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Formulation and Evaluation of Herbal Soap Taking Different Bioactive Plants

Sarthak D. Godge

Arihant College of Pharmacy, Ahmednagar

ABSTRACT :

This research aimed to develop a natural, aseptic cleanser using a cold process method and incorporating antimicrobial agents. A natural soap and hand sanitizer were developed using extracts from Azadirachta indica (neem), Ocimum tenuiflorum (holy basil), Sapindus mukorossi (soapnut), and Acacia concinna (shikakai). These Ayurvedic cosmetics, also known as natural cosmetics, leverage the power of natural ingredients to provide effective skincare without the side effects associated with chemical products. Many herbal supplements are based on botanical ingredients with a long history of traditional use in medicine. Traditional soap-making ingredients such as reetha, neem, shikakai, and tulsi, including neem leaves and seeds, have been found to be effective against certain dermatophytes.

Keyword :

- Antimicrobial soap,
- Hand sanitizer.
- Formulation
- Antibacterial
- Cosmetic

INTRODUCTION:

The word "beauty" has its roots in the Greek word "kosm tikos," which signifies the power to arrange, organize, and adorn. The history of cosmetics is deeply intertwined with human history, dating back to prehistoric times (around 3000 BC). People used pigments for various purposes, including hunting, protection, and self-expression. They painted their bodies to attract prey or intimidate enemies, both human and animal.

According to the Drugs and Cosmetics Act, cosmetics are defined as substances intended for application to the human body for cleansing, beautifying, promoting attractiveness, or altering appearance. Unlike drugs, cosmetics do not require a license.

Natural cosmetics are formulations that utilize phytochemicals derived from various botanical sources to nourish and enhance skin and hair health. Herbal cosmetics, in particular, employ fragrant plants for their beauty benefits.

Herbal soaps, often considered medicinal, incorporate antibacterial and antifungal agents derived from plant parts like leaves, stems, roots, and fruits. These soaps are used topically to treat various skin conditions, including those caused by fungi, Staphylococcus aureus, and Streptococcus species. Ethnomedicinally, plant extracts and juices are applied to the skin to address issues like eczema, ringworm, and itching. Soapy plant extracts can soften the skin, improve penetration, and promote healing.

This review article focuses on herbal soaps containing neem, tulsi, shikakai, and reetha, which possess antibacterial and antifungal properties. Neem, a key ingredient, exhibits numerous medicinal benefits, including immunomodulatory, anti-inflammatory, anti-ulcer, antimalarial, antifungal, antibacterial, antioxidant, and anticarcinogenic properties. Tulsi, another potent herb, is effective in managing diabetes, respiratory infections, stress, inflammation, and fungal infections. Reetha, a natural cleanser, is gentle on the skin and suitable for sensitive skin types. It also helps maintain skin moisture and addresses conditions like eczema and psoriasis. Shikakai, known for its anti-wrinkle properties, is used to treat various skin infections, including scabies.

Ancient Ayurvedic texts like Charaka Samhita and Varnya Kashaya detail the use of herbs for achieving radiant skin. Herbs such as sandalwood, nagkeshar, lotus, vetiver, licorice, Indian madder, Indian sarsparilla, Indian pennywort, and durva were used to purify blood and balance the body's doshas, which are believed to influence skin health. Additionally, indigo, red sandalwood, madder root, aloe vera, sandalwood, vetiver, and turmeric were used for various cosmetic purposes in ancient times.

Ayurveda offers a holistic approach to health and beauty, emphasizing the use of natural remedies. The growing awareness of the benefits of natural products is driving the demand for herbal cosmetics. Understanding the skin's structure, function, and common concerns is essential for selecting appropriate skincare products. Whether it's addressing oily skin and acne in youth or dry skin in old age, knowledge of skin care principles can help maintain healthy and beautiful skin.

Definition of cleaning soap:

Soap, a salt of fatty acid, is a common ingredient in various cleaning and lubricating products. It's a surfactant primarily used for washing, bathing, and general housekeeping. Soaps help remove dirt, microorganisms, and unpleasant odors from the body. However, industrial soaps often contain harmful chemicals like mercury, aluminum, barium, bisphenol, plastic, and others. These chemicals can be absorbed into the body through inhalation of vapors or skin absorption, leading to severe health consequences.

Both soaps and detergents are substances that dissolve in water to remove dirt from surfaces like skin, textiles, and other solids.

Skin Types and Simple Skincare:

"A fundamental skincare routine consists of three essential steps:

- **Cleansing:**

Gently purifying the skin by removing dirt, dead skin cells, and environmental impurities. Natural oils like coconut, sesame, and palm oil can effectively cleanse the skin without stripping away its natural moisture.

- **Toning:**

Refreshing and tightening the pores to minimize the appearance of blemishes and protect the skin from pollutants. Herbal toners made from ingredients such as witch hazel, geranium, sage, lemon, ivy, burdock, and essential oils can help balance the skin's pH and tone.

- **Moisturizing:**

Hydrating the skin to keep it soft, supple, and youthful. Natural moisturizers like vegetable glycerin, sorbitol, rose water, jojoba oil, aloe vera, and iris can help nourish the skin and prevent premature aging."

