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Formulation And Evaluation of Herbal Soap

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ABSTRACT
The majority of commercial soaps contain ingredients that may hurt skin. Natural herbal soaps can be a good substitute. In terms of medicine and commerce, herbal products have gained relevance on a global scale, and their use has grown due to their efficacy and safety. The most common skin infections in people are caused by bacteria, necessitating careful attention for treatment, improved skin preservation, and maintenance of healthy, youthful-looking skin. Some herbal plant extracts have properties that are antimicrobial, antibacterial, anti-inflammatory, and so forth. The current study's goal is to create antibacterial poly herbal bath soap using ingredients like Curcuma longa, citrus limon, olea europaea, crocus sativus L., vitellaria paradoxa, cocos nucifera (L.), Prunus amygdalus dulcis, and ricinus communis, among others. Good results were seen when the manufactured Polyherbal soap was tested for several physicochemical parameters like ph and foam retention time. Plants are easily accessible, have positive skin effects, and provide producers with advantages in terms of cost-effectiveness, accessibility, and side effects that are minimal or nonexistent. The purpose of this research is to create an antibacterial poly herbal bath soap using Curcuma longa, Citrus limon, and Olea europaea because some herbal plant extracts have antibacterial qualities. After the polyherbal formulation was created, it was evaluated for pH, moisture content, saponification, foaming index, foam retention duration, ethanol soluble matter, and antibacterial activity using various soap solution concentrations and comparing them to standards. Additionally, the assessment tests revealed that the herbal soap has good antibacterial outcomes.

Keywords: Poly herbal soap, Evaluation, saponification value, antimicrobial, anti-inflammatory, etc.

1.Introduction

Soaps are fatty acid salts of sodium or potassium that are water soluble. Contrary to how the phrase is typically used, soaps are manufactured by chemically processing fats and oils with a potent alkali. Despite the fact that section 1 of the legislation includes "article for cleansing" in the identification of cosmetics, soap is excluded from the restrictions of the food medicine and cosmetics act. The majority of commercial soaps on the market now contain chemical ingredients with possible depilatory effects on skin pathogens and antibacterial action. Soaps are thought of as a necessary disinfectant in regular hygiene practise. Soaps are sodium- or potassium-soluble in water. Soaps are cleaning agents that can be solid, liquid, semi-solid,

or powdery. They are used to remove dirt, dust, microorganism stains, foul odours, and other impurities from surfaces in order to maintain health, beauty, and odor-free skin. Due to the disadvantages of conventional soaps, people are now gravitating more towards herbal soaps. Unlike commercial products, herbal soaps don't contain artificial flavours, colours, or other additives. the high therapeutic efficacy of plants. The benefits of soaps include smooth skin, a thick lather, protection against skin disorders, the treatment of skin infections, and gentleness on the skin. A key natural supply of yellow colour, spice, neutraceuticals, and herbal medicine is turmeric. The curcuma longa L plant, which is a member of the zingiberaceae family and is often known as turmeric, is a plant.

The fluid obtained from crushed olive fruits is known as olive oil. Olea Europaea, a member of the Oleaceae family, is its botanical name. Squalene and vitamin E are found in olive oil. Vitamin E improves the skin's ability to absorb and retain water, whilst squalene promotes the skin's ability to do so. reduces ageing symptoms: Antioxidants are abundant in olive oil.

Lemon water might have important antibacterial and antioxidant capabilities. Lemon water may keep the skin glowing and free from infections and smells, which can assist to rejuvenate it. To exfoliate dead skin cells from the skin or treat rashes and bruises, lemon juice or slices can be applied. Products containing lemon juice may benefit acne-prone skin that has sunburned damage. Lemon water's anti-oxidant qualities could be useful in cosmetic formulations. It could reduce oxidative stress and boost collagen formation by external application, giving the skin a smoother, firmer appearance.

