



**INTERNATIONAL JOURNAL OF
PHARMACEUTICAL SCIENCES**
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: <https://www.ijpsjournal.com>



Research Article

Formulation And Evaluation of Multipurpose Medicated Poly Herbal Soap

Vaishnavi Awachat*, Afreen Naz L. Sheikh, Pooja Basule, Rahela Anjum

Central India collage of Pharmacy Lonara, DBATU University Nagpur-441111.

ARTICLE INFO

Published: 17 Feb. 2025

Keywords:

Ayurveda, Poly herbal soap,
Anti-aging, Rasna.

DOI:

10.5281/zenodo.14883361

ABSTRACT

Background: The demand for achieving and maintaining healthy skin is increasing. This trend leads to the creation of antioxidant soaps that contain complex synthetic chemicals, the safety of which for skin and overall human health remains uncertain. This study focuses on the formulation and assessment of poly herbal soaps. The herbal soaps were created using rasna, neem, tulsi, and sandalwood, and were evaluated for several characteristics, such as color, fragrance, pH level, foam retention (Fr), and foam height (Fh). The poly herbal soap F4 demonstrated the highest stability in foam, retaining it for more than 4 minutes and 55 seconds when a small quantity of soap was mixed with distilled water. Findings from the formulated soaps indicate that those containing just one ingredient display less significant effectiveness compared to those combining two or more. The outcomes of this research suggest a promising alternative for the cosmetic industry in the production of poly herbal soaps..


INTRODUCTION

Ayurveda is derived from the Sanskrit words "Ayur" (life) and "Veda" (knowledge). Ayurveda is believed to have originated from Brahma (the creator god).(1) It was passed on to his disciple (Daksha Prajapati) who in turn conveyed this treatise to Ashvini Kumara (the God of Health). Who brought the Ayurvedic song of Indra (God of Thunder) to the world. Ayurveda was brought to us by three great sages: Dhanwantri, Bharadwaja and Kashyapa. Indra who acquired this

knowledge. Bharadwaja taught it to Atreya Punarvasana and passed it on to his disciple Agnivesha along with a treatise on it which was collected in a book called Charaka Samitha. (2) Ayurveda has a wide and rich tradition that dates back about 3000 years. Ayurveda primarily focuses on herbal remedies, diet and different forms of exercise to boost the body's immunity.(1) Herbal cosmetics is a category of beauty and skin care products that harness the power of natural plant-based ingredients, including a wide variety

*Corresponding Author: Vaishnavi Awachat

Address: Central India collage of Pharmacy Lonara, DBATU University Nagpur-441111.

Email : vaishnaviawachat6@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



of elements such as herbs, fruits, flowers, extracts, etc.(2,3) Herbal cosmetics are characterized by their reliance on the original properties of these organic ingredients, making them a holistic alternative in the field of personal hygiene. The premise behind these products' popularity is rooted in the perception that these formulations offer gentler action on the skin, reduced susceptibility to allergic reactions, and a more environmentally friendly approach than traditional products.(4) From emollients and toners to shampoos and serums, this diverse range of products embodies a marriage of scientific innovation and traditional wisdom to enhance the beauty and health of skin and hair through nature-inspired solutions.(5)

1.2 Soap

1. Soap is a salt derived from fatty acids, utilized in various cleaning and lubricating products. Soaps function as surfactants primarily for washing, bathing, and other household tasks.(6,7)They are effective in eliminating dirt, including dust, microorganisms, and unpleasant odors from the skin.(8) Commercial soaps often contain harmful substances such as mercury, aluminum, barium, bisphenol, plastics, and other chemicals, which can be absorbed by the body through internal organs due to vaporization of these substances and skin contact, leading to adverse health effects.(9)