Most frequent skin issue:

Common skin conditions include eczema, acne, rashes, psoriasis, allergies, dry skin, hives, and more. Natural remedies can be effective for many of these issues, especially for unique skin problems.

SOAP:

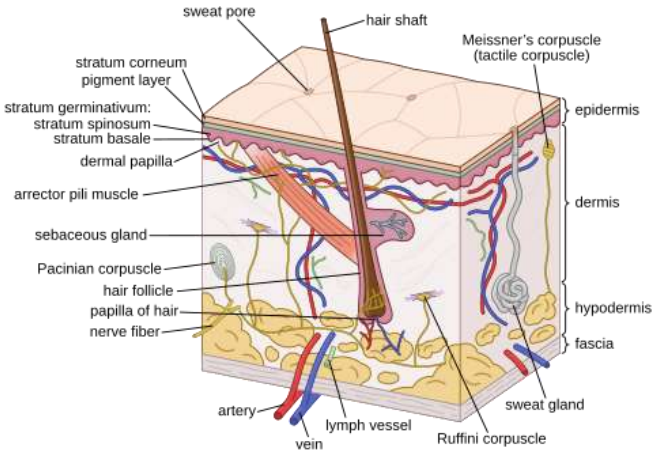
Applications in other areas. The hardness of a soap, for example, is influenced by the metal element present in the salt. Sodium salt soaps exhibit less hardness compared to potassium salt soaps, assuming the same fat or oil is used in both cases. These differ significantly from soaps made from divalent metals like magnesium, calcium, aluminum, or iron, which are not water-soluble.

Although primarily used for washing and cleaning, calcium soap has been reported to be used as a component in animal feed. It is well-known that soap is produced through the saponification of a triglyceride (fat or oil).

The invention and art of soap-making date back to 1660. Soap, as a product derived from the reaction of a base with fats and oils, has played a significant role in the history of civilization. However, its discovery was accidental, and its usefulness was gradually recognized. It is therefore inaccurate to assess past civilizations based on their knowledge or lack of knowledge of soap. If this were the case, the Fanti of West Africa and the Gauls of the first century AD, who independently discovered soap, would have achieved a higher level of civilization than the Egyptians or Greeks, who were unfamiliar with soap.

Nevertheless, both the Egyptians and Greeks were acquainted with medicinal preparations containing alkalis, tallow, various vegetable oils, and other ingredients. The Papyrus Ebers details the use of such ointments for herpes and removing fat around the eyes. Various types of lead plasters were also known. The Berlin Papyrus provides instructions for making an ointment with natron and tallow, and Hippocrates used combinations of oil and soda as ingredients in purgatives.

Skin :



All professionals who work in the field of skin care should have a basic understanding of the structure and function of the human skin. Also known as the cutaneous membrane, the skin covers a surface area ranging from 1.2 to 2.2 square meters in adults. There are two main types of skin: hair-bearing skin, which covers most of the body, and hairless skin, such as that found on the palms of the hands and the soles of the feet. As the most exposed part of the body, the skin is constantly subjected to sunlight, environmental pollutants, and pathogens. However, it also provides a significant degree of protection against these harmful agents.

SKIN ANATOMY:

Benefits of Herbal Soap:

- Natural Cleanse: Herbal soaps offer a gentle, natural cleanse, unlike harsh detergents.
- Healthy Skin: Free from harmful chemicals, they promote healthier skin.
- Deep Hydration: Enriched with glycerin, essential oils, and other natural ingredients, they deeply moisturize your skin.
- Healing Properties: Many herbal soaps possess healing properties due to their natural ingredients.

Key Ingredients:

* Aloe Vera: Soothes and rejuvenates the skin.

* Turmeric: A powerful antioxidant with anti-inflammatory properties.

* Vitamin E: Nourishes and protects the skin.

* Lavender Essential Oil: Calms the mind and promotes relaxation.

* Ritha: A natural cleansing agent.

* Tulsi: A potent herb with antimicrobial properties.

* Shikakai: Strengthens hair and promotes healthy scalp.

1.NEEM:

Botanical name- Azadiracta indica.

Family: Meliaceae

Part typically used- Leave.

Color- Green.

Description –

The leaves are compound and alternate, with a central stem (rachis) that is 15-25 cm long and very thin. Each leaf is made up of several smaller leaflets that are slanted (oblique), have jagged edges (serrate), and are 7-8.5 cm long and 1-1.7 cm wide. The leaflets are a slightly yellowish-green color.

Constituent –

Neem leaves are rich in a variety of bioactive compounds, including flavonoids, alkaloids, azadirachtin, nimbin, nimbidin, terpenoids, steroids, tannic acid, saponins, and sursertin.

Uses-

Neem, a versatile medicinal plant, possesses anti-inflammatory properties that aid in acne reduction. It is effective in treating fungal infections, facilitating detoxification, and enhancing immunity. Furthermore, neem serves as a natural insect and mosquito repellent. Its wound-healing properties are well-known, and neem leaves are traditionally used to address head lice, skin diseases, and skin ulcers.

