



FORMULETION AND EVALUATION OF ALOE VERA SOAP

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ABSTRACT

Aloe vera, a succulent plant species in the Alliaceae genus, is pronounced /aero(i) vr, v r-. It is widely dispersed and regarded as an invasive species in many parts of the world. Its usefulness in treating wounds and burns is debated, with some evidence suggesting it may alleviate skin disorders symptoms, but potential allergic reactions may occur. As a result of enhanced hygiene producers meant to lower the population of harmful micro-organism, soap consumption is rising in modern developed nations. Formulating and evaluating aloevera soap involves several steps, including ingredient selection, the soap-making process, and testing for quality and efficacy.

1. INTRODUCTION

Aloe vera, a succulent plant species in the Aloe genus, is pronounced /'aeloo(i) verə, viər-/^[1]. It is widely dispersed and regarded as an invasive species in many parts of the world^[2]

Scientific Classification

Kingdom: Plantae

Clade: Tracheophytes

Clade: Angiosperms

Clade: Monocots

Order: Asparagales

Family: Asphodelaceae

Subfamily: Asphodeloideae

Genus: Aloe

Species: A. Vera

This evergreen perennial is native to the Arabian Peninsula and grows wild in tropical and semi-tropical regions all over the world^[2]

This species looks good inside and is a potted plant that does well^[4]

Acemannan, a polysaccharide gel found in aloe vera leaves, has topical application benefits^[5]

Products including skin lotions, cosmetics, ointments, and gels for minor burns, skin abrasions, bug bites, and windburn include aloe vera's acemannan^[6]

Because of the unknown effects that aloe vera extracts may induce, consuming them might be dangerous^[3,7]

Even when aloe vera is administered only topically, pregnant women are more susceptible to adverse responses^[3,7]

2. ETIOLOGY

Verus which means "true" in Latin, is the source of the particular adjective vera^[9,11]

Common Names

Common names for aloe include those that reflect the location in which it is found, including Chinese aloe, Cape aloe, or Barbados aloe^[3,12,13]



2.1. TOXONOMY

Aloe barbadensis Mill., *Aloe indica* Royle, *Aloe perfoliata* L. var. *vera*, and *Aloe vulgaris* Lam are some of the synonyms for the species.^[14,16]

Aloe perfoliata var. *vera* was the species that Carl Linnaeus originally described in 1753.^[19]

Aloe vera was dubbed *Aloe barbadensis* by Philip Miller after Nicolaas Laurens Burman had titled it in *Flora Indica* in 1768.^[20]

Aloe vera and the Yemeni native *Aloe perryi* may be closely related, according to DNA comparison methods.^[21] Chloroplast DNA sequence comparison and inter simple sequence repeat profiling suggest *Aloe* species are closely related to *Aloe forbesii*, *inermis*, *scobinifolia*, *sinkatana*, and *striata*, native to Yemen, Somalia, and Sudan.^[22] Because there are no distinct natural populations of *Aloe vera*, several experts speculate that the plant may have hybrid origins.

2.2. Description

Because there are no discernible natural populations of the species, some experts speculate that *aloe vera* may be a hybrid.^[2]

LEAVE

Thick and meaty, the leaves are green to grey-green in color, with some types having specks of white on the upper and lower surfaces of the stems.

FLOWER

The flowers are produced in summer on a spike up to 90 cm (35 in) tall, each flower being pendulous, with a yellow tubular corolla 2–3 cm ($\frac{3}{4}$ – $1\frac{1}{4}$ in) long.

ROOTS

Like other *Aloe* species, *Aloe vera* forms arbuscular mycorrhiza, a root symbiosis that allows the plant better access to mineral nutrients from the soil.

3. DISCUSSION

Aloe vera is thought to be indigenous to just the southeast. One important area in the region is the Arabian Peninsula, which is situated in the Hajar Mountains in eastern United Arab Emirates and northeastern Oman. The plant has been widely grown around the world and has naturalized in the Canary Islands, Cape Verde, Madeira Islands, North Africa, Sudan, and surrounding nations.^[14]

Additionally, the species has established itself in Portugal's Algarve wild places around Spain.

On temperate continents, this plant has been widely naturalized in tropical, temperate, and dry environments.^[2]

4. CULTIVATION

Modern gardeners use *aloe vera*, a popular decorative plant, as a topical therapeutic herb.

The plant is well-known for its distinctive shape, blossoms, and succulence, which enable it to flourish in areas with little rainfall and make it appropriate for low-water gardening. The plant can withstand severe cold and snowfall, however it is hardy in zones 8 through 11. Although the species is usually resistant to most insect pests, certain types of aphids, mealy bugs, spider mites, and scale insects may be harmful to plants.^[15] The Royal Horticultural Society has awarded this plant its Award of Garden Merit.

Before rewatering, potted plants should dry fully since puppies can overwhelm them. Reorganize densely populated plants or ignore the puppies. Since *aloe vera* can become dormant in the winter, heated glasshouses or indoor environments are ideal.