1.3 Herbal Soap

Herbal soap preparations are medicinal products containing antibacterial, anti-aging, antioxidant and antiseptic properties that use mainly plant parts such as seeds, rhizomes, nuts and pulp for the treatment of injuries and diseases or to promote health.[10] Herbal soaps contain less artificial coloring, fragrance, fluoride, etc. compared to the contents of commercial soaps.[11] Herbs are natural products that are mainly used to treat almost all skin diseases and problems due to their medicinal properties, cost-effectiveness,

availability and compatibility.[4] *Pluchea lanceolata* is an ancient medicinal plant. having properties like , anti-ageing, anti-oxidant , Antiinflammatory, antimicrobial activity. The leaves of the plant are a source of herbal extract, which used in soap. The anti-aging properties of Rasna nourish the skin and tissue layers and reduce inflammation.[12,13] *Azadirachta indica* is one of the best trees in India, known for its medicinal properties. The leaves are the source of neem extract. It is used to treat most of the common problems people face.[14] *Ocimum Sanctum* has been known and used for centuries for its health, beauty, medicinal and skin care properties. Today, Tulsi is most commonly used in the beauty field. Tulsi contains many potentially active compounds.[15] *Santalum album* use many skin problems, such as wrinkles, acne, and dark spots. Sandalwood It contains many pharmacological active ingredients that help solve skin problems. Recent research has focused increasing interest in oxidative stress in biology and medicine in light of its involvement in many diseases, including cancer, aging, and atherosclerosis. Sandalwood has been used for hundreds of years to treat all types of skin diseases, especially Bacterial infection. Sandalwood can reduce the appearance of acne, itching, burn Sensation, rash and sunburn. [16] During the Covid-19, the pandemic can be frequent and an increase in the use of synthetic products for washing can cause cellular damage. The use of synthetic ingredients in soaps causes serious health problems for humans and ecosystems. Therefore, poly herbal soaps developed from natural sources reduce the impact on the environment and improve public health. [17,18]

2 . Plant Profile

2.1 Rasna: *Pluchea lanceolata* belongs to the *Asteraceae* family. It is a perennial shrub, which is found mainly in Asian countries (India, Iran, Afghanistan, Western Himalayas) and African

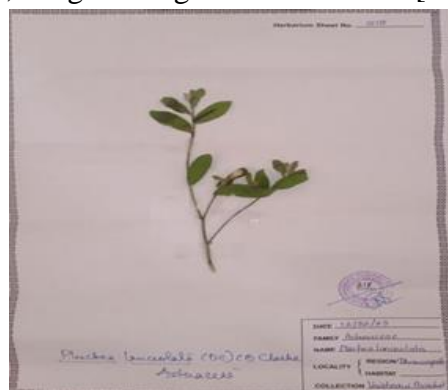


countries (Senegal, Chad, Tanzania). The plant grows to a height of 30-60 cm. The stems and branches are cone-shaped, thin and covered with soft hairs. The leaves are 2-6 cm long, stalkless,

oblong, leathery, finely silky and hairy on both sides, with entire or vaguely toothed edges near the tip. Traditionally used to treat pain, digestion, gout, coughs and general weakness. [12,13]



***Pluchea lanceolata* (Rasna)**



Authentication of *Pluchea lanceolata*

2.2 Tulsi: *Ocimum Sanctum* belongs to the *Lamiaceae* family. His native land is India. It growing from Himalayas to Andaman and Nicobar Island and several Arab and African countries. This plant is erect branch sub-shrub 30-60cm long with simple opposite green and purple leaves that

are strongly scented and hairy stem leaves have petiole and areovate up to 5cm long, usually somewhat toothed. Traditionally, it is used for treatment Cough, digestion, heart disease, asthma, respiratory disease, pain, skin disease, kidney Stone, eye infections, and mental disorders are also antibacterial and antiviral. [15]



***Ocimum sanctum* (Tulsi)**

2.3Neem:

