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Formulation and Evaluation of Poly Herbal Soap

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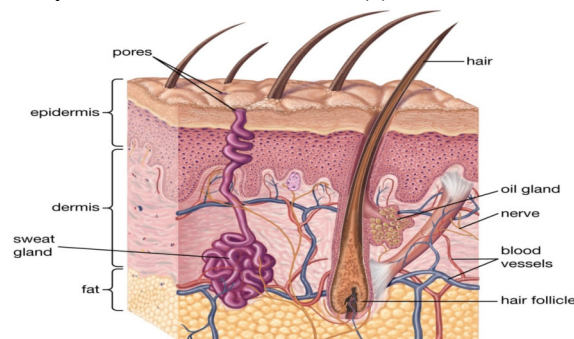
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Abstract: Herbal soap preparation is a medicine or drugs it contain Antibacterial and Antifungal agents which are mainly uses the parts of plants such as leaves, seeds, flowers and fruits to treatment for a injury or disease or to achieve good health. Herbal soaps contain the natural goodness of nature, and this makes them nourishing, healthy and beautiful for skin. It provides comfort, healing and stress relief as well. Soaps having the properties are cleaning the skin to remove the dirt and oil. So, every person wants a clean and healthy skin. Now-a-day's herbal soaps are in the part of herbal cosmetics to treat the skin diseases, infections and also don't have any side effects on human body it contain several active ingredients. Polyherbal soap was formulated by using leaves extract of Thumbai leaves (*Leucas aspera*), Lantana leaves (*lantana camera*), Coconut oil (*Cocos nucifera*), Aloe Vera (*Aloe barbadensis*), Rose water (*Rosa Damascena*). Thumbai leaves and Lantana leaves have been demonstrated to exhibit antioxidant, antimicrobial, fungicidal and insecticidal properties. Aloe extracts shows Anti-aging properties. Rose water show rejuvenating and prove to be a tonic. Saffron having antibacterial, anti-inflammatory and anti-cancer properties. The prepared formulations was evaluated for various parameters like Color, odor, appearance, PH, foam height, foam retention, percentage free alkali, alcohol insoluble matter, moisture content, total fatty matter, antimicrobial testing, antioxidant activity of poly-herbal formulation.

Key words: Antioxidant, Antibacterial, Antimicrobial, Anti fungal, Anti-aging, Poly Herbs

INTRODUCTION:

The skin is the largest organ of the body. It is made up of water, protein, fats and minerals with a total area of about 20 square feet. Skin protects the body from germs and the elements. Skin helps to feel sensation like hot and cold, and also regulates the temperature of the body. The epidermis is the outer-most layer of the skin, provides a water-resistant and creates our skin tone. The dermis is the second layer of the skin, contains tough connective tissue, hair follicles, and sweat glands. The hypodermis is the deeper layer of the skin and known as subcutaneous tissue. It is made up of fat and connective tissue. (1)



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Figure 1: Structure of skin

TYPES OF SKIN (1)

Table 1: Types of Skin

Skin types	Features
Normal	Has even tone, soft, smooth texture, no visible pores or blemishes & no greasy patches or flaky areas.
Dry	Low level of sebum & prone to sensitivity. Has a parched look, feels tight, chapping & cracking are signs of extremely dry, dehydrated skin.
Oily	Shiny, thick & dull colored chronically oily skin has coarse pores, pimples& other embarrassing blemishes. Prone to black heads.
Combination	Some parts of our face are dry or flaky, while the center part of our face, nose, chin & forehead is oily.

INTRODUCTION FOR SOAP:

Soaps are carboxylate salts with very long hydrocarbon chains. Soaps can be made from the base hydrolysis of fat or oil. It is used as a surfactant for washing, bathing and cleaning but also used in textile spinning lubricants. Saponification is the process in making the soap by reaction of triglyceride fats or hydrolysed into free fatty acids then it will combine with alkali to form crude soap.(2)

Hydrolysis reaction:

Fat or oil+ NaOH → Glycerol + sodium salts of fatty acids

MATERIALS AND METHODS

Name
Thumbai leaves
Lantana leaves
Aloe vera
Rose water
Coconut oil
Stearic acid
Soft paraffin
Ethanol
Glycerin
NaOH
Distilled Water
Sodium lauryl sulphate (SLS)
Triethanolamine

RAW MATERIALS: (3, 4)

Thumbai leaves:

Part: Leaves, Botanical name: Leucas aspera, Family: Lamiaceae.



