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Research Paper

Formulation and Evaluation of Herbal Soap

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ABSTRACT

The therapeutic virtues of neem (semambu), also known as Azadirachta indica, have led to its widespread usage in traditional medicine. Neem leaves have traditionally been used to treat skin disorders like eczema, psoriasis, and acne. Neem contains antioxidants and boosts immune response in damaged skin tissues. It also contains bioactive chemicals with antibacterial, antifungal, and anticancer properties. This study employed neem leaf extract to make herbal soap to treat skin disorders [1] Plant-based components and botanical extracts are used to make herbal soaps, also referred to as natural soaps. Because they are composed of natural components, they provide the skin with a number of benefits. Among the advantages are their natural scent, antioxidant content, moisturizing and nourishing qualities, and environmental friendliness. Herbal formulation and evaluation, including the identification of organoleptic and physic-chemical characteristics, constitute the basis for the manufacture of the herbal soap extract. Measurements and observations were made of the pH, total fatty matter, alcohol insoluble matter, foam height, foam retention, and moisture content. It was found to have a smooth texture, a brown color, and a fragrant scent [2].

INTRODUCTION

The first line of protection against a variety of infections is the human skin, which is the outermost layer of the body. Because the skin interacts with the environment, it is continuously exposed to a variety of stimuli. The skin is therefore more vulnerable to damage. Scar tissue—usually decolorized and epigmented—emerges as severely damaged skin attempts to recover. Conversely, chemical soaps are known to exacerbate dryness and irritation of the skin. Customers are increasingly choosing natural component cosmetics as a more organic, ecologically friendly, and healthful choice. Herbal cosmetics are another name for Ayurvedic cosmetics. In most situations, the natural

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ingredient in herbal medication has no adverse effects on the human body. An antibacterial and antifungal pharmaceutical or treatment is referred to as a "herbal soap preparation." It Is used to treat damage, illness, and maintain human health. It is composed of plant parts such as leaves, stems, roots, and fruits. Soaps have a long history and have been a part of our everyday lives for more than 6,000 years. By mixing animal fats, wood ash, and water, the ancient Babylonians created what is now known as "soap." The fundamental process of making soap, known as saponification, involves the reaction of fats or oils with a base or lye. There are two categories of soap: liquid and solid. Medicinal soaps are different from ordinary soaps in that they contain bioactive ingredients, either natural or manufactured, that give the final product a variety of biological activities. [3,4]. Since the beginning of time, people have used the neem tree, Azadirachta indica, as a source of medicine. Various portions of neem, including the seed, bark, and leaf, contain a variety of chemicals. Because each portion of neem has unique chemical characteristics, its efficacy in treating different kinds of ailments may vary [5]. Because it contains a variety of active ingredients, including flavonoids, azadirone, and azadiractin, neem is frequently utilized in Ayurveda. These active ingredients may have medicinal benefits [6].

Fig no.1 herbal soap

AIM & OBJECTIVE

★ AIM

To study formulation and evaluation of the herbal soap**.**

★ OBJECTIVE

- Natural Skincare: Use natural components with well-established health benefits to offer a chemical-free skincare substitute.
- Health Benefits: Provide soap with therapeutic qualities as anti-inflammatory, antibacterial, and antioxidant effects.
- Environmental Sustainability: Use sustainable processes and biodegradable components to promote eco-friendly products.
- Allergen Reduction: Steer clear of harsh chemicals and artificial perfumes to lessen the incidence of skin allergies and irritations.
- Market Niche: Serve customers that favor natural and organic products, meeting the rising need for herbal and environmentally friendly personal care products.
- Educational Outreach: Raise consumer knowledge of the advantages of using herbal constituents in traditional soap as well as the possible disavantages of using synthetic chemicals [7].

