



Formulation and Evaluation of Polyherbal Soap

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ABSTRACT

The present study focuses on the formulation and evaluation of a polyherbal soap utilizing natural plant-based ingredients known for their dermatological benefits. With growing consumer preference for herbal cosmetics due to their safety, minimal side effects, and therapeutic efficacy, this study integrates traditional herbal knowledge with modern formulation techniques. The soap was prepared using a glycerine base combined with herbal ingredients such as aloe vera gel, turmeric powder, neem, tulasi, white lotus flower powder, jasmine, and vitamin E. Aloe vera served as the primary moisturizing agent, while turmeric and neem contributed anti-inflammatory and antimicrobial properties. The formulation process involved melting the soap base, incorporating powdered herbal components, and molding into various shapes. Evaluation parameters included pH, color, shape, odor, foam height, foam retention, skin irritation, and percentage of free alkali. The results demonstrated a stable, mildly alkaline soap (pH 8) with satisfactory foaming properties, pleasing odor, no skin irritation, and minimal free alkali content (0.22%). The findings suggest that the formulated herbal soap is safe, effective, and suitable for skincare applications, promoting both cleansing and therapeutic benefits. This study highlights the potential of herbal cosmetics as sustainable and consumer-friendly alternatives in the personal care industry.

Keywords: Polyherbal soap, Herbal cosmetics, Aloe vera, Turmeric, Skin care

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1. Introduction

The term “cosmetics” originates from the Greek word “Kosm tikos” which translates to possession of powder, order, adornment.[1] It reflects the historical association with beauty product and practices aimed at enhancing appearance. The use of one or more herbal constituents is effective in treating a variety of skin conditions. These products are created by combining different cosmetic components forming a natural and a whole approach to skincare.[2] Herbals in their raw or extracted forms play a crucial role in “herbal cosmetics”.[3] Cosmeceuticals are

blending cosmetics with pharmaceutical elements and incorporate active components to enhance skin health. These products modify the biological texture and activity of the skin aiming to improve its overall appearance.[4] Good habits, a healthy lifestyle proper skincare and consideration of environmental factors like climate all play roles in maintaining beautiful skin.[5] Herbal cosmetics are cosmetics which incorporate natural herbs and their extracts which are valued for their aromatic properties and consumer prefers for natural products. This shift reflects an

increasing interest in herbal formulations within the cosmetic industry.[6]

Cosmetics: Cosmetics within the meaning of the Medicines and Cosmetics Act are objects that are intended to be rubbed, poured, sprinkled or sprayed, inserted or otherwise applied to the human body for the purpose of cleaning or beautifying the skin, increase attractiveness or change appearance.

Herbal Cosmetics:

Herbal cosmetics are formulated from various cosmetic ingredients to form a base on which one or more herbal ingredients are used to treat various skin conditions. Plants are often used to develop new drugs for cosmetic and pharmaceutical applications. The Drug and cosmetics Act specify that herbs and essential oils in cosmetics should not claim to penetrate beyond the skin surface layers or possess therapeutic effects.[7]The topical application of juice and extracts from plant leaves is utilized for their anti-microbial and anti-inflammatory properties, particularly in treating skin conditions such as eczemas, ringworms, and pruritus.[8]Herbal soap preparation possess anti-acne and anti-oxidant properties which contains different parts of plants such as leaves, stem, roots, and fruits, to treat injuries or diseases and to accomplish good health.[9] Herbal soap containing aloe vera, turmeric powder, orange peel powder, sandal wood powder as natural ingredients and this gives anti-acne, anti-microbial, anti-inflammatory activity. In this soap aloe vera is main compound it will moisturize the skin.[10] Turmeric powder is having anti-inflammatory and anti-oxidant properties. Turmeric may assist in calming irritated skin and adds skincare benefits. Orange peel powder is often included in herbal soap for its beneficial properties. It contains natural antioxidants which can contribute to skin brightening and have anti-acne properties. Sandal wood powder possesses natural anti-inflammatory properties and is known for its distinctive fragrance. Shampoo ginger is believed to have antioxidant properties and potentially benefiting the skin.

Skin types and their care:

The skin is classified into 4 groups and for class appropriate ingredients should be used to maintain its natural functionality [11-12]

Evaluation Parameters:

Colour and shape: Colour and shape can be identified using naked eye.