5. USES

Commercial solutions for skin diseases and constipation treatment employ *aloe vera*'s clear gel and yellow latex; the gel is used for topical medicines and the latex is for individual usage.^[7]

Aloe vera's effectiveness in treating wounds and burns is debated, with some evidence suggesting it may alleviate skin disorders symptoms, but potential allergic reactions may occur.

Although its usefulness in healing burns and wounds is up for discussion, *aloe vera* has been shown to help ease the symptoms of a few other skin conditions.^[7,24]



6. TOXICITY

It's debatable if aloe vera works well for burns and wounds, although it has been proposed that it helps with some skin conditions. [7,11]

7. HISTORY

A fatty acid's alkali salt is the chemical component of soap, a frequently used skin 'cleaning product. Ancient Babylonians are the first people in thousands of years to have used

When animal fat was cooked with an alkali called ye, which was generated, From woody ashes, an aggressive, foul-smelling substance known as soap was created for the first time. Since then, there have been numerous variations and the addition of other components to make soap more aesthetically pleasing. The term "soap" understates the complexity of modern skin cleanser, which also cause skin conditions. Ingredients in addition to the surfactant [1].

soap about 600 BC. The word "soap" originates from the animal sacrifice on mount soap. Roman Ladies laundered their clothing with soap. Gau's colored their with soap.

Using olive oil, the skill of producing soap emerged in Spain, Italy and France during the 7th century. By the thirteenth century, Britain manufacturing of soap had destroyed forest, rendering it a luxury ✓ good available only to aristocrats - Royal households in Europe began to utilize castile soap, which is allowed pure white soap. Glad stone removed the soap tar in 1853, lowering the cost. Nicolas leblanc, a French scientist, developed alkali soda ash in 1791.

Soap's original use was cleaning, but it eventually gained usage for its health and beauty properties. Surface-active substances called surfactants cause foaming and cleaning lower surface tension and harm the stratum corneum. Mild and moisturizing cleansers have been made possible by the development of newer technology. Both natural and synthetic surfactants are utilized in making of soap. Syndet bars contain emollients for moisture and gentler surfactants to reduce irritation.

7.1. ANCIENT MIDDLE EAST

No one knows for sure who invented soap first

A Sumerian clay tablet from about 2500 BC contains a soap recipe for heating oil and wood ash, the first known chemical reaction, which was used to wash woolen garments.

According to Ebers papyrus, which dates back to 1550 BC, the ancient Egyptians mixed vegetable or animal fats, trona, a material made of soda ash, to make soap.

Barilla plant ashes, such as those from salsola, saltwort, and anabolise, were used in the southern Levant to make potash, or soap

7.2. Roman Empire

In his works from the early centuries, Pliny the Elder describes soap as a Gaulish innovation [12]

The Latin word "sebum", which means fat, is connected to the Latin word "sapo" which means soap. It most likely came from an early Germanic language.

Then there were more likely than women naturalise tallow and as her to make soap, which was employed in Historia Naturalist to heal scrofulous sore and radden hair in the culture.

In the second century AD, the Celts known as the Gauls are mentioned by the historian Aretaeus of Cappadocia as using soap, an alkaline material.

The Romans liked to massage oil into their skin which they would then remove with a strigil along with any debris.

The metal grip and curved blade are elements of the conventional design.

Galen, a physician from the second century AD, recommended creating and washing soap for personal hygiene and named Germanic and Gaul soaps of the best soapmaking was also documented by Zosimos or Panopolis.

Islamic Golden Age

Using instruction from Muhammad ibn Zakariya al-Razi soap-making in the Middle East developed into a thriving business during the Islamic Golden Age. In Syria, ratty oils, fats, alkali and lime were used to make soap, which was then sold to Europe and other Muslim nations.



The main component alkali, which is derived from al-galy or ashes is mentioned in the book, Alkali has become crucial to contemporary Chemistry.

Medieval Europe

In the late sixth century, soapmaker in Naples belonged to a guild that was ruled by eastern Roman Empire

Around 800, the carolingian capitulary de villis describe the soap as a commodity Stewarded by royal ertates by 800 medieval spain was the leading producer of soap (while soapmaking in England began around 1200

Making soap is a big business, that requires variety of abilities, including baking, blacksmithing and carpentry. It's also seen, as a "women work's" and a creation of "good workmen"

15th-18th Century

The semi-industrialized soap industry of Provence, which included Toulon, Hyeres, and marseille was a major, supplier to the rest of France by the 15th century.

Marseilles was noticeably more productivity than other provencal communities with at least two factories specializing in soap manufacture by 1525

Vegetable oils like olive oil were used to make European soap sorting in the 16th century, and this technique will widely used today one well-known example is castile soap, which is made up the.

19th Century

The soap industry was tiny and soap industry was tiny. And unorganized before to the industrial Revolution Isi order to produce alkalis, James Keir founded tipton chemical works in 1780. Nicolas lebalanc took Over al director. In 1790.