- **Plant profile**

1) Neem: -

Fig.No.2: - Neem

Table no.1: - Taxonomy of Neem

Family	**Meliaceae**
Biological Name	Azadirachta Indica
Chemical constituents	Azadirachta, Nimbin, Nimbidin
Part used	Leaves, seed, flower, bark
Uses	Moisturizing, cooling
Properties	Antibacterial, antiseptic
Other Uses	Insecticide

2) Tulsi: -

Fig.no.3: -Tulsi

Table no.2: - Toxonomy Of Tulsi

Family	Lamiaceae
Botanical Name	Holy basil
Chemical constituents	Eugenol Germacrceterpn
Part typically used	Leaves
Colur	Green
Properties	Antifungal, Antibacterial, Antiseptic

3) Honey

Fig.no-4: - Honey

Table no.3: - Toxonomy Of Honey

Family	Apidea
Colour	Dark brown
Odour	Sweet
Properties	Antioxidants, Antimicrobial

4) Goat milk soap base

Fig.no.5: - Goat milk soap base

Goat milk soap base is a pre-made soap base made from goat milk and other ingredients such as oils and lye. It is commonly used as a base for making homemade soap, as it is easy to use and does not require the additional step of making the soap base from scratch.

5) Reetha

Fig.no.6: - Reetha

Table no.4: - Toxonomy Of Reetha

Family	Sapindaceae
Biological Name	Sapindus mukorossi
Chemical constituents	Saponins, Steroids, Flavonoids, Triterpenoid
Part typically used	Fruit
Colour	Green
Properties	Cleansing, Anti-inflammatory
Uses	Natural cleanser, dandruff remover

6) Rose essences

Fig no.7: - Rose essences

Table no.5: - Toxonomy Of Rose essences

Family	Rosaceae
Biological Name	Rosa × damascena
Colour	Colourless
Odour	Strong odour
Part typically used	Petals
Properties	Moisturizing, Soothing, Anti-inflammatory
Uses	For fragrance

7) Beetroot

Fig no. 8: - Beetroot

Table no. 6: - Toxonomy Of Beetroot

Family	Amaranthaceae
Biological Name	Beta vulgaris
Part typically used	Root and leaves
Colour	Red and pinkish red
Odour	Distinct earthy smell
Properties	Good source of vitamin, mineral, Antioxidants
Uses	Weight, mangement, Digestive health, Skin

8) Sodium hydroxide

Sodium hydroxide (NaOH), also known as lye or caustic soda, is a crucial ingredient in the soap-making process, including herbal soap preparation. It acts as an alkali that reacts with oils and fats during saponification, converting them.

Fig no.9: - Sodium Hydroxide

9) Lemon

Fig no.10: - Lemon

Table no.7: - Toxonomy Of Lemon

Family	Rutaceae
Biological Name	Citrus limon
Part typically used	Pulp and rind
Colour	Vivid yellow
Odour	Bright, citrus and refreshing
Properties	High in vitamin C, Digestive benefits, Antioxidants properties
Uses	Flavouring, preserveing, cleaning

- **Preparation of solvent extraction**

- **Extraction of Azadirachta Indica By Decoction process**

1.Fresh Azadirachta indica leaves were collected and washed under running tap water and rinsed with distilled water to remove dust and debris.
2.Dry them away from direct sunlight.
3.The dried leaves are then powdered using motar and pestle.

4.Add the leaves powder to water and bring it to a boil.
5.Boil the mixture vigorously, then reduce heat to a simmer and continue boiling until the water volume reduces to about half.
6.Remove from heat and allow the mixture to cool slightly. Strain the decoction through a filter Paper in a conical flask.
7.The prepared decoction can be stored in a clean container and refrigerated for later use [8].

Fig no.11: - Neem powder

Fig no.12: - Extract of neem

1. **Extraction of Holy Basil by Decoction process**

1.Fresh Holy Basil leaves were collected and washed under running tap water and rinsed with distilled water to remove dust and debris.
2.Dry them away from direct sunlight.
3.The dried leaves are then powdered using motar and pestle.
4.Reduce the heat and simmer for a few minutes, or allow the mixture to steep for a set time.
5.Allow the decoction to cool to a comfortable drinking temperature.
6. Strain the decoction through a filter Paper in a conical flask.

Fig no.13: - Tulsi Powder

Fig no.14: - Extract of tulsi

- **Extraction of Sapindus mukorossi By Decoction Process**

1.Place reetha pods in a container and cover them with water.
2.Soaking for at least 8 hours, or preferably overnight, helps extract the saponins.
3.Transfer the reetha and water to a pan. Bring the mixture to a boil, then reduce the heat and simmer for 30-40 minutes.
4.After the mixture has cooled slightly, you can mash the reetha pods to help release the remaining saponins.
5.Strain the mixture through a filter Paper to separate the liquid extract from the pulp.
6.The reetha liquid extract can be stored in a clean, dry container at room temperature for a few days or refrigerated for longer storage.