Odor: The smell of formulation was checked by applying preparation on hand and feels the fragrance of perfume.

pH: By applying a pH strip to the freshly made soap and combining it with a solution of 1gramme in 10ml of water,

the pH of the created soap was measured. utilizing a digital pH meter.[13]

Foam retention: In a 100 ml graduated measuring cylinder, 25 ml of the 1% soap solution were added.10 times were shaken while holding the cylinder with one hand. For 4 minutes, the volume of foam was measured every minute.[14]

Foam height: A sample of soap weighing 0.5 gramme was dissolved in 25ml of pure water. Then pour it into a 100ml measuring cylinder after adding water to make the volume 50ml. 25 strokes were administered while standing until the aqueous volume was measured.

Irritation: performed by rubbing soap into the skin for ten minutes. If there is no irritation, the product is regarded as non-irritating.[15]

Determination of % free alkali:

Five gramme of the sample and fifty milliliters of neutralizing alcohol placed in a conical flask. On a water bath with reflux, it was boiled for 30 minutes, after which it was cooled. A solution of phenolphthalein in 1ml is then added 0.1 N hydrochloric acid was then used to titrate it right away [16].



Fig.1: Types of skin

2. Methodology

Collection of ingredients:

A high quality of soap base, such as glycerine soap base is needed. The herbal ingredients such as Turmeric powder, Aloe vera gel, Sandal wood powder, Vitamin E capsules, Menthol, Shampoo ginger gel.

Melt the soap base:

Cut the soap base into small pieces and melt it in a double boiler. Stir the soap base until it has melted to a smooth consistency.

Addition of the herbs:

After melting the soap base, take it off and incorporate the herbal ingredients by stirring them.

Pour into moulds: Once the herbs are added, pour the soap mixtures into moulds.

Store the soap:

Once the soap is fully cooled and hardened, remove it from moulds then dry. Soap in a cool place

Table.1: Different types of skin and herbs used

Skin type	Features	Herbs	Essential oils
Oily skin	1. Shiny and often has breakouts. 2. Coarse pores and pimples.	Aloe vera, Thyme, Lemon grass,	Bergamot, Lavender, Juniper
Dry skin	1. A feeling of skin tightness. 2. Fine lines.	Aloe vera, olive oil, calendula	Chamomile Fennel, Geranium, Lavender
Combination skin	1. Oily skin on the forehead, shine, blackheads.	Witch Hazel, Menthol,	Citrus oils, jasmine oil,

	2. Dullness and fine lines on cheeks.	Aloe vera, Turmeric	sandal wood oil
Normal skin	1. Neither oily nor dry 2. Appears smooth	Pomegranate, Herbal face pack, Gingili oil	Chamomile Fennel, Geranium, Lavender, Sandal wood

Table.2: Ingredients to herbal soap with aloe vera gel as main ingredient

S.No	Material	Quantity
1	Aloe vera gel	16 gm
2	Turmeric powder	1gm
3	Neem powder	5gm
4	Tulasi powder	7gm
5	White lotus flower powder	2 gm
6	Vitamin E capsules	5 gm
7	Jasmine	2.5gm
8	Glycerine soap Base	250gm

3. Results and Discussion

Colour and shape: Colour and shape was checked by naked eye.

Odor: The smell of formulation was checked by applying preparation on hand and feels the fragrance of perfume.

pH: By applying a pH strip to the freshly made soap and combining it with a solution of 1gramme in 10ml of water, the pH of the created soap was measured. Utilizing a digital pH meter.

Foam retention: In a 100 ml graduated measuring cylinder, 25 ml of the 1% soap solution were added. 10 times were shaken while holding the cylinder with one hand. For 4 minutes, the volume of foam was measured every minute.

Foam height: A sample of soap weighing 0.5 gm was dissolved in 25ml of pure water. Then pour it into a 100ml measuring cylinder after adding water to make the volume 50ml. 25 strokes were administered while standing until the aqueous volume was measured.

Irritation:

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Determination of % free alkali: 5gms of the sample and 50 ml of neutralizing alcohol placed in a conical flask on a water bath with reflux, it was boiled for 30minutes after which it was cooled. A solution of phenolphthalein in 1ml

is then added 0.1 N hydrochloric acid was then used to titrate it right away.