Azadirachta Indica is a multipurpose and valuable tree. It belongs to the family of *Meliaceae* family. Native to the Indian subcontinent (India, Nepal, Pakistan, Bangladesh and Sri Lanka), the neem is an evergreen tree that grows to a height of 15-20 metres. Usually he has a spread and Trunk direct from gray to brown bark. The leaves are connected to each sheet 8-15 leaflets. They are

dark green and have the edge of teeth. Prosper in tropical Sub tropcoation. It can tolerate a wide range of temperatures, but prefers areas with temperatures between 20°C and 30°C. Neem grows well in a variety of soils, but prefers well-drained sandy or loamy soils. You can carry slightly acidic soil to slightly alkaline. Be It was used in traditional medicine for centuries. Various parts of the tree,

including leaves, bark, and seeds, are used to treat a wide range of ailments such as skin disorders fever, malaria, gastrointestinal issues, and dental problems.[14]



Azadirachata Indica (Neem)

2.4 Sandalwood: *Santalum album* is a small evergreen tree that belongs to the *Santalaceae* family. The tree is native to the Indian subcontinent, Southeast Asia and Australia. Its aromatic kernel has been highly valued for centuries by different cultures. It is used in perfumes, incense, cosmetics and traditional medicine. Sandalwood trees usually grow 4-9 metres (13-30 feet) tall, but can sometimes reach 20 metres (65 feet). They can grow up to 100 feet tall. Sandalwood can

be propagated by seeds, but is semi-parasitic, so it requires a host tree for the early stages of growth. It forms a symbiotic relationship with Host tree, from there he draws a part of the nutrients. When it is established, you can grow Independent. Sandalwood has long been used in traditional medical systems, including Ayurveda and traditional Chinese medicine. It is believed to have a variety of health benefits, including antiinflammatory, antibacterial and sedative properties.[16]



Santalum album (sandalwood)

3 MATERIALS AND METHOD

3.1 MATERIALS

Pluchea lanceolata (Rasna) leaves were collected from Manas Ayurveda Nagpur. Tulsi and neem leaves were collected from the plant present in Central India College of Pharmacy

located in Lonara, Nagpur, Maharashtra, India. Rasna Plant Identified and confirmed by Dr. Dongalwar, Department of Botany, Nagpur University, RTMNU, Nagpur, Maharashtra, India. Sandalwood

powder was collected from a local Nagpur market.

3.2. Pharmacognostical Profile of Active Ingredients

Table no 1: Pharmacognostical profile of active ingredients.

S. No	Name	Biological Source	Parts	Chemical Constituents	Use
1	Rasna	<i>Pluchea lanceolata</i> (Asteraceae)	Leaves	Polymannans, anthroquinone, Cglucosides.	Anti-oxidant, Anti_inflammatory, Anti-bacterial, wound helling antiageing.
2	Neem	<i>Azadirachta indica</i> (Meliaceae)	Leaves	Azadirachtin, glycerides, polyphenols, triterpenes	Antibacterial, anti-septic
3	Tulsi	<i>Ocimum santam</i> (Lamiaceae)	Leaves	Protein, lipid, tannins, linolenic acid, amino acids.	Anti-septic
4	Sandalwood	<i>Santalum album</i> (order santalum) <i>Santalaceae</i>	Bark	Curcumin, zingiberine	skin brightning , skin softening

4 Extractions of Materials

4.1 Rasna Extraction:

The Rasna extraction process is carried out by Soxhlet extraction method. The leaves of Rasna and tulsi were collected and dried in a hot air oven. Dried leaves were ground into powder

using a mortar and pestle. Approximately 10g of powder sample was extracted using a Soxhlet apparatus. In ethanol solvent at room temperature. Filter with Whatman Filter Paper. The filtered extract was concentrated in drought. Store in the refrigerator until further use. [18,19]



(Soxhlet extraction of Rasna)

