is also used as main compound in this herbal soap. The main antifungal activity of Tulsi serves to be beneficial in soap formulation. Reetha is an exceptional cleanser. Hence, it's a perfect substitute for soap and facewash due the presence of saponin. It is also good for use on sensitive skin. A combination of Reetha and Chickpeas gives a gentle and enriching experience to the skin it has conditioning properties; therefore, it keeps skin moisturized and cool. Reetha prevents the skin from drying and keeps it soft and supple it also helps to treat eczema and psoriasis. Shikakai is quite effective in treating various skin infection like scabies and also used as an antiwrinkle property.

Nowadays, there is an increasing consumer demand for cosmetics comprising natural ingredients as healthier, organic, and ecological product. Consumers are more and more refusing synthetic chemicals in beauty and cosmetic products. A natural soap is prepared without a non- natural surfactant, with addition of functional ingredient from natural substance, such as essential oil or plant extract. A natural soap may be generally divided based on the production method. Into a melt – pour soap, a hot process soap, and a cold process soap. The hot process soap is called a transparent or translucent soap. The soap has good detergency or cleansing power, good moisturizing effects, long-lasting fragrance, and less of irritant. Herbal soaps are prepared by adding various dried herbs, flowers and stems into soap base. Herbs are the natural products could be found in the treatment of almost all diseases and skin problems owing to their high medicinal value, cost effectiveness, availability and compatibility.

Definition of Soap:

Soap is a salt of fatty acid used in a variety of cleansing and lubricant products. Soaps are surfactant usually used for washing and bathing and other types of housekeeping. Soaps are used to remove dirt including dust microorganism, strains bad smells from the body. Commercial soaps usually are made up of toxic mercury aluminum, barium, bis-phenol, plastic and other chemicals which are absorbed into the body via internal organs from vaporization of the chemical as well

as skin absorption with negative side effects. Soap and detergent, substance that, when dissolve in water, possess the ability to remove dirt from surfaces such as the human skin, textile and other solids.



Fig No.2: Transparent Soap

Type of soap:

- 1] Laundry soaps
- 2] Cleaning soaps
- 3] Personal soaps
- 4] Novelty soaps
- 5] Perfumed soaps
- 6] Guest soaps
- 7] Beauty soaps
- 8] Medicated soaps
- 9] Glycerin soaps
- 10] Transparent soaps

1] Laundry soaps: Laundry soaps are formulated to eliminate grease, solid particle and organic compounds from clothes. They can be found in liquid, powder and gel forms.

2] Cleaning soaps: Cleaning soaps have different formulation to clean grease and soli. The difference between cleansers and cleaning soaps is that cleaning soap don't contain harsh abrasives.

3] Personal soaps: This kind of soap is made in many forms and special formulation for specific personal hygiene need. One types of the personal soap is the antibacterial soap that is made to prevent bacteria and viruses from spreading.

4] Novelty soaps: Novelty soaps are especially manufactured for the kids and include the soaps in the shapes of various items, such as a rubber ducky or the soap on the rope. There are made not only to clean dirt and grime, but for amusement and

enjoyment as well.

5] perfumed soaps: Perfumed soaps are product by adding a few additional ingredients and perfume.

6] Guest soaps: Guest soaps are miniature soaps that are made and shaped into attractive shapes and they are basically designed for the use by guests either in the main bathrooms or separate guest bathroom. Popular and commonly used shapes are flowers, sea shells and rounds.

7] Beauty soaps: Beauty soaps are produced to feature attractive fragrance and ingredients for a variety of skin types. They can feature glycerin or special oil blends.

8] Medicated soaps: Medicated soap and original soap are very similar. Unlike original soap, medicated soap has the addition of antiseptics and disinfectants.

9] Glycerin soaps: Glycerin is a normally produced during the process of soap production. Soaps which include glycerin in then tend to make your skin feel moister.

10] Transparent soap: Transparent soap uses slightly different ingredients and usually some form of alcohols to alter the process which is also conducted at higher temperature. Not all transparent soap are glycerin soaps.