Classification of Soaps

Based on usage

1. Toilet soap
2. Non toilet soap
3. Glycerin soap
4. Transparent soap

Based on form

1. Handmade soaps
2. Bar soaps
3. Liquid soaps

Based on ingredients

1. Milk Soap
2. Animal Soap
3. Luxury Soap
4. Perfume

Based on method of manufacture

1. Melt and Pour Method
2. Hot Press Method and Cold Press Method
3. Milling Method

2.Drug/Plant Profile

Table 1: Drug/Plant Profile

Sr. No	Drug/Plant Common name	Biological Name	Parts used	Chemical Constituents	Use
1	Tuermeric	curcuma longa	Rhizome / Roots	curcumin, Turmerone, Volatile Oil, Resin etc	luminous skin.increases healing. aids in treating psoriasis.reduces the appearance of acne scars.could cure scabies. other skin disorders might benefit.
2	Lemon Juice	Citrus limon (L.)	Juice	Vitamin C, Citric Acid, Ascorbic Acid, Carbocycyclic Acid. etc.	Blackheads and pimples can be avoided with the aid of lemon juice. Lemons combat wrinkles and other ageing indicators, as we've already discussed. They also make your pores smaller, giving you clearer, smoother, and more youthful-looking skin. Lemon juice has astringent qualities due to its acidic composition.
3	Olive Oil	Olea Europa	Oil	Triacylglycerol‘, fatty acids, mono and di acyl glycerols, and an array of lipids such as hydrocarbons, sterols, aliphatic alcohols, tocopherols, and pigments. A plethora of phenolic and volatile compounds are also present, etc.	Olive oil includes squalene and vitamin E, which moisturises the skin. Vitamin E improves the skin's ability to absorb and retain water, whilst squalene promotes the skin's ability to do so. Olive oil is high in antioxidants, which helps to reduce ageing symptoms.
4	Saffron	Crocus sativus L	Stigma	nthocyanins, flavonoids and terpenoids. etc.	It treats dark spots and aids in the battle against acne, pigmentation, and inflammation. Additionally, it is abundant in vitamins, minerals, and antioxidants that help improve skin tone.

5	Cocoa Butter	Theobroma Cocoa (Cocoa) Seed Butter	Butter	triglycerides that contain palmitic, stearic, and oleic acids, etc.	Phytochemicals, which are organic plant substances, are also abundant in cocoa butter. By preventing damage from the sun's damaging UV rays, these chemicals may increase blood flow to the skin, reduce skin ageing, and improve skin quality. To reduce the appearance of scars, wrinkles, and other skin imperfections, cocoa butter is frequently used.
6	Coconut Oil	Cocos nucifera	Oil	fatty acids, Caprylic acid, Capric acid, Lauric acid, Myristic acid, Palmitic Acid, Stearic Acid, Oleic Acid, Linoleic Acid, etc.	There are many ways that coconut oil can be good for your skin. Your skin may become more hydrated, irritation may be reduced, wounds may heal more quickly, and acne may be treated.
7	Shea Butter	Vitellaria paradoxa	Butter	palmitic, stearic, oleic, linoleic, and arachidic, etc.	It functions as an emollient to moisturise and soften skin. Shea butter also shields skin from environmental harm like pollution since it includes a variety of fatty acids that strengthen the skin's natural barrier, such as lineoleic, oleic, palmitic, and stearic acids.
8	Castor Oil	Ricinus communis L.	Oil	ricinoleic, oleic, stearic, palmitic, linoleic, linolenic acid, etc.	avoiding creases, Antioxidants included in castor oil help your body fight free radicals and reduce acne. Castor oil is antimicrobial, moisturises, soothes sunburn, fights dry lips, and improves the health of the skin overall.
9	Almond Oil	Prunus Amygdalus Dulcis	Oil	leic acid, stearic acid , linoleic acid, palmitoleic acid and palmitic acid etc.	improves skin tone and complexion, treats dry skin, lessens the appearance of under-eye bags and puffiness, and treats acne. aids in repairing solar damage, decreases the appearance of stretch marks and scars.

10	Sodium Hydroxide	lye	-	-	Cleansers, soaps, cosmetics, creams, and lotions are just a few examples of products used in the beauty and skin care industries that contain sodium hydroxide to balance pH. Although sodium hydroxide is exceedingly dangerous in its pure form, cosmetics and skin care products include very little of it, making them safe to use.

3.Material/Procedure Method

Preparation of Infused Olive Oil

Table 2: Preparation of Infused Olive Oil

Ingredients	Quantity
Dried Turmeric	2.5 gm
Olive Oil	37.5gm

Formulation of Herbal Soap

Table 3: Formulation of Herbal Soap

Ingredients	Quantity	Uses
Infused Olive Oil	31.5 gm	Antimicrobial , Anti-inflammatory, Moisturizer , Antioxidant
Frozen Lemon Juice	17.5 gm	Antimicrobial
Saffron	0.20 gm	Antibacterial
Cocoa Butter	12 gm	moisturizer
Shea Butter	5 gm	vitamins and antioxidants
Coconut Oil	17 gm	Moisturizer ,
Castor Oil	2.25 gm	anti-inflammatory
Almond Oil	3.24 gm	Anti-aging
Lye solution	11.31 gm	alkali metal hydroxides

Procedure

The process for making infused olive oil is as follows:

1) Weigh 37.5 g of olive oil accurately, add 2.5 g of dried turmeric, and infuse it over low heat.
2) Give this mixture a 48-hour rest. Triturate this mixture in a mortar and pestle after 48 hours and then re-infuse it over low heat.
3) The following day, filter the mixture (infused olive oil) into a beaker.

