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## A REVIEW ON HERBAL LOOFAH SOAP

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### ABSTRACT.

The formulation of herbal loofah soap is reviewed in this paper. *Luffa cylindrica* is the source of the natural loofah, also known as natural scrubber. It has exfoliating properties for the skin. Neem oil, peppermint oil, oregano oil, aloe vera, coconut oil, vitamin E, and shea butter soap base are the remaining ingredients. Neem oil has antifungal and antimicrobial properties. Additionally, peppermint oil has antimicrobial properties and cools the skin. There is antimicrobial action in oregano oil. Vitamin E has antioxidant and preservation properties. Aloevera has antibacterial and hydrating properties. Because shea butter soap base offers anti-aging properties, it's a better option. Therefore, the natural elements in the herbal loofah soap combination are more helpful than those in commercial soap.

**KEY WORDS:** Loofah, Herbal soap, Anti-fungal , Anti-microbial.

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### INTRODUCTION.

The Federal Food, Drug, and Cosmetic Act (FD&C Act) defines cosmetics as "articles intended to be rubbed, poured, sprinkled, or sprayed on, introduced into, or otherwise applied to the human body...for cleansing, beautifying, promoting attractiveness, or altering the appearance" [FD&C Act, sec. polishes, makeup, cleansing shampoos, permanent waves, hair colors, and deodorants, as well as any substance intended for use as a component of a cosmetic product.<sup>1</sup> More than 25 years ago, Professor Albert Kligman coined the word "cosmeceuticals"; it has since entered our language. The U.S. Food and Drug Administration, Centre for Food Safety and Nutrition 201(i)]. Among the products included in this definition are skin moisturizers, perfumes, lipsticks, fingernail, Office of Cosmetic and Colors, however, says, "The FD&C Act does not recognize any such category as 'cosmeceuticals'. A product can be a drug, a cosmetic, or a combination of both, but the term "cosmeceutical" has no meaning under the law.<sup>2</sup>

Soap, defined as the substance produced by the action of a base on fats and oils, has played an essential role in civilization's history, yet its discovery was unintentional, and its utility was only gradually recognized.<sup>3</sup> Skin infections caused by fungi are the most common and require significant attention for treatment, and also to maintain a healthy skin thereafter. For countless years, skin problems have affected millions of people. The most common skin problems are: Acne, Acne Scars, Eczema, Hives, Skin Rashes, Dry and Cracked Skin, Psoriasis, Stretch Marks, Sun Damage, Skin Dullness and Lack of Elasticity. In general, fungi live in the dead and top layer of skin cells of moist areas of the body and cause only a minor irritation. Other types of fungal infections could be more serious. Most commercial soap available today in the markets is incorporated with chemical agents having antimicrobial activity with potential depilatory properties on skin pathogens. Soaps are cleaning agents, which may be liquid, solid, semisolid or powders. They are used to remove dirt, including dust, microorganisms, stains and bad smells in order to maintain health, beauty and remove bad odor from the body or inanimate objects, including clothes.

The problem now is most people do not know the long term consequence of using the commercial soaps. This is because these commercial products contain substances which are considered as unhealthy and could harm the body in the future.

Herbal soap is a natural alternative to conventional soap that is often made using botanical herbs and plant-based ingredients. The rising popularity of herbal soap can be attributed to its skin-friendly and environmentally conscious characteristics.<sup>4</sup>

Herbal soaps do not contain the artificial colors, flavors or fluoride etc., when compared to the contents of commercial products. The antimicrobial activities of the selected plants to be used in this project work are known to exhibit antimicrobial activity against skin pathogens. Herbs are the natural products mostly found in the treatment of almost all diseases and skin problems owing to their high medicinal value, cost-effectiveness, availability and compatibility. Hence it can be used in soap base. The attribute of the soap includes gentleness on the skin, rich lather, protection against skin disorders (including rashes, eczema, scabies) treatment of skin infection (such as ringworm), protection of even skin toning and smoothness of the skin.<sup>5</sup>

Loofah (*Luffa cylindrica*) is a creeping plant that grows in nature on abandoned building structures and fence walls in some cities and villages. The sponge in the fruit holds the seeds. This sponge is used in rural areas of some countries to wash and clean household dishes and their seeds are thrown away. Natural cellulose fibers obtained from the world of plants have many uses. They can remove dead skin cells and make the skin glow. These copper cellulose fibers can clean and tighten the skin.<sup>6</sup>