4.2 Tulsi and Neem Extraction:

The extraction process is medicinal. Neem and Tulsi leaves are collected and dried in a hot air oven. Dried leaves are crushed with a mortar and pestle to powder form. 25g of powder is poured into vial containing iodine and 150ml of

hydro-ethanol solvent mixed in a ratio of 30:70. Store in a dark place at room temperature for 7 days. Filter through whatman filter paper. Concentrate the filtered extract to dryness. Store in the refrigerator until ready to use. [18,19]



(Extraction Of Neem and Tulsi)

5 . Formulation

Table no 3 Formula for poly herbal soap

Ingredients	F1	F2	F3	F4	uses
Soap base	80g	80g	80g	80g	Remove dirt from the skin
Rasna bextract	0.50g	0.75g	1.00g	1.50g	Anti-inflammatory, anti_oxidant, anti-bacterial, wound heling, anti-ageing
Neem extract	1.50g	1.00g	1.00g	2.00g	Antibacterial, anti-septic
Tulsi extract	0.5g	0.5g	0.5g	0.5g	Anti septic
Sandalwood powder	1.00g	1.00g	1.00g	1.00g	Skin brightening, Skin softning
Rose oil	5ml	5ml	5ml	5ml	Perfume

5.1 Soap Base:

The glycerin soap base was collected from Vedanum Ayurveda.

5.2 Poly Herbal Soap Formulation Procedure:

Put the necessary amount of soap base in a 500 ml beaker and keep the temperature high enough to heat the soap base on a water bath without stirring in order to make poly herbal soap. After then, the soap base will change into a liquid. Add all of the components to the mixture mentioned above as well. To get the right mixture, bring the mixture to a boil on the water bath without stirring. After that,

the mixture was put into the soap mold and left for six to seven hours.[20]

6 Evaluation Parameters

6.1 Colour and Shape: The colour and shape were verified by the naked eye.

6.2 Odour: The odour of the composition is determined by applying the preparation to the hands and smelling the perfume.

6.3 pH: The pH of the prepared soap was assessed by contacting the freshly prepared soap with pH paper and dissolving 1 gram in 10 ml of water using a digital pH meter.[21]



(F1)



(F2)



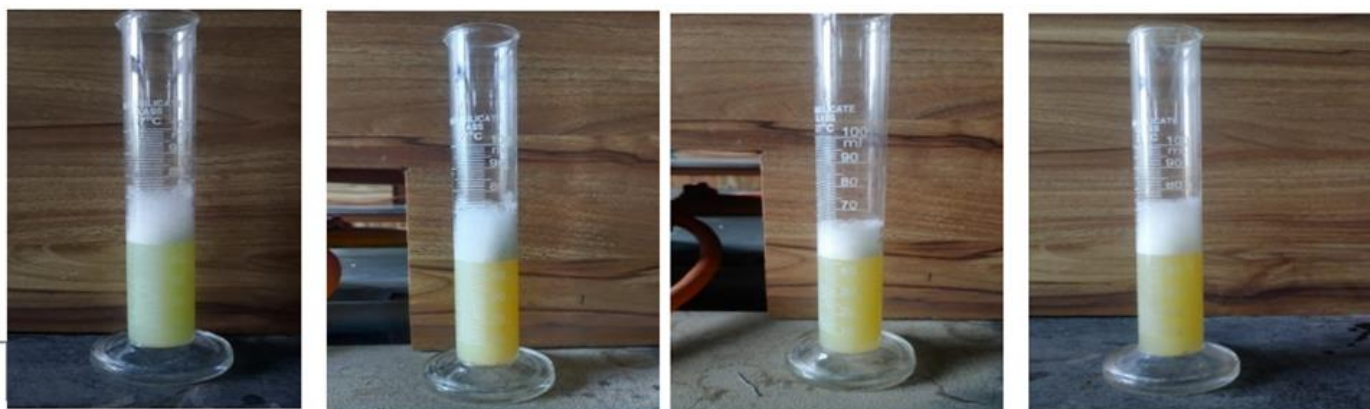
(F3)



(F4)