Characteristics:

- Soaps are the sodium salts of carboxylic acids in long chains.
- Sodium salts of long-chain benzene sulphonic acids are detergents.
- Soaps are biodegradable while some of the detergents cannot be biodegraded.
- Soaps have relatively weak cleaning action, whereas detergents have a strong cleaning effect.
- We cure all our soaps selling, to achieve a desirable hardness.
- A soap that is difficult to rinse off is not a quality soap.

Benefits:

- Herbal soaps actually soap and not bars of detergent.
- Herbal soaps are free of harmful synthetic detergents and foaming agents.
- It moisturizes your hands better and longer with glycerin.
- Herbal soap is made with a variety of natural

ingredients fragrance and oils that are known to lock in moisture and hydrate the skin.

- Herbal soap often contains healing properties due to the lack of chemicals in the ingredients. Because herbal soap is made with natural ingredient.

❖ **Advantage:**

- Herbal soap are paraben and sulphate free.
- Natural ingredients.
- Handmade soap.
- Targets skin problem.
- In herbal soaps colourant agents are not added.
- Herbal soap is no tested-on animals.
- Herbal soap is nourishing and moistening the skin.

❖ **Disadvantage:**

- It's hard to think of a disadvantage associated with organic soap after reading all the benefits it can bring.
- Some people may have issues with organic soaps due to the presence of essential oils they are allergic to.
- This can cause different reactions that may vary based on the person.

❖ **Limitation:**

- They may not be as effective at killing bacteria as commercial soaps.
- They may not lather as well as commercial soaps.
- They may not be as long-lasting as commercial soaps.
 - They may not be as affordable as commercial soaps.

Drug and Excipient profile/ Material Method:

Herbs:

- 1 Lemongrass
- 2 Tulsi
- 3 neem
- 4 Aloe Vera

Chemical:

1. Stearic acid
2. Soft paraffin
3. Ethanol
4. Lemon oil

1.Lemongrass:

Kingdom: Plantae

Family: *Poaceae*

Synonyms: *Cymbopogon*

Cymbopogon, also known as lemongrass, barbed wire grass, silky heads, oily heads, Cochin grass, Malabar grass, citronella grass or fever grass, is a genus of Asian, African, Australian, and tropical island plants in the grass family. Some species (particularly *Cymbopogon citratus*) are commonly cultivated as culinary and medicinal herbs because of their scent, resembling that of lemons (*Citrus limon*). The name *cymbopogon* derives from the Greek words *kymbe* ('boat') and *pogon* "which mean in most species, the hairy spikelets project from boat-shaped spathes." Lemongrass and its oil are believed to possess therapeutic properties.

➤ **Chemical Composition:**

Citral (mixture of geranial and neral), isoneral, isogeranial, geraniol, geranyl acetate, citronellal, citronellol, germacrene-D, and elemol.

➤ **Uses & Effectiveness:**

- High cholesterol. Early research suggests that taking lemongrass oil by mouth for 90 days does not reduce cholesterol levels in people with high cholesterol.
- Yeast infection in the mouth (thrush). Early research suggests that drinking a lemongrass infusion for 10 days decreases thrush symptoms in people with HIV/AIDS better than applying a solution of gentian violet to the affected area.
- Stomach and intestinal spasms.
- Stomach ache.
- High blood pressure.
- Convulsions.
- Pain.
- Vomiting.
- Cough.
- Achy joints (rheumatism).
- Fever.
- Common cold.
- Exhaustion.
- Headache.
- Use as an antiseptic and astringent.

➤ **Properties:**

- It may have anti-allergenic activity.
- It may have anti-dermatic activity and may be helpful for skin diseases like acne eczema, psoriasis.

- It may have anti-inflammatory activity.
- It may have antipyretic activity (fever-reducing)
- Helps Destroy Cancerous Cells.

➤ **Side effects:**

- Consumption of neem extracts may cause miscarriage in pregnant women. Because of this reason, pregnant women must avoid neem.
- Long-term consumption of neem extracts may cause severe skin dryness.
- Excessive consumption of neem extracts may develop kidney stone.