*Luffa's* popularity for personal hygiene products is due to its gentle, soft, and non-scratching exfoliating effect on the skin. So, it is widely used in bath sponges. The extracts of *L. cylindrica* can be used in appropriate cosmetic formulation aiming at the prevention of acne, dandruff owing to antibacterial properties. It can also be used in hand sanitizer and medicated talcum powder due to its antimicrobial property. It is high in the essential amino acid,

arginine therefore it is considered as an excellent lubricant, and externally used for shingles and boils, leprosy and skin diseases. It has a wound-healing property; therefore it can be employed in aftershave products and other foot cosmetics as treatment of chilblain, athlete foot.<sup>7</sup>

## REVIEW OF LITERATURE :

1. **Zahra Korooni (2023)** conducted study on Loofah (*Luffa cylindrica* L.) and its role in medicine, agriculture, and industry. Natural cellulose fibers obtained from the world of plants have many uses. They can remove dead skin cells and make the skin glow. These cellulose fibers can clean and tighten the skin.<sup>8</sup>
2. **Reetika Kawale et al., (2020)** The *Luffa cylindrica* possesses several pharmacological activities such as antioxidant, anti-inflammatory, antibacterial, wound healing, and many more. The biologically active component purporting to have skincare benefits and can be used in products such as moisturizers, anti-aging, anti-inflammatory cream, facial cleanser, body oil, sponge soap, etc.<sup>9</sup>
3. **Siddhartha Das et al., (2024)** conducted study on Formulation and evaluation of herbal soap. Herbal soaps, often known as natural soaps, are made from plant-based ingredients and botanical extracts. They offer the skin several advantages since they are made of natural ingredients.<sup>10</sup>
4. **T.R. Govindachari et al.,(1998)** conducted study on Identification of Antifungal Compounds from the Seed Oil of *Azadirachta indica*. Evaluation of the activity of the cold expeller neem oil (*Azadirachta indica* A. Juss.) and the fractions derived through solvent partitioning, against *Drechslera oryzae*, *Fusarium oxysporum* and *Alternaria tenuis* showed that the active antifungal fraction is a mixture of tetranortriterpenoids. Further, testing the triterpenoidal mixture derived from the 90% methanol (MeOH) extract of neem oil against 13 phytopathogenic fungi revealed that various species were inhibited to different degrees.<sup>11</sup>
5. **Peshawa Y. Aziz et al., (2023)** conducted study on Antifungal Activity of Essential Oil of *Mentha piperita* (Mint). This study aimed to investigate the anti-fungal activity of mint essential oil against selected fungal strains.<sup>12</sup>
6. **Nayely Leyva-López et al., (2017)** conducted study on Essential Oils of Oregano: Biological Activity beyond Their Antimicrobial Properties. Essential oils of oregano are widely recognized for their antimicrobial activity, as well as their antiviral and antifungal properties.<sup>13</sup>
7. **Abdul Haq et al., (2020)** conducted study on Antibacterial and Antifungal activity of Aloe vera plant. The use of Aloe vera herb plant is beneficial for medicinal purposes. The main objective of study is to test antifungal properties of Aloe vera plant on pathogenic fungi.<sup>14</sup>

## HERBAL LOOFAH SOAP.

Herbal loofah soap is a type of soap that contains a loofah (a natural plant fiber) embedded with herbal soap. The loofah acts as a natural exfoliant, while the herbs provide therapeutic properties for the skin. The soap is typically formulated to offer a combination of cleansing, exfoliating, and moisturizing effects, leaving the skin smooth, rejuvenated, and refreshed.

### INGREDIENTS.

#### i. Neem Oil (*Azadirachta indica*)



- Kingdom :Plantae
- Phylum :Magnoliophyta
- Class :Mangnoliopsida
- Order :Sapindales
- Family :Meliaceae
- Genus :*Azadirachta*
- Species :*A.indica*

### Neem Oil

#### Benefits:

- ❖ Antibacterial action : The extraction of neem oil has strong activity against Gram positive and Gram negative bacteria like *Mycobacterium tuberculosis* and streptomycin-resistant strains.
- ❖ Antifungal action
- ❖ Antitumor and antiviral activity: Oils of neem fraction showed antiviral action against Polio Viruses and HIV.