6.4 Foam Height: 0.5 grams soap samples have distributed 25 ml of distilled water. Next, we moved to 100 ml of the measurement cylinder. The volume was up to 50 ml of water. 25 shots The

amount of solution up to 50 ml was measured, the height of the foam was measured, and the solution was left to stand until the amount of solution above that was measured.[22]



6.5 Foam Retention: 25ml of 1% soapy water was placed in a 100ml graduated cylinder. The cylinder was covered with the hand and shaken 10 times. The amount of foam was recorded at one-minute intervals for four minutes.[23]

6.6 Irritation: It is carried out by applying soap on the skin for 10 minutes. If no irritation then it is considered as non-irritant product.



(F1)

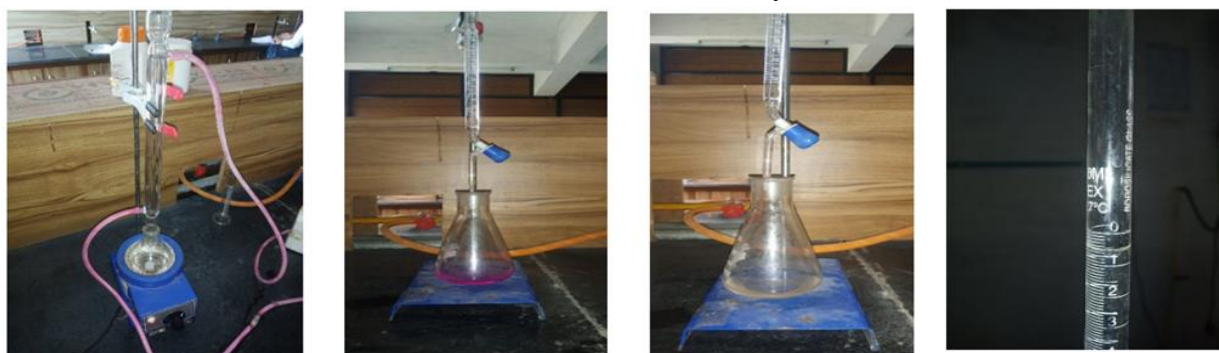
(F2)

(F3)

(F4)

6.7 Determination of Percentage Free Alkali: Approximately 5 g of sample was added to 50 ml of neutralized alcohol, boiled under reflux in a

water bath for 30 min, cooled and added with 1 ml of phenolphthalein solution. It was then immediately titrated with 0.1 NHCl.[2]



(Before standardization)

(After standardization)

(Final reading)

(Reflux)

6.8 Total Fatty Matter (TFM): Take 5g of soap sample and added to 100ml of distilled water until the soap was dissolved. Add methyl orange and 50ml of sulphuric acid (50%), Once the phase split up then transfer the solution after cooling into the separating funnel. Next, add the oil ether to the separation funnel now, separate the water layer and the fat layer, and remove water. Clean the layer and oil ether, separate the layer, and wash the final wash with water. Put 3-4 g of sodium sulfate on a filter paper and filter the fat layer. Then weigh the empty beaker, transfer the fat layer to the beaker, and heat the fat layer until the petroleum ether evaporates. Add 2-3 ml of acetone and leave

it in a hot air oven at 90°C to 100°C for up to 1 hour. after that cool it in desiccator and weigh the beaker.[24]

Formula for calculating TFM



$$\% \text{ TFM} = \frac{\text{Wt of beaker with cake} - \text{Wt of empty beaker}}{\text{Wt of sample}} \times 100$$



6.9 alcohol Insoluble Substance: Place 5 g of sample in a conical flask, add 50 ml of warm ethanol and shake vigorously until the sample is completely dissolved. The solution was filtered through a tared filter paper along with 20 ml warm ethanol and dried it at 105°C for 1 h. The weight of dried paper was noted [25]