The following is the process for making herbal soap:

Put 31.5 g of infused olive oil in a beaker and weigh it precisely. Add 12 g of cocoa butter and 5 g of shea butter to it. Add 17 gm of solid phase coconut oil to it. Add 2.25 g of castor oil to it. Include 3.24 g of almond oil. Add 0.20 g of saffron to it.

1) Use the double boiler method to melt this oil mixture.
2) Give the mixture a through stir and let it rest at room temperature for a while.
3) Weigh 17.5 gm of frozen lemon juice precisely and add 11.31 gm of lye (sodium hydroxide) to it. Stir until the mixture is well dissolved.
4) Filter this lye solution in a beaker with olive oil infusion using the filteration method.
5) Mixture should be stirred and blended until it resembles gel.
6) Pour this mixture into a soap mould and let it sit while creating the herbal soap.

4.Result and Discussion

The creation and assessment of polyherbal soap was completed.The prepared soap's physicochemical characteristics were identified. The formulations showed satisfactory visual characteristics, and their pH values were within the specified range of 8.7. The percentage of free alkali, foam height, foam retention, alcohol-insoluble materials, and thermal stability were among the other parameters measured. The results of the various parameters are tabulated. The total amount of fatty matter in a manufactured soap is a good indicator of its quality. It is not ideal for dry skin if the total fatty matter is reduced. The human body experiences certain adverse effects from chemically produced soap. Comparing herbal soap to chemical soap, the former has less adverse effects. It also functions as soap that fights bacteria and microbes.

Table 4: Physiochemical evaluation of formulated herbal soap

Sr. No.	Physicochemical parameters	Observation
1.	Physical Apperance	Pale Yellow
2.	Odour	Pleaseant smell
3.	Texture	Solid & Smooth
4.	% Free Alaklie	0.27
5.	Foam Height (cm)	2.5 cm
6.	Foam retention	15 min
7.	Alcohol Insoluble Matter	18.0
8.	P^H Determination	8.7
9.	Thermal Stability	Stable at room temperature soap melt at 60 c
10.	Saponification Value	161.27/ml

5.Conclusion

Our team eventually produced the results and formulation needed to create the poly herbal soap that is free of dangerous chemicals during the course of this project. Cold process method was used to make poly herbal soap. The developed formulation exhibits favourable physical properties. Based on its evaluation criteria, the formulation offers outstanding foaming properties and is free of alkali components. The results of the microbiological analysis reveal a formulation with antibacterial properties through antimicrobial activity. Therefore, it can be concluded from the study research that polyherbal can be efficiently made as soap that has excellent antibacterial properties on the skin. When the created polyherbal soap mixture was

put through several tests, it performed well. By utilising these soaps, it was discovered that they do not irritate skin in any way; therefore, it is proven that soap does not irritate skin in any way.

6.Future Scope

The potential herbal soap from this study can be commercialised to improve formulation quality.

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9.References

1. Kuril M, Yadav Y, sahil A.K, Shukla k, Formulation and evaluation of polyherbal soap, Volume 1 issue 1 july 2020 in journal of innovation and invention in pharmaceutical science (JIPPS).[CrossRef].
2. Varsha M. Chaudhari, studies on antimicrobial activity of antiseptic soap and herbal soap against selected human pathogens, on 26 Nov 2016, journal of scientific and innovative research. [CrossRef].
3. Saba Riaz, Adeel ahmad and shahida Hasnain antibacterial activity of soap against daily encountered bacteriae ,african journal of biotechnology vol 8 (8) pp. 1431- 1436 , 20 April 2009. [CrossRef].
4. Sylavapus Akpakupula ,Emmnuel E. Bassey and uchenna Eze ije, antiseptic soap and body cleansing agent and it's effect on normal flora of the human skin, world journal of pharmaceutical and medical research, vol 7 issue 4 , 2021. [CrossRef].
5. A.Fathima, sujith varma, p.Jagannath, m. Akash, General review on herbal cosmetics, International journal of drug formulation and research, volume 2 issue, 5 sep - oct 2011. [CrossRef].
6. Ashlesha ghanwat , sachin wayzod and vanjire divya, formulation and evaluation of herbal soap, current trends in pharmacy and pharmaceutical chemistry, http://ecurrentscience.com/journal/e/CTPPC[CrossRef].
7. G.Sucharita ,V.Ganesh , B.Shiva krishna , D.Sireesha , S.Pavan kumar, N Sai Sasidhar , S.Revathi , Dr.P.Venktesh , Formulation and Evaluation of Polyherbal antibacterial soap , volume 10 issue no.8 August 2020. [CrossRef].
8. Satish kumar Sharma , suruchi singh , antimicrobial herbal soap formulation , 32(36): 82-88 , 2020. [CrossRef].