- ❖ Anti-inflammatory, antipyretic and analgesic activities: Neem oil holds antipyretic activity, its leaves extracts showed antipyretic effect when injected into male rabbits.
- ❖ Antimalarial activity and Antiulcer activity.<sup>15</sup>

## ii. Peppermint Oil (*Mentha piperita*)



- Kingdom : Plantae
- Phylum : Angiospermophyta
- Class : Magnoliopsida
- Order : Lamiales
- Family : Lamiaceae
- Genus : *Mentha*
- Species : *piperita*

### Peppermint Oil

#### Benefits :

- ❖ Skin Health : Mint has anti-inflammatory and anti-bacterial properties that help treat acne and pimple on the skin. Mint leaves contain a high amount of salicylic acid which acts as anti-acne. It also acts as an effective skin cleanser
- ❖ Antioxidant : They have significant antioxidant activities, can be confidently used in pharmaceuticals, food and cosmetic productions.
- ❖ Antibacterial : Mint works against harmful microbes, regulates muscle relaxation, and helps control inflammation.
- ❖ Antifungal and Anti Yeast
- ❖ Antiviral
- ❖ Anticancer : Mint contains perillyl alcohol, which has been shown in lab studies to inhibit the growth of cancer cells, according to the AICR.<sup>16</sup>

## iii. Oregano Oil (*Origanum vulgare L.*)



- Kingdom: Plantae
- Class: Magnoliopsida
- Order: Lamiales
- Family: Lamiaceae
- Genus: *Origanum*
- Species: *vulgare*

### Oregano Oil

#### Benefits :

- ❖ Antioxidant activity
- ❖ Anti-Inflammatory Activity
- ❖ Antimicrobial activity
- ❖ Antitumoral Activity
- ❖ Antihyperlipidemic activity
- ❖ Anti-hyperglycaemic Potentials
- ❖ Hepatoprotective Activity
- ❖ Antiurolithic Activity
- ❖ Antimelanogenic Properties
- ❖ Effects on Human Sperm Mobility

- ❖ *Antiplatelet Activity*
- ❖ *Therapeutic uses* : Oregano products are taken orally for conditions such as allergies, headaches, painful menstrual cramps, urinary tract infections, and psoriasis. Oregano oil is also applied topically for conditions such as acne, dandruff, warts, wounds, muscle and joint pain, varicose veins and psoriasis.<sup>17</sup>

iv. **Aloe vera**



- Kingdom : Plantae
- Phylum : Anthrophyta
- Class : Liliopsida
- Order : Aspagales
- Family : Liliaceae
- Genus : *Aloe*
- Species : *barbadensis* Mill

**Aloevera**

**Benefits:**

- ❖ Wound healing
- ❖ Anti inflammatory
- ❖ Moisturizing and anti aging
- ❖ Skin protection to radiation
- ❖ Anti viral<sup>18</sup>

v. **Loofah. (*Luffa cylindrica*)**



- Kingdom : Plantae
- Division : Mangoliophyta
- Class : Mangoliosida
- Order : Cucurbitales
- Family : Cucurbitaceae
- Genus : *Luffa*
- Specie : *cylindrica*.<sup>19</sup>

**Loofah**

**Benefits :**

- ❖ Luffa's popularity for personal hygiene products is due to its gentle, soft, and non-scratching exfoliating effect on the skin. So, it is widely used in bath sponges.
- ❖ The extracts of *L. cylindrica* can be used in appropriate cosmetic formulation aiming at the prevention of acne, dandruff owing to antibacterial properties.
- ❖ It can also be used in hand sanitizer and medicated talcum powder due to its antimicrobial property. It is high in the essential amino acid, arginine therefore it is considered as an excellent lubricant, and externally used for shingles and boils, leprosy and skin diseases.
- ❖ It has a wound-healing property; therefore it can be employed in aftershave products and other foot cosmetics as treatment of chilblain, athlete foot.<sup>20</sup>

vi. **Coconut Oil.**

Coconut oil

- **Synonym :** *Cocos nucifera* L.
- **Family :** Arecaceae
- **Chemical constituents :**
- Coconut oil contains a high proportion of glycerides of lower chain fatty acids.<sup>21</sup>

**Benefits :**

- ❖ moisturizing dry skin, including in people with conditions such as [eczema](#)
- ❖ reducing inflammation, which may result from UVB rays
- ❖ promoting wound healing
- ❖ antibacterial, antifungal, and antiviral properties.<sup>22</sup>

vii. **Vitamin E.**

Vitamin E

- **Synonym :** alpha-Tocopherol
- **Molecular Formula :** C<sub>29</sub>H<sub>50</sub>O<sub>2</sub>
- **Molecular Weight :** 430.7 g/mol
- **Melting point :** 3<sup>0</sup>C
- **Solubility :** Insoluble in water, freely soluble in ethanol, miscible in ether.
- **Boiling point :** Decomposes.<sup>23</sup>
- **Density :** 0.950 g/cm<sup>3</sup>