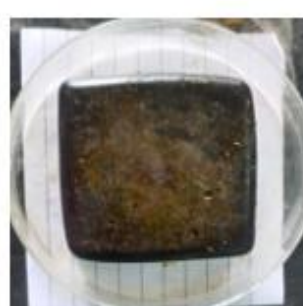
7. Prepared Formulations



Formulation 1



Formulation 2



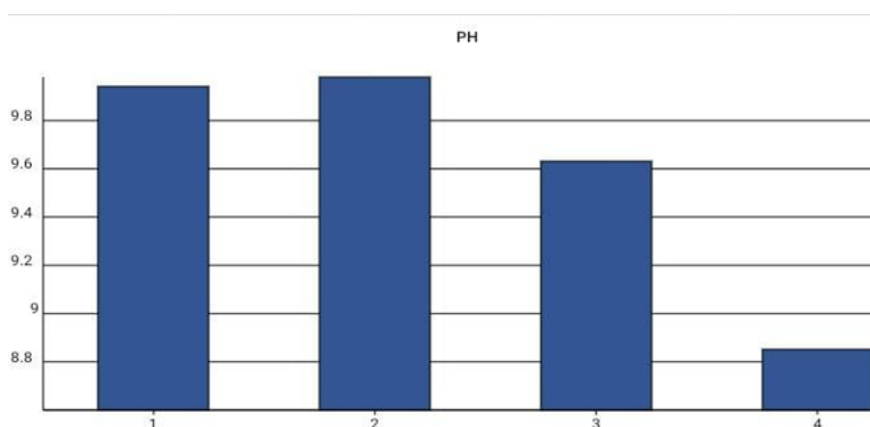
Formulation 3



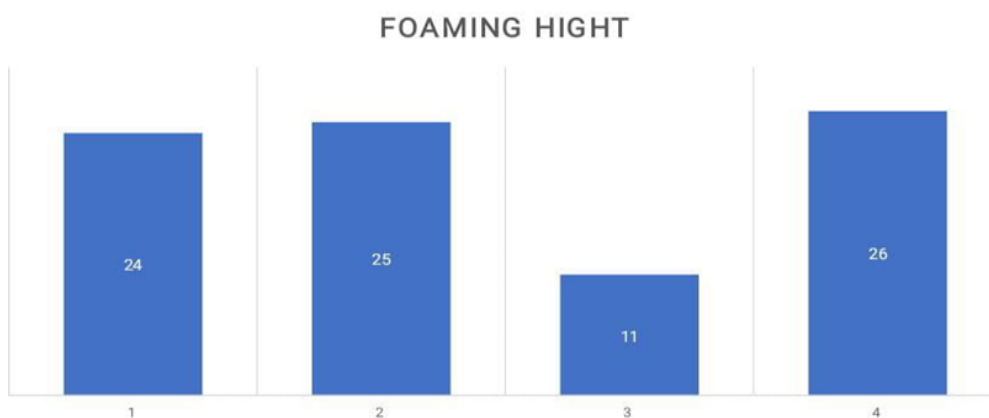
Formulation 4

RESULT AND DISCUSSION

Sr No	Physicalparameters	F1	F2	F3	F4
1	Colour	Dark green	Dark green	Dark green	Dark green
2	Odour	Aromatic	Aromatic	Aromatic	Aromatic
3	Shape	Heart	circle	square	Oval
4	Ph	9.94	9.98	9.63	8.85
5	Foam retention	5min20sec	5min00sec	4min50sec	4min55sec
6	Foam height	24	25	11	26
7	Foam irritation	Non irritant	Non irritant	Non irritant	Non irritant



(Bar graph of potential of hydrogen present in each formulation of soap)



(Bar graph of foaming index of each formulation)

Sr No	Chemical Parameters	Result
1	% Free alkali	0.7
2	Alcohol insoluble matter	21.928
3	Total fatty matter	65.210