Fig no. 15: - Dry reetha fruit.

Fig no.16: - Extract of reetha

- **Formulation of Herbal Neem Soap**

Herbal soap formulation typically involves blending base oils, herbal extracts, and other ingredients like essential oils and natural colorants. The process often involves a combination of saponification (for a soap base) or melt-and-pour techniques, followed by adding herbal extracts and other additives. Herbal soap formulation for 100g can be created by combining herbal extracts with a soap base and adding ingredients like honey for moisturizing and lemon juice for a fresh scent. Beetroot can add a natural color.

1. **Procedure for herbal soap preparation**

1. The Soap base was taken in a beaker and was melted in a hot water bath.
2. Incorporate neem, tulsi, reetha extract into melted soap base.
3. Add honey to the mixture for moisturizing properties.
4. Lemon juice add for preserving the soap and NaoH for saponification.
5. Add beetroot powder as a coloring agent and rose essence for flavour.
6. Pour the mixture into molds and let it harden.

Fig no.17: - Herbal Soap

❖ **Evaluation parameters of herbal soap:**

The prepared soap were then subjected to evaluation parameters are as follows:

1.Physical Evaluation

Colour: Cream colour
Odour: Aromatic
Apperance: Smooth texture
Shape: Round

2.Physico- chemical evaluation

➢ **pH**:

10 ml of distilled water and stirring, 2 g of the finished soap was dissolved, yielding a dissolved sample. A pH paper was used to measure the pH.

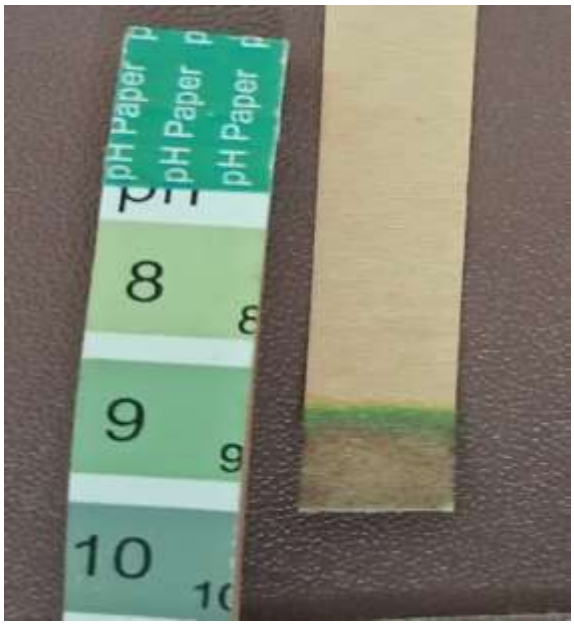

Fig no.18: - pH

➢ **Foamability**

A sample of soap weighing 0.5 grams was obtained and dissolved in 25 milliliters of distilled water. After that, put it into a 100 ml measuring

cylinder and added water to get the volume up to 50 ml. After giving 25 strokes, the aqueous volume was measured up to 50 ml, and the foam height was measured above the aqueous volume [9].

Fig no.19: - Foamability

- **Moisture content: -**

1. Accurately weigh a small sample of the material using a balance. Record the initial weight(W1).
2. Place the sample in the oven and dry it at a specified temperature (usually 100-105°C) until it reaches a constant weight.
3. After drying, remove the sample from the oven and let it cool.
4. Then, weigh the dried sample using the same balance or scale. Record the final weigh (W2).

- **Calculation**

Moisture Content (%) = ((W1 - W2) / W1) x 100
Moisture Content (%) = ((10 - 8) / 10) x 100 = 20%
This means the sample has a moisture content of 20%

- **Alcohol insoluble matter**

1. Accurately weigh a small sample of the herbal soap.
2. Mix the sample with a sufficient amount of alcohol and stir well.
3. Filter the mixture through filter paper or a funnel to separate the insoluble matter.
4. Wash the residue with additional alcohol to remove any remaining soluble matter.
5. Dry the insoluble matter in a drying oven at a suitable temperature (e.g., 100-105°C) until it reaches a constant weight.
6. Accurately weigh the dried insoluble matter.