9. Evaluation of Poly Herbal Anti Bacterial Soap G. Sucharita, V. Ganesh, B. Siva Krishn, D. Sireesha, S. Pavan kumar, N. Sai Sasidhar, S. Revathi, Dr. P. Venkatesh,IJESC Volume 10, issue no 8,2020. [CrossRef].
10. Formulation development and antimicrobial evaluation of polyherbal soap, Plant Archives journal Rakesh K. Sindhu*, Mansi Chitkara, Gagandeep Kaur , Arashmeet Kaur, Sandeep Arora,S. Sandhu. Vol. 19, Supplement 2, 2019 pp. 1342-134. [CrossRef].
11. Development and Evaluation of Antibacterial Polyherbal Bath Soap Seema U. Shinde,; Nikita D. Gidde ; Jamir. A. Tamboli, Journal of Pharmaceutical Sciences and Medicine (IJPSM),Vol.6 Issue. 5, May- 2021, pg. 45-52. [CrossRef].
12. Development and Evaluation of Antibacterial Polyherbal Soap , Pravin V. Gomase*, Mo. Javed Ahamad, Mohd Danish Salahuddin, Deshmukh N. I, Khan G. J.IJPPR June 2019 Vol.:15, Issue:3. [CrossRef].
13. Ruckmani K, Krishnamoorthy R, Samuel S, Linda H, Kumari J. Formulation of herbal bath soap from Vitex negundo leaf extract. J Chem Pharm Sci 2014; 2:974-2115. [CrossRef].
14. Mohanapriya M, Ramaswamy L, Rajendran R. Health And Medicinal Properties Of Lemon (Citrus Limonum). Inter J of Ayur and Herbal Med. 2013 Jan;3(1):1095–1100. Available from: http://interscience.org.uk/v3-i1/8-ijahm.pdf [CrossRef].
15. Klimek-Szczykutowicz M, Szopa A, Ekiert H. Citrus limon (Lemon) Phenomenon-A Review of the Chemistry, Pharmacological Properties, Applications in the Modern Pharmaceutical, Food, and Cosmetics Industries, and Biotechnological Studies. Plants. 2020;9(1):119. Available from: https://www.mdpi.com/2223-7747/9/1/119/htm [CrossRef].
16. Algrech, C. The saffron of Quercy. Rev. Quercy Rech. 2001, 97, 20–27. [CrossRef].
17. Lage, M.; Faiz, C.; Cantrell, C.L. Developmental project for introducing saffron (Crocus sativus L) as an alternative crop in other Moroccan regions. In Proceedings of the 2nd International Symposium on Saffron Biology and Technology, Masshad, Iran, 28–30 October 2006; pp. 49–52. [CrossRef].
18. Ameh, A.O., Muhammad, J.A. and Audu, H.G. (2013). "Synthesis and characterization of antiseptic soap from neem oil and shea butter oil", African Journal of Biotechnology, Vol. 12 No. 29, pp. 4656–4662. [CrossRef].
19. Garba, I.D., Sanni, S.A. and Adebayo, C.O. (2015), "Analyzing the Structure and Performance of Shea Butter Market in Bosso and Borgu Local Government Areas of Niger State, Nigeria", International Journal of U- and E- Service, Science and Technology, Vol. 8 No. 2, pp. 321–336. [CrossRef].
20. International Journal of Scientific Development and Research (IJSDR) www.ijsdr.org 301,Formulation and Evaluation of Polyvalent Herbal Cream, Rimi Mondal, Dr. Arvind Negi, Dr. Manish Mishra,February 2021 IJSDR Volume 6 Issue 2 IJSDR2102043. [CrossRef].