Figure 2: Thumbai leaves [Reference No.14, 22]

Collection: Wash a bunch of thumbai really well, then pat it dry. Spread it on dehydrator trays for about 6-8 hours until its super dry and crispy. Cool the thumbai leaves then work in small batches crumble the leaves into a grinder and pulverize into a fine powder.

Uses: Used as a mosquito repellent, used for healing of wounds since ancient times used to treat various health conditions, including respiratory ailments, digestive disorders. Used to treat psoriasis, scabies, and chronic skin eruptions

Lantana leaves:

Botanical name: *Lantana camera*, Family: Verbenaceae



Figure 3: Lantana leaves

Collection: Wash a bunch of lantana really well, then pat it dry. Spread it on dehydrator trays for about 6-8 hours until its super dry and crispy. Cool the lantana leaves then work in small batches crumble the leaves into a grinder and pulverize into a fine powder.

Uses: Antimicrobial, fungicidal and insecticidal properties used to treat skin itches, chicken pox, and measles, Anti inflammatory activity

Coconut oil: (5)

Botanical name: *Cocos nucifera*, Family: Arecaceae



Figure 4: Coconut oil

Uses: It can be used as cleanser and even has a sunscreen, it also reduces inflammation

Aloe vera:

Part: Leaves, Botanical name: *Aloe Barbadensis*, *Aloe Indica*

Family: *Aloaceae*



Figure 5: Aloe vera

Collection: Once the leaf is picked and washed, it is peeled. The natural aloe vera gel is visible. Using a small spoon, scoop it into a blender. Be careful not to include any pieces of the aloe vera skin. Blend the gel until it is frothy and liquefied, which should only take a few seconds.

Uses: It acts as growth hormones and stimulates new cells. It treats chronic skin problems such as acne, psoriasis, and eczema. It minimizes scarring from acne and lessens the process of healing.

Rose water:

Part: Rose petals, Botanical name: *Rosa damascene*, Family: *Rosaceae*

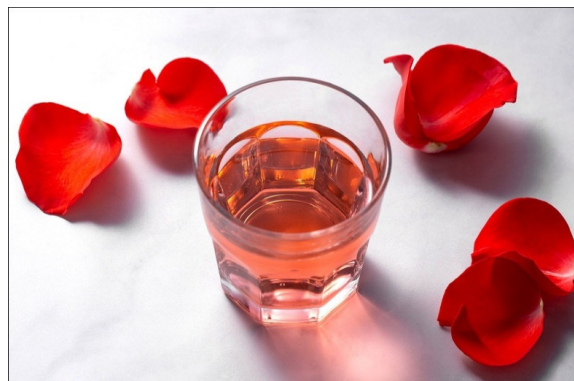


Figure 6: Rose water

Collection: Place the rose petals into a dish. Add just enough distilled water to cover them. Cover the dish and bring the contents to a boil. Simmer for 20-30 minutes. Strain the mixture to remove the petals. Pour the rose water into a glass jar.

Uses: It acts as a facial toner and exfoliates skin. It acts as a flavoring agent.

PROCEDURE: (6)

Preparation of glycerin soap base:

Step 1: For the preparation of soap base, take 50 ml of coconut oil in a 500ml beaker.

Step 2: Put it on a water bath, boil the liquid up to form a strong consistency under a temperature of 40-45°C with stirring.

Step 3: Note the temperature level by using a thermometer, then add 5ml of glycerin with continuous stirring.

Step 4: Take 10ml of NaOH solution into a clean beaker and add 50ml of distilled water again, maintain the temperature level by using a thermometer.

Step 5: Add the solution to the coconut mixture, boiled at 40-45°C up to base consistency.

Step 6: At the end of the process, add 5ml of SLS with continuous stirring, and then add 5ml of Triethanolamine until you get the consistency of soap base.

Step 7: Then the mixture can be transfer into soap mould and keep it the freeze up to 2-3 hours and then remove the soap containing mould from the freezer then allow 5minutes without disturbances then soap base will be formed.

FORMULATION: (7)

Formulation of poly herbal soap:

- To prepare poly herbal soap take the 125gm of prepared soap base in a 500ml of beaker and maintain the temperature at 45°C to heat the soap base on the water bath without stirring.
- Then the soap base will be converts into liquid form and then add the ingredients one by one thumbai leaves powder (4gm), lantana leaves powder (4gm), aloe vera gel (2ml), rose water (5ml).
- Boil the mixture at 45°C on the water bath to obtain proper mixture without stirring, then add stearic acid(2gm), followed by soft paraffin (0.5gm) , ethanol (5ml) with continuous stirring.
- Then the mixture poured into the soap mould and freeze the soap containing mould up to 2-3 hours.
- After 2-3 hours remove the soap mould from the freeze allow to few minutes then soap will be formed.