1. Calculation

Alcohol-Insoluble Matter (%) = (Weight of Insoluble Matter / Weight of Sample) x 100
Alcohol-Insoluble Matter (%) = (0.3 / 1.5) x 100 = 20%
This means the herbal soap contains 20% alcohol-insoluble matter.

Table no. 8: -Ingredients used in herbal soap preparation

Sr.no.	Ingredients	Quantity
1.	Neem	5ml
2.	Tulsi	5ml
3.	Honey	2.5ml
4.	Goat milk soap base	90 grams
5.	Reetha	5ml
6.	Rose essences	q. s
7.	Beetroot	5 grams
8.	Sodium hydroxide	2 grams
9.	Lemon	2 drops

RESULTS

The prepared herbal soap using the mentioned ingredients was evaluated for the following parameters and the results are as follows:

Table no.9: - Evaluation parameters of herbal soap

Sr.no	Parameters	Standard value	Observe value
1.	Colour, Odour, Appearance	-	Cream colour, Aromatic, smooth texture
2.	Shape	-	Round
3.	pH	8-10	9
4.	Foamability	1.3cm - 22cm	5cm
5.	Moisture content	10 - 20%	20%
6.	Alcohol insoluble matter	10-18%	20%

CONCLUSION

The plants Azadirecta indica, Ocimum tenuiflorum, Sapindus mukorossi, beta vulgaris and Citrus limon underwent a series of evaluation tests. The fact that a small group of volunteers has used these soaps and found them to be skin-friendly indicates that soap does not irritate skin. Furthermore, the produced soap was standardized through evaluation of various physical and chemical attributes, including pH, look, and odor, where the product demonstrates acceptable outcomes. Herbal soap offers a natural and effective way to cleanse and nourish the skin. With its blend of herbal extracts, essential oils, and other natural ingredients, herbal soap can provide numerous benefits.

REFERENCES

1. Bornare Pratiksha, Deokar Trupti, Shinde Aishwarya, Musmade Dipak (Formulation and evaluation of herbal neem soap) International Journal of Medicine Research ISSN: 2455-7404, Volume 6; Issue 1; 2021; Page No. 09-12.
2. Siddhartha Das, Sejal Agarwal, Sudipta Samanta, Muskan Kumari and Rajat Das (Formulation and evaluation of herbal soap) Journal of Pharmacognosy and Phytochemistry 2024; 13(4): 14-19, E-ISSN: 2278-4136P-ISSN: 2349-8234.
3. Ganamanjusha k, BalakrishnaiahP, Syamala R, Mounik N, Ravi Chandra T, 2019. Formulation and evaluation of herbal bath soap containing methanolic extracts of three ayrvedicvarnya herbs. Asian journal of pharmaceutical and clinical research;12 (11); 213-215.

4. Kumar P. 2014 Jul 8. Greening retail: an Indian experience. International Journal of Retail &Distribution.
5. Biswas K, Chattopadhyay I, Banerjee RK, Bandyopadhyay U. Biological activities and medicinal Properties of neem (Azadirachta indica). Current Science-Bangalore. 2002; 82(11):1336-1345.
6. Rahmani A, Almatroudi A, Alrumaihi et al. Pharmacological and therapeutic potential of Neem (Azad irachta indica). Pharmacognosy Reviews. 2018;12(24):250.
7. Mr. Rushikesh B. Shendage and Mr. Pramod B. Chikkodi (Formulation and Evaluation Herbal Soap) ISSN (Online) 2581-9429, Volume 4, Issue 7, May 2024.
8. Vaishna V V, International Journal of Pharmaceutical Research and Applications Volume 7, Issue 2 Mar-Apr 2022, pp: 466-470 ISSN: 2456-4494.
9. Devi, Seetha A, et al. Formulation and Evaluation of Antimicrobial Herbal Soap. Int. J Pharm. Sci. Rev. Res.2021;71(2):122-125

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