Properties-

This substance possesses anti-allergic and anti-dermatic properties. It may also exhibit antipyretic activity and has the potential to damage cancerous cells.

2. ALOE VERA :

Biological name- Aloe Vera.

Family: Asphodelaceae

Common name- Aloe barbadensis

Chemical constituents-

Essential vitamins, catalytic enzymes, vital minerals, simple sugars, structural lignin, protective saponins, pain-relieving salicylic acid, and protein-building amino acids.

Part typically used- leaves

Color- Green.

Benefits and Applications-

* May alleviate symptoms of Gastroesophageal Reflux Disease (GERD)

* Compatible with our Digestive gadget

* Aids in detoxification

* Promotes oral health

* May help regulate blood sugar levels

* Benefits skin health

* May assist in managing psoriasis and improve hair health

3.TURMERIC :

Biological name: Curcuma longa

Common name: Haldi

Chemical constituents:

* Proteins, lipids, minerals, and carbohydrates

• Part typically used: root

4. VITAMIN E:

Hydrates and restores dehydrated skin, reduces the appearance of fine lines and wrinkles, fades hyperpigmentation, cleanses pores, and prevents future signs of aging.

5) LAVENDAR ESSENTIAL OIL:

Antioxidants, nature's defense against oxidative stress, can help regulate blood sugar levels in individuals with diabetes, promote radiant skin and lustrous hair, improve sleep patterns, and reduce pain.

6) RITHA:

Botanical name: sapindus mukorossi

• **Part typical used:** seed

• **Colour:** Brown

• **Uses:** Detergent, surfactant

Description :

The fruit is a drupe, 1-2 cm in diameter, with a leathery exocarp. It exhibits a color change from yellow to black during maturation and contains 1-3 seeds.

7) SHIKIKAI:

Biological name:- Acacia concinna

Common name:- shikekai Chemical Constituents:- Spinasterone , Acacic acid

Part Typical used:- Fruits pods

Colour:- Brown

Uses:

Dandruff-inhibiting detergent

Seborrheic dermatitis detergent (if targeting the root cause)

8)TULSI :

Kingdom: Plantae

Family: Mints

Synonyms: Gauri, Bahumanjari, Pavani, Gramya, Surasa.

Botanical name: ocimum tenuiflorum

Common name: holy basil

Part of typical used: leaves

Color: Green

Chemical constituents: eugenol, terpens, germacrene

Description :

Holy basil is an erect, multi-branched subshrub reaching 30-60 cm in height. Its hairy stems support green or purple, simple leaves with ovate blades up to 5 cm long and slightly toothed margins.

Uses :

* Reduces fever (antipyretic) and pain (analgesic).

* Alleviates coughs, bloodless conditions, and other respiratory ailments.

* Lowers stress and blood pressure.

* Possesses anti-cancer properties.

Properties :

Enhances natural immunity and offers various health benefits, including fever reduction, pain relief, alleviation of cold, cough, and respiratory issues, stress reduction, blood pressure regulation, and potential anti-cancer properties.

*** Adverse effects :**

This substance has the potential to affect fetal development throughout pregnancy. Its ursolic acid content may influence the menstrual cycle. Additionally, it can significantly reduce blood sugar levels, particularly in individuals with diabetes, potentially leading to hypoglycemia.

Benefits of herbal soap :

a. Natural Ingredients:

Crafted from plant-based sources like herbs, essential oils, and botanical extracts, these detergents are gentle on the skin and can soothe and nourish without irritation or dryness.

b. Hypoallergenic:

Formulated to minimize allergic reactions, herbal detergents are a safer choice for sensitive skin compared to synthetic detergents with harsh chemicals and artificial fragrances.

c. Eco-Friendly:

These detergents are biodegradable and free from harmful chemicals, making them a more sustainable option for both your skin and the environment.

d. Aromatherapy:

Many herbal detergents incorporate essential oils that offer aromatherapy benefits. These oils can promote relaxation, uplift mood, and enhance overall well-being during your bath or shower.

Limitations of herbal soap :

Quality

Herbal soaps can vary in quality, with some containing lower-quality ingredients or being less effective.

Shelf life

Herbal soaps may have a shorter shelf life than synthetic soaps because they don't usually contain preservatives.

Availability

Herbal soaps may not be as widely available as conventional soaps, and may require shopping at specialty stores or online.

Cost

Herbal soaps can be more expensive than regular soaps because of the high-quality natural ingredients used.

FUTURE SCOPE:-

The herbal soap market is expected to grow in the future due to the increasing demand for natural and organic products. Here are some factors that are contributing to the growth of the herbal soap market:

Growing awareness

Consumers are becoming more aware of the importance of using safe and environmentally friendly products.

Skin diseases

The increasing prevalence of skin diseases, such as rashes and burning, is leading to a greater demand for natural or organic products.

Premium products

The demand for luxury and premium products is contributing to market growth.

Aesthetic appeal

The trend toward aesthetic appeal is a significant driver for the premium product range.

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