**Fig.2: Foam Height****Fig.3: Herbal soap****Table.3:** Results of evaluation parameters

TEST	RESULTS
Colour	Brown
Shape	Different shapes
Odour	Menthol like odour
PH	8
Foam Retention	1cm per minute
Foam Height	2 cm
Irritation	No irritation
Determination of % free alkali	0.22

4. Conclusion

From the above study, the formulation of herbal soaps combines the wisdom of traditional botanical knowledge with modern skincare science. Extracts of microbial plant

parts like leaves, root, barks, wood, and fruits were extracted using solvents like water, methanol, ethanol, and ethyl acetate, and then evaluated by using number of tests.

The carefully selected herbal ingredients known for their therapeutic properties which contribute to a holistic cleaning experience. These formulations often prioritize natural oils, antioxidants, and plant extracts promoting skin health. The increasing popularity of herbal soaps signifies a growing appreciation for their gentleness and potential benefits. Herbal cosmetics are prepared from herbal ingredients to treat various ailments and promote a healthy lifestyle and beautify the skin without side effects. Many herbs are naturally available to use in various skin care formulations.

5. References

- [1] Pandey S, Meshya N, Viral D. Herbs play an important role in the field of cosmetics. *Int J Pharm Tech Res.* 2010, 2(1): 632-639.
- [2] Joshi H. Potentials of traditional medicinal chemistry in cosmetology industry: Prospectives and perspectives. *Anaplastology.* 2012, 1(3).
- [3] Sahu AN, Jha S, Dubey SD. Formulation and evaluation of curcuminoid-based herbal face cream. *Indo Glob J Pharm Sci.* 2011;1(1):77-84.
- [4] Datta HS, Paramesh R. Trends in aging skin care: Ayurvedic concepts. *J Ayurveda Integr Med.* 2010;1(2):110.
- [5] Kole PL, Jadhav HR, Thakurdesai P, Nagappa AN. Cosmetics potential of herbal extracts. *Indian J Nat Prod Resour.* 2005;4(4):315-321.
- [6] Larsson SC, Bergkvist L, Naslund I, Rutegard J, Wolk A. Vitamin A, retinol and carotenoids and the risk of gastric cancer: a prospective cohort study. *Am J Clin Nutr.* 2007;85(2):497-503.
- [7] Sankholkar DS. Current regulations and suggested way forward. *Pharma Times.* 2009;41(8):30-33.
- [8] Kareru PG, Keriko JM, Kenji GM, Thiong'o GT, Gachanja AN, Mukiira HN. Antimicrobial activities of skincare preparations from plant extracts. *Afr J Tradit Complement Altern Med.* 2010;7(3):279-284.
- [9] Sharma J, Gairola S, Sharma YP, Gaur RD. Ethnomedicinal plants used to treat skin diseases by Tharu community of district Udham Singh Nagar, Uttarakhand, India. *J Ethnopharmacol.* 2014;158:140-206.
- [10] Kapoor VP. Herbal cosmetics for skin and hair care. *Nat Prod Radiance.* 2005;4(4):306-315.
- [11] Kole PL, Jadhav HR, Thakurdesai P, Nagappa AN. Cosmetic's potential of herbal extracts. *Nat Prod Radiance.* 2005, 4(4):315-321.
- [12] The Wealth of India: A dictionary of Indian raw materials and industrial products. Vols I-XI. New Delhi: CSIR; 1948-1976. Revised Series: Vol IA (1985); Vol 2B (1988); Vol 3 Ca-Ci (1992).
- [13] Afsar Z, Khanam S. Formulation and evaluation of polyherbal soap and hand sanitizer. *Int Res J Pharm.* 2016;7(8):54-57.
- [14] Kuril M, Yadav Y, Sahi AK, Shukla K. Formulation and evaluation of polyherbal paper soap. *J Innov Inven Pharm Sci.* 2020;1:54-57.
- [15] Jacobol B, Ciyamol, Chandy V. Formulation and evaluation of herbal soap. *Int J Pharm Biol Sci.* 2019;9(2). ISSN: 2230-9861 (Online), 2349-1299 (Print).
- [16] Chinnathambi M. Formulation and evaluation of herbal soap by using natural ingredients. *Int J Pharm Sci Rev Res.* 2023, 12(6): 669-688.