- **Stability and storage condition :** Vitamin E is stable at RT for up to 24 hrs, +4<sup>0</sup>C for up to 7 days, and -20<sup>0</sup>C for up to 22 days.<sup>24</sup>
- **Application in pharmaceutical formulation :** Alpha-tocopherol is a phenolic antioxidant. Vitamin e is an important anti inflammatory molecule since it acts on many different factors that affect, directly or indirectly, the immune system. Vitamin E has also an important role in the inhibition of platelet aggregation inhibiting various enzymes such as PKC, which is a key signal transduction pathway in several cell types.<sup>25</sup>

viii. **Shea Butter Soap Base.**

- ❖ Shea butter oil was obtained from the edible nut of the fruit from Karite (*Butyrospermum parkii*) tree grown in Savannah Grasslands of West Africa.
- ❖ It is a wild growing tree that produces tiny, almond-like fruit.
- ❖ Shea Butter oil was extracted from the fruit by cold process and was used to prepare medical soap.
- ❖ Chemical analysis showed that the obtained soap has 76.0 %, 9.0 %, 3.41 minutes, 9.0, 0.0 %, 3.7% and 0.87 as its total fatty matter, moisture, foam stability, pH, free caustic alkali, unsaponified and specific gravity respectively.
- ❖ Due to the phytoconstituents in shea butter oil and the favourable chemical characteristics of the soap, it can be used as medical and cosmetics toilet soap.
- ❖ Such soap is used to alleviate problems of the skin and scalp.<sup>26</sup>

### ADVANTAGES

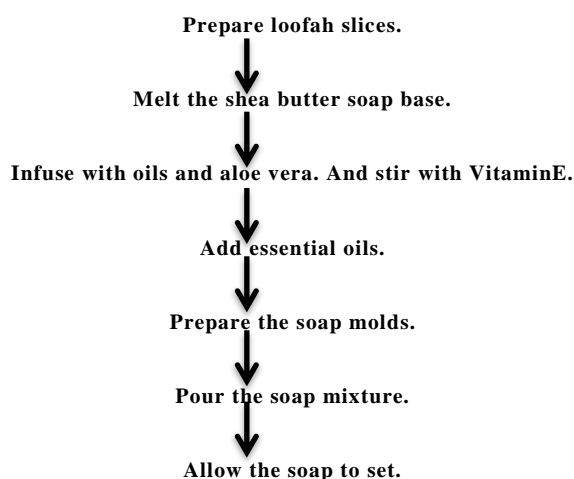
- Exfoliation
  - Loofah soap helps to remove dead skin cells and reveal brighter, smoother skin.
  - It is gentle, yet effective in exfoliating the skin, leaving it feeling refreshed.
  - It is best used on the tougher areas of your skin, such as the bottoms of your feet, arms, and legs.
- Cleansing
  - Loofah soap helps to cleanse the skin by removing dirt, oil, and other impurities.
  - It's phenomenal if you garden, work with cars, or do other activities that make it hard to fully wash afterwards.
  - It deeply cleanses the pores and helps to reduce acne breakouts.
- Moisturizing
  - Our loofah soap is rich in natural oils, such as neem oil,pepper mint oil, oregano oil, coconut oil, which help to moisturize and nourish your skin.
  - The glycerine that is a by-product of the soap making process is retained in the soap and reduces the loss of moisture.<sup>27</sup>

### DISADVANTAGES

- A loofah scrubs and dead skin cells off of your body, which then get trapped in its delicate weave.
- Every time the loofah gets wet and does not dry properly, the trapped organisms grow and grow.<sup>28</sup>

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### METHOD OF PREPARATION.




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### CONCLUSION.

Loofahs are popular natural exfoliating sponges. It's helpful to lather the soap, effectively exfoliating skin and stimulating the blood circulation during a shower. The loofah, along with soap, is made from plant-based oils. It includes shea butter soap base (suitable for dry and aging skin), neem oil (anti-microbial action), oregano oil (anti-microbial action), peppermint oil (anti-bacterial action), and aloe vera (moisturizing action). The loofah is inside the soap, so it reduces the risk of contamination.

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