9.1 Collection Of Bacteria: Gram positive (+) bacteria (*S. aureus*) and Gram negative (-) bacteria (*e. coli*) were collected from Vishakha Clinical Microbiology Laboratory, Dharampet Nagpur, Lokmat Bhawan,

9.2 Antimicrobial Activity: The Antibacterial activity of Soap form was evaluated by agar well diffusion method against bacterial strain gram +ve staphylococcus aureus and gram - ve Ecoli, The autoclaved nutrient agar medium was poured into sterile petriplate followed by swabbing of bacterial colony from the inoculum of test microorganism on prepared media plates. It was followed by pouring a test sample (30 ug/ml) into the well of seeded agar plates. All the plates were incubated at

37 degree celsius. After incubation the antibacterial activity of given soap was evaluated by measuring the zone of inhibition In mm. [26,27]



Gram – ve (E- coli)



Gram +ve (S - aureus)

10. Observation

Sr. No	Zone Of Inhibition (Mm) E. Coli	Zone Of Inhibiton (Mm) S. Aureus
F1	20 mm	27 mm
F2	15 mm	20 mm
F3	17 mm	22 mm
F4	20 mm	35 mm

The table above describes the color, odor, form, pH, irritation, lather height, and lather retention of

poly-herbal soap. The color of all four formulas was dark green. The smell of the four formulas was aromatic. The shape of the four formulas was different. According to the evaluation tests, F4 formulation is perhaps the most standard formulation compared to other formulations because the pH of F4 formulation is 8.85, which is probably close to the pH of skin and there is no irritation apart from foam retention and the foaming ability of F4 is perhaps much better than other formulations.



(Ideal formulation)

11.CONCLUSION

The prepared polyherbal soap was formulated using cold process technique with antioxidant and Anti_bacterial properties. Further clinical studies of this formula may increase the use of polyherbal soaps. The most important thing about polyherbal

soap is that it is chemical free and more remarkable than synthetic soaps. Thus, this study showed that the prepared polyherbal soap has antioxidant and antibacterial properties and can be used as a cosmetic product.