Composition and importance of ingredients used in poly herbal soap

Table 2: Ingredients used in Poly Herbal soap

INGREDIENTS	QUANTITY	IMPORTANCE
Thumbai leaves	4gm	Antioxidant, Antifungal
lantana leaves	4gm	Anti inflammatory
Rose water	q.s	Flavoring agent, Cleanser
Aloe vera	2 ml	Moisturizer, Antiaging
Soap base	125 gm	Humectant
Stearic acid	2gm	Hardening
Soft paraffin	0.5 gm	Glossy
Ethanol	5 ml	Solvent

EVALUATION OF PHYSICOCHEMICAL PROPERTIES OF THE PREPARED FORMULATION



Figure 7: Poly Herbal soap

ORGANOLEPTIC EVALUATION:

Colour and Appearance was checked by naked eyes against white background, the odour was smelled.

PHYSICOCHEMICAL PROPERTIES: (8, 9, 10)

1) PH:

The PH of the prepared soap was assessed by touching a PH strip to the freshly formulated soap and conjointly by dissolving 1g in 10ml water with the help of digital PH meter.

2) Foam Height:

0.5gm of sample of soap was taken dispersed in 25ml distilled water, and then transferred it into 100ml measuring cylinder; volume was made up to 50ml with water. 25strokes were given and stand till aqueous volume measured up to 50ml and measured the foam height, above the aqueous volume.

3) Foam Retention:

25ml of the 1% soap solution was taken in to a 10ml graduated measuring cylinder. The cylinder was covered with hand and shaken 10times. The volume of foam at 1minute intervals for min was recorded.

4) Determination of percentage free alkali:

About 5gm of sample was taken in a conical flask and added to it into 50ml of neutralized alcohol. It was boiled under reflux on water bath for 30min, cooled and 1ml of phenolphthalein solution was added it was then titrated immediately with 0.1N HCL.

5) Alcohol insoluble matter:

5gm of soap was taken in a conical flask. Added it to 50ml of warm ethanol and shaken vigorously to dissolve the solution was filtered through a tarred filter paper with 20ml warm ethanol and dried it at 105°C for one hour. The weight of dried paper was taken.

$$\%Alcohol\ insoluble\ matter = \frac{weight\ of\ the\ residue}{wt\ of\ sample} \times 100$$

6) Determination of Moisture content:

About 10g of the sample under study were accurately weighed and transferred to a tarred china dish of know weight and kept in a hot air oven at 100-105°C for an hour. Then, the sample was weighed along with the china dish. The weight of the content was noted to calculate the percentage moisture content.

$$Moisture\ content = \left[\frac{final\ weight}{initial\ weight} \right] \times 100$$

7) Total fatty mater [TFM]:

TFM was estimated by reacting soap with acid in the presence of hot water and calculated the fatty acids obtained. 10g of the formulated soap was dissolved in 150ml distilled water and heated. To this 20ml of 15%H2SO4 added while heating until a clean solution was obtained. Fatty acids that are present on the surface of the resting solution are solidified by adding 7g beeswax and heated again. Then, it was allowed to cake. Cake was removed and boiled to dry and weighed to obtain the TFM using the formula.

$$\%TFM = \left[\frac{Weight\ of\ the\ cake - Weight\ of\ the\ wax}{weight\ of\ the\ soap\ in\ gms} \right] \times 100$$

8) Accelerated stability testing:

Accelerated stability testing of prepared poly herbal formulation was at room temperature, studied for one week at 50°C ± 1° C for 3 months. The poly herbal formulation was kept on water bath at room and elevated temperature and observed on 0th, 15th, 20th, 30th, 40th, 50th, 60th, 70th, 80th, and 90th day.