In 1865-his con-in-law Thomas J. Barrott was appointed Pear's first-ever brand manager

Liquid Soap

liquid soap was first created in the 19th century. and was, patented by william Sheppard in 1865.

B.J. Johnson founded the B.J. Johnson soap company in 1898 and marketed "Palmolive" brand soap, which was derived from palm and olive oils.

cleaning cloth, Floors, and bathrooms became, easier when businesses like pinesol and Tide launched their ow liquid. soap in the early 1900s.

8.INGREDIENTS

Base Ingredients:

Oils and Butters, Olive oil, Coconut oil, Palm oil (sustainably sourced), Shea butter

Lye Solution

- Sodium hydroxide (NaOH) for solid soap
- Distilled water

Additives

- Aloe Vera
- Fresh aloe vera gel or aloe vera extract
- Essential Oils
- For fragrance (e.g., lavender, tea tree, or peppermint essential oil)

9. SOAP-MAKING PROCESS

Safety Precautions:

- Wear gloves, goggles, and long sleeves.
- Work in a well-ventilated area.



Steps

1. Prepare the Lye Solution

- Weigh the distilled water and NaOH.
- Slowly add NaOH to the water (never the other way around) and stir until dissolved. Allow it to cool.

2. Prepare the Oils

- Weigh and melt the solid oils/butters (coconut oil, palm oil, shea butter) in a heat-resistant container.
- Add the liquid oils (olive oil) to the melted mixture.

3. Mix Lye and Oils

- When both the lye solution and oils are at a similar temperature (around 100°F/38°C), slowly add the lye solution to the oils.
- Use a stick blender to mix until reaching "trace" (a thin pudding-like consistency).

4. Add Aloe Vera and Other Additives

- Gently fold in aloe vera gel, essential oils, and any other additives.

5. Mold the Soap

- Pour the soap mixture into molds.
- Cover and insulate to allow the soap to undergo saponification for 24-48 hours.

6. Cure the Soap

- Remove the soap from the molds and cut into bars.
- Cure the bars in a well-ventilated area for 4-6 weeks.

10. EVALUATION OF ALOE VERA SOAP

1. Physical Properties

- Appearance: Check for uniform color, absence of cracks, and smooth texture.
- Hardness: Test by pressing lightly; the soap should be firm but not brittle.
- Lather: Evaluate the amount and quality of lather produced.

2. Chemical Properties

- pH Testing: Use pH strips or a digital pH meter to ensure the soap has a skin-friendly pH (around 7-10).
- Moisture Content: Lower moisture content indicates better longevity. Measure using a moisture analyzer.

3. Microbiological Testing

- Preservation: Ensure no microbial growth by testing for bacteria, yeast, and mold.

4. User Evaluation:

- Conduct a patch test for skin irritation.
- Collect feedback on skin feel, moisturization, and fragrance from a group of users.

5. Stability Testing:

- Shelf Life: Assess the soap's stability over time by storing it under different conditions (temperature, humidity) and monitoring changes in colour, fragrance, and efficacy.

Sample Aloe Vera Soap Formula (Cold Process)

- Olive oil: 40%, Coconut oil: 30%, Palm oil: 20%, Shea butter: 10%, Aloe vera gel: 15% (of total oil weight), Sodium hydroxide: Calculated based on oil weights using a lye calculator, Distilled water: 1.5 times the weight of sodium hydroxide, Essential oils: 1-2% of total oil weight.^[23]

11. RESULT

ALOE vera soap is popular for its potential benefits for the skin, largely due to the properties of the Aloe vera plant. Here's an overview of what users might expect when using Aloe vera soap:

Benefits of Aloe Vera Soap

Moisturizing: Aloe vera is known for its hydrating properties, making the soap a good choice for dry or sensitive skin. It helps in locking moisture into the skin, leaving it soft and smooth.

Healing and Soothing: Aloe vera has anti-inflammatory and healing properties. The soap can soothe irritated skin, reduce redness, and help heal minor cuts, sunburns, and abrasions.

Anti-Aging: Aloe vera contains antioxidants, including beta-carotene, vitamin C, and vitamin E, which can help improve the skin's natural firmness and keep it hydrated, thereby reducing the appearance of fine lines and wrinkles.



Anti-Acne: Due to its antibacterial and anti-inflammatory properties, Aloe vera soap can help reduce acne and prevent future breakouts. It also helps in removing excess oil and dirt from the skin.

Hypoallergenic: Aloe vera is generally gentle on the skin and is less likely to cause allergic reactions, making it suitable for sensitive skin types.

Skin Brightening: Regular use of Aloe vera soap can help in achieving a more even skin tone and reducing dark spots and pigmentation.

12. REFRANCE

To align the references in the YMER journal format, you could adjust them as follows:

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23. This format follows a consistent style, including author names, publication dates, article titles, journal names (where applicable), volume and issue numbers (where applicable), page numbers, DOI (Digital Object Identifier) when available, and relevant publication mediums.