REFERENCES

1. WWW.wikipedia.com
2. Charak samhita volume number 1 shloka number 1-31 page no 1 by Maharshi agnivesh
3. .Nadkarni KM. Indian plants and drugs with their medicinal properties and uses. Norton and Co. Madras: 1910. p. 120.
4. Pauzi, N.A.M.; Cheema, M.S.; Ismail, A.; Ghazali, A.R.; Abdullah, R. Safety assessment of natural products in Malaysia: Current practices, challenges, and new strategies. *Rev. Environ. Health* 2021, 37, 169–179.
5. Kunda B. Patkar, 22, Shireesh Coap. H. Society, 187, Veer Sawarkar Marg, Mahim, Mumbai-400 016, India; Silver Sand I. Apt. # 316, P.O.Box 9168, Dubai, U.A.E.
6. Friedman M., Wolf R. Chemistry of soaps and detergents: Various types of commercial products and their ingredients. *Clin. Dermatol.* 1996;14:7–13. doi: 10.1016/0738-081X(95)00102-L.
7. Burke M. In: Bailey's Industrial Oil and Fat Products. 6th ed. Fereidoon S., editor. Wiley-Interscience; New York, NY, USA: 2005.
8. Zeynab Khosrowpour, skin biophysical assessment of four types of soap by forearm in use test 2022 Jul;21(7):3127-3132. doi: 10.1111/jocd.14589. Epub 2021 Nov 6.
9. Juan P Castanedo-Cázares study of cytotoxic and irritant effects of skin cleansing soap 2020;156(5):418-423. doi: 10.24875/GMM.M20000430. PMID: 33372931
10. Samiksha V. Amrutkar, A Review on Herbal Soap. *Research Journal of Topical and Cosmetic Sciences.* 2022; 13(1):49-4. doi: 10.52711/2321-5844.2022.00008
11. Gana manjusha k. Formulation and evaluation of herbal bath soap containing methanolic extracts of three Ayurvedic varnya herbs: *Asian journal of pharmaceutical and clinical research* volume 12, issue 11,2019
12. Charak samhita volume no 1 chapter no 4 Sholkaha no 50 page no 60 by Mahrshi agnivesh.
13. Prem Shankar panday A review article of pluchea lanceolate *Int j. pharm sci. Rev, Res,* 52 (1), September –October 2018 article no 24, pages 133-141.
14. Grover A , Bhandari BS, Rai N (2011) antimicrobial plant *Azadirachata indica* A juss, *Allium cepa* *aloevera* L *Int J pharm Tech Res* 3:1059-1065
15. Priyabrata Pattanayak, pritishova behera sangram k. panda, *ocimum santam* A reservoir plant for therapeutic applications An overview. *Pharmacognosy Review,* 2010,4,7,9, 5-105
16. Anshika garg Herbs in cosmetic : an overview volume no 14 (1) 2023 DOI-10.52711/2321-5844.2023.00007.
17. Noureddine chaachouay COVID-19, prevention and treatment with herbal medicine in the herbal markets of Salé Prefecture, North-Western Morocco *PMCID: PMC7836426 PMID: 33520016*
18. O.R.Alara Ethanolic extraction of flavonoids, phenolic and antioxidants from *vernonia amygdalin* leaf using two level factorial design, *Journal of king saud university-science* volume 32(1) Jan-2020 page no 7-16
19. Ramesh kumar sainsi , Cartenoid extraction methods : A review of recent development , *Elesvier Food chemistry* volume 240, 1 February 2018 pages 90-103.
20. Devipriya nisha p, Nivetha L, Formulation, development and characterization of herbal soap using *borsus fiabelifer* and *curcuma zedoaria* *Int. J. pharm. Sci. Rev. Res.,* 69(2),july-august2021; Article no20, pages: 134-139.
21. L.Gopi; Formulation and evaluation of antifungal herbal soap *IJPPR international journal of pharmacy & pharmaceutical research* an official publication of Human



journals, Research Article may2023 vol,;27
issue 2.

22. Devi, Seetha A, et al. Formulation and Evaluation of Antimicrobial Herbal Soap. *Int. J Pharm. Sci. Rev. Res.* 2021;71(2):122-125
23. Shah, Rutuja R, Rohan R, Vakhariya. Formulation and Evaluation of Antifungal Soap of Garlic Oil. *Asian Journal of Pharmaceutical Research* 2020;10(1):13-16. DOI: 10.47583/ijpsrr.2021.v71i02.019
24. Kumar K. Sudheer, et al. formulate and evaluate the herbal bath soap using extracts of three plants having ethnic and dermatological importance in ayurveda, namely *Azadirachta indica*, *curcuma longa*, *Ocimum tenuiflorum*. *Neuroquantology.* 2022;20(12):1055
25. Ahmed, Latif Hazarika MU, Sarma D. Formulation and evaluation of an ayurvedic bath soap containing extracts of three ayurvedic herbs. *Journal of Medicinal Plants.* 2021;9(2):115-117.
26. Moghadamtousi S. Z, Kadir H. A, Hassandarvish P, Tajik H, Abubakar S, Zandi K, A Review on Antibacterial, Antiviral and Antifungal Activity of Curcumin, *BioMed Research International*, 2014; 18:1-12.
27. Dr. A. seethe devi Formulation & evaluation of antimicrobial soap *Int.J.pharma.sci.rev.res.*,71 (2),Nov-Dec 2021; Article no 19, pages 122-125 IJPSR..

HOW TO CITE: Vaishnavi Awachat*, Afreen Naz L. Sheikh, Pooja Basule, Rahela Anjum, Formulation and Evaluation of Multipurpose Medicated Poly Herbal Soap, *Int. J. of Pharm. Sci.*, 2025, Vol 3, Issue 2, 1432-1443. <https://doi.org/10.5281/zenodo.14883361>