Fig no.3 Lemongrass

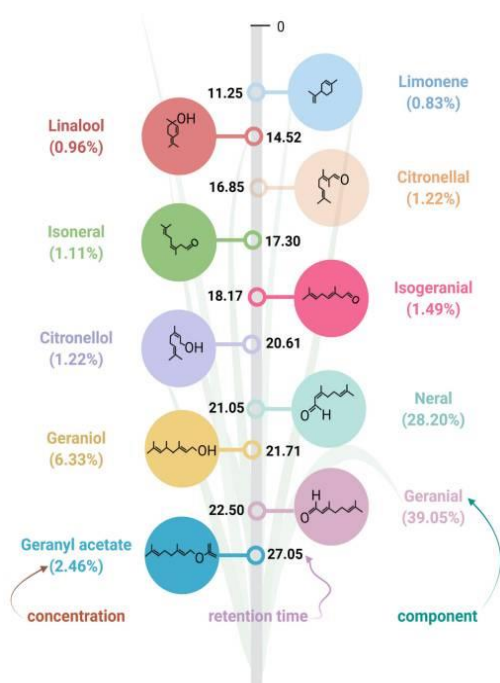


Fig No. 4: Chemical Composition of lemongrass.

2.Tulsi:

- Kingdom: Plantae
- Family: Mints
- Synonyms: Gauri, Bahumanjari, Pavani, Gramya, Surasa.

Ocimum tenuiflorum, commonly known as holy basil or Tulsi, is an aromatic perennial plant in the family *Lamiaceae*. It is native to tropical and subtropical regions of Australia, Malesia, Asia, and the western Pacific. It is widely cultivated throughout the Southeast Asian tropics.

Description: Holy basil is an erect, many-branched subshrub, 30–60 cm (12–24 in) tall with hairy stems. Leaves are green or purple; they are simple, petioles with an ovate blade up to 5 cm (2 in) long, which usually has a slightly toothed margin.

Chemical Constituent: eugenol, germacrene, terpenes.

➤ **Uses:**

- Reduces Fever (antipyretic) & Pain(analgesic)
- Reduces Cold, Cough & Other Respiratory Disorders
- Reduces Stress & Blood Pressure
- Anti-cancer Properties.

➤ **Properties:**

- Natural Immunity Booster
- Reduces Fever (antipyretic) & Pain(analgesic).
- Reduces Cold, Cough & Other Respiratory Disorders.
- Reduces Stress & Blood Pressure.
- Anti-cancer Properties.

➤ **Side effects:**

- It may affect fetal development during pregnancy.
- The ursolic acid content can affect the menstrual cycle.
- It can reduce blood sugar to a dangerously low level, particularly for people with diabetes.



Fig No. 5: Tulsi

3.Neem:

Biological source: *Azadirachta Indica*, commonly known as margosa, neem, neemtree or Indian lilac, is a tree in the mahogany family *Meliaceae*. It is

one of two species in the

- Genus: *Azadirachta*.
- Family: *Meliaceae*
- Botanical name: *Azadirachta indica*
- Part typically used: Leaves
- common name: Part typically used: - neem
- Colour: Green

Description: Compound alternate, rachis 15-25cm long, 0.1cm thick, leaflet with oblique, serrate, 7-8.5 cm long and 1-1.7cm wide slightly yellowish green in color.

Chemical Constituents: Flavonoids, Alkaloids, Azadirone, Nimbin, Nimbidin, Terpenoids, Steroids, Margosic acid, Vanilic acid, Glycosides, B-sitosterol, Nimbectin, Kaempeerol, Quercusertin are present in Neem Leaf.

➤ **Uses:**

- Neem has an anti-inflammatory property which helps reduces acne.
- Treats Fungal Infections.
- Useful in Detoxification.
- Increases Immunity.
- Insect & Mosquito Repellent.
- Treats Wounds.
- Neem leaves are used to treat head lice, skin diseases, wounds or skin ulcers.

➤ **Properties:**

- It may have anti-allergenic activity.
- It may have anti dermatic activity
- It may have anti-inflammatory activity.
- It may have antipyretic activity (fever-reducing)
- Helps Destroy Cancerous Cells.

➤ **Side effects:**

- Consumption of neem extracts may cause miscarriage in pregnant women. Because of this reason, pregnant women must avoid neem.
- Long-term consumption of neem extracts may cause severe skin dryness.
- Excessive consumption of neem extracts may develop kidney stones.