9) Irritancy test:

The soap solution is prepared and applied on the specific body area. This area is than kept under observation for few hours conduct irritancy test. (11-17)

RESULTS:

The physicochemical parameters of the prepared soap were determined, parameters such as clarity, colour, odour and pH were tested. The formulation exhibited good as appearance characteristics as well as pH of soap was found to be 7 with pH strip and 8 with pH meter. Remaining parameter such as Foam height, Foam retention, Percentage free alkali, Alcohol insoluble matter and moisture content were also determined and the results are tabulated in the table no.3

Table 3: Results of evaluation parameters

PARAMETERS	HERBAL SOAP	STANDARD
pH	7	6.5-7.5
Foam height	2.5cm	2.5-3.0cm
Foam Retention	2cm	0.5-2.5cm
Percentage free alkali	0.28%	0.25%

Alcohol insoluble matter	16.2%	18.0%
Moisture content	5.3%	5.40-15.12%
Total fatty matter	71%	70-76%
Accelerated stability test	Soap melts above 45°C	45°C
Irritancy test	Nil	Nil

DISCUSSION:

The use of synthetic soaps has been tremendously increases, and the chemicals involved for formulating these synthetic soaps causes hazards to the skin and health. However, the main aim of present research work was formulation and evaluation of natural poly herbal soap and the main goal to minimize the side effect of the available synthetic soaps in the market. From the results obtained in the present investigation shows the poly herbal formulation with a better option with minimal side effects through detailed evaluation of formulation.

It shows good skin compatibility and causes no irritation or side effects, when tested on volunteers. Based on the estimated total fatty matter of the soap and other evaluation activities was characterized with good Grade were found to be without particles transparent components which are used in formulation are having good compatibility without any significant changes. The formulation showing good physical characteristics. On the basis of evaluation studies the formulation provide excellent foaming property, free from alkali components that poly herbal can be effectively formulated as in the form of soap by using cold process technique which having excellent anti-aging property.

REFERENCES:

1. Tortora G. J, Grabowski S. R., Principles of Anatomy and Physiology 10th edition published by John Wiley and Sons.
2. Aswal A, Kalra M, Rout A. Preparation and evaluation of polyherbal cosmetic cream. Pharm Lett 2013; 5:83-8.
3. Shivendra Raghuvanshi^{1*}, Arun Kumar Gupta². 2019. Formulation of medicinal soap using herbal extract of fruits. International Journal of Pharmacognosy and Clinical Research, 1(1): 22-24.
4. Arora N, Agarwal S, Murthy RSR. Latest technology advances in cosmaceuticals. Int J Pharm Sci Drug Res 2012; 4: 168-182
5. Rattan SI. Hormetins as novel components of cosme ceuticals and aging interventions. Cosmetics 2015; 2:11-20
6. Sindhu, R.K. and Kaur, G. (2018). Formulation Development and Evaluation of Polyherbal Bath Soap. Sch. Bull., 4(12):899-904.
7. Dureja H, Kaushik D, Gupta M, Kumar V, Lather V. Cosmeceuticals: An emerging concept. Ind J Pharmacology 2005; 37:155-9.
8. Faicel, R., Baati, R., Damak, N., Kamoun, A., Chaabouni, M.: J. Am. Oil Chem. Soc., 2008, 85 869-877
9. Shivanand, P., Nilam, M., & Viral, D. (2010). Herbs play an important role in the field of cosmetics. International Journal of PharmTech Research, 2(1), 632-639.
10. Panda, H. (2011). Herbal soaps & detergents handbook. NIIR Project Consultancy Services.
11. Ragnar. D, Pharmacognosy and phytochemistry, 2nd edition reprint, Volume 1st, Nashik, published by career publication; May 2012, 115.
12. G. Sucharita , v. Ganesh, b. Siva krishna, d. Sireesha⁴ , s. Pavan kumar, n. Sai sasidhar , s. Revathi, dr. P. Venkatesh, 2020, formulation and evaluation of poly herbal anti-bacterial soap, , ijesc, , 27165-27173.
13. Khadbadi s. S, deore s. L, bhaviskar b. D, 2011, experimental phytopharmacognosy, a comprehensive guide, 1st edition, may 8.4.
14. Afsar z, khanam s, 2016; formulation and evaluation of poly herbal soap and hand sanitizer, international research journal of pharmacy, 7(8): 54-57.
15. Zeeshan afsar, salma khanam, 2019, formulation and evolution of polyherbal soap and hand sanitizer, international research journal of pharmacy, 7(8), 54-57.
16. AOCS Official Method Da 3-48. Reapproved 2017; Alcohol-Insoluble Matter in Soap and Soap Products, AOCS, 7th ed AOCS, Champaign, USA, 7 th ed. 1997.
17. Joshi, L.S. and Pawar, H.A. (2015). Herbal cosmetics and cosmeceuticals: An overview. Nat Prod Chem Res., 3:170.