Fig.no. 6: Neem

4. Aloe Vera:

Biological source: Aloe is the dried juice collected by incision, from the bases of the leaves of various species of Aloe.

- Family: *Asphodelaceae*
- Botanical name: *Aloe barbadensis miller*
- Part typically used: The green part of the leaf
- Colour: Green

➤ **Benefits & Uses:**

- May Aid in Gastro esophageal Reflux Disease (GERD)
- Good for our Digestive System
- Helps to Detox our Body
- Good for Oral Health
- Blood Sugar Levels
- Amazing for our Skin
- Treatment of Psoriasis
- Good for our Hair

➤ **Side effects:**

- Nausea
- Diarrhea
- Stomach cramps
- Vomiting



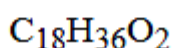
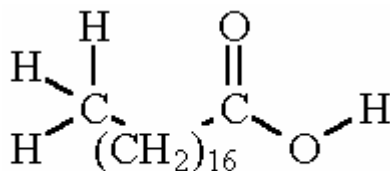
Fig.No.7: Aloe vera

Chemicals:

1] Stearic acid:

Stearic acid is a saturated fatty acid with an 18-carbon chain. The IUPAC name is octadecanoic acid. It is a soft waxy solid with the formula $\text{CH}_3(\text{CH}_2)_{16}\text{CO}_2\text{H}$. The triglyceride derived from three molecules of stearic acid is called stearin.

• Structure:



- Chemical formula: - $\text{C}_{18}\text{H}_{36}\text{O}_2$
- Molar mass: - 284.484 g·mol⁻¹
- Appearance: -White solid
- Odor: -Pungent, oily
- Density: -0.9408 g/cm³ (20 °C)
- Melting point: - 69.3 °C (156.7 °F; 342.4 K)
- Boiling point: -361 °C (682 °F; 634 K)
- Decomposes: -232 °C (450 °F; 505 K) at 15 mmHg
- Solubility in water: - 0.00018 g/100 g (0 °C), 0.00029 g/100 g (20 °C)
- Solubility: - Soluble in alkyl acetates, alcohols, HCOOCH_3 , phenyls, CS_2 , CCl_4

Uses:

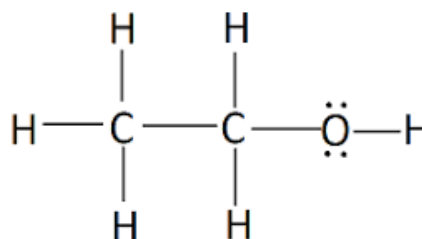
• Stearic acid is mainly used in the production of detergents, soaps, and cosmetics such as shampoos and shaving cream products.

• Stearate soap, such as sodium stearate, could be made from stearic acid but instead are usually produced by saponification of stearic acid-containing triglycerides.

2] Ethanol:

Ethanol is an organic compound. It is an alcohol with the chemical formula $\text{C}_2\text{H}_6\text{O}$. Its formula can also be written as $\text{CH}_3-\text{CH}_2-\text{OH}$ or $\text{C}_2\text{H}_5\text{OH}$. Ethanol is a volatile, flammable, colorless liquid with a characteristic wine-like odor and pungent taste.

• Structure:



- Chemical formula: - $\text{C}_2\text{H}_5\text{OH}$
- Molar mass: - 46.069 g·mol⁻¹
- Appearance: Colorless Liquid
- Odor: - wine-like, pungent
- Density: - 0.78945 g/cm³ (at 20 °C)
- Melting point: - -114.14 ± 0.03 °C (-173.45 ± 0.05 °F; 159.01 ± 0.03 K)
- Boiling point: -78.23 ± 0.09 °C (172.81 ± 0.16 °F; 351.38 ± 0.09 K)
- Solubility in water: - Miscible

➤ Uses:

• It is used as a topical agent to prevent skin infections, in pharmaceutical preparations (e.g. rubbing compounds, lotions, tonics, colognes), cosmetics, and in perfumes

II. Materials and Methods:

Materials:

1. Herbs
2. Chemicals
3. Apparatus
4. Instrument

1]Herbs:

1. Neem
2. Tulsi
3. Shikakai
4. Reetha

2]Chemicals:

1. Stearic acid
3. Ethanol

2. Soft paraffin 4. Lemon oil

6. Liquid soap making
 7. Make plant based saponin

3]Apparatus:

- 1.Beaker 6. Measuring cylinder
 2. Stirrer 7. Spatula
 3. Evaporating dish 8. Soap Mould
 4. Bunsen Burner 9. Weighing balance
 5. Tripod stand 10. Water bath

III. Methods of soap preparation:

1. Cold process
 2. Melt and pour process
 3. Hot process
 4. Rebatched soap process
 5. Partially rebatch soap process

IV. Research methodology:

Collection of crude drugs:

The leaves of *Azadirachta indica*, *Ocimum tenuiflorum*, and seeds of *Sapindus mukorossi* and pods of *Acacia concinna* were collected from different matured plant. The leaves were dried in hot air oven, pulverized and stored in airtight bottles for the studies. Ethanol, stearic acid, soft paraffin, lemon oil are issued in college. Soap base is purchase from Flipkart. Soap base is purchase from Flipkart.

Sr.no	Herbal plant	Source
1]	Neem plant	Leaves
2]	Tulsi plant	Leaves
3]	Aloe vera	Leaves
4]	Lemongrass	Leaves

Table no.1: List of Herbal plant

Sr.no	Chemical	Source
1]	Soap base	Laboratory reagent
2]	Stearic acid	Laboratory reagent
3]	Soft paraffin	Laboratory reagent
4]	Ethanol	Laboratory reagent
5]	Lemon oil	Laboratory reagent

Table no.2: List of chemical names

Extraction process of drug:

The *Azadirachta indica*, *Ocimum tenuiflorum*, *Sapindus mukorossi* and *Acacia concinna* powder was extracted with water by decoction process. Weight 10 gm *Azadirachta indica*, *Ocimum tenuiflorum*, *Sapindus mukorossi* and *Acacia concinna* powder was take in butter paper. Take 500 ml of beaker in measure 100 ml distilled water. Then mix 10 gm powder in 100 ml distilled water. In magnetic stirring heat and stir continuously. Then take filter paper and a Buchner funnel were used to filter the mixture. Then this filtrate is use in formulation of soap.



Fig.no.8: Extraction process

Formulation of herbal soap

Formulation of soap containing active plant potentials was carried out using cold saponification method. To obtain extract of *Azadirachta indica*, *Ocimum tenuiflorum*, *Sapindus mukorossi* and *Acacia Concinna* powder was incorporated into a soap formulated with basic glycerin soap and which contain 1 gm stearic acid, 0.70gm soft paraffin. Weighed 1gm of stearic acid, 0.70gm soft paraffin, 5ml ethanol was taken. Glycerin basic soap was melted first and to it 1gm stearic acid, 0.70gm soft paraffin, 5ml ethanol were

added with continuous stirring in water bath until the extract gets dissolved and become homogeneous. To it addition of few drops of lemon oil was added and mixed properly. Extract was incorporated into melted solution with continuous agitation for 30 minutes until molten mixture became homogeneous. The semisolid mixture was poured into a mould and allowed to solidify at room temperature and physical observation was done for any characteristic changes. Then make label and pack in container.

Formulation Table of Herbal Soap

Sr. No.	Ingredients	Quantity	Uses
1	Soap Base	100 gm	Base
2	Steric Acid	1 gm	Hardening
3	Soft Paraffin	0.70gm	Hardening
4	Ethanol	5ml	Solvent
5	Neem	4ml	Antibacterial
6	Aloe vera	2 ml	Antidandruff
7	Tulsi	1 ml	Moistures
8	Lemon Grass	3 ml	Antiacne
9	Jasmin Oil	q.s.	Perfume

V. Conclusion:

The plant *Azadirachta indica*, *Ocimum tenuiflorum*, *Sapindus mukorossi* and *Acacia concinna* were extracted using water and subjected to various evaluation test according to previous research. the prepared formulation when tested for different test gave good results.

It does not give any irritancy to skin it was determined by using this soap by few volunteers hence it is proved that soap does not give any irritancy to skin. Furthermore, the prepared soap where standardized by evaluating various physicochemical properties such as pH appearance odour in which the exhibit satisfactory effect.

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