CODEN [USA]: IAJPBB ISSN : 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
SJIF Impact Factor: 7.187
https://doi.org/10.5281/zenodo.15570256

https://www.iajps.com/volumes/volume12-may-2025/38-issue-05-may-25/

Available online at: http://www.iajps.com Research Article

PREPARATION & EVALUATION OF HERBAL SOAP

Prof. Mr. Shivshankar A. Padghan*[1], Mr. Arnav M. Awhale*[2], Mr. Bharat V. Parihar*[3], Mr. Datta R. Kitale*[4], Mr. Dhananjay A. Sangle*[5], Mr. Dhananjay B. Sathe*[6]

*[1]Assistant Professor, Department Of Pharmacy. PRMSS, Anuradha College Of Pharmacy (0299), Chikhli. Dist. Buldhana. Maharashtra, India.

*[2,3,4,5,6]UG Students, Department Of Pharmacy. PRMSS, Anuradha College Of Pharmacy, Chikhli. Dist. Buldhana. Maharashtra, India.

Abstract:

Herbal soaps are a natural alternative to traditional soaps, often crafted with botanical herbs and plant-based ingredients. They are gaining popularity due to their skin friendly and environmentally conscious nature.

Herbal soaps often lack harsh chemicals and artificial fragrances, making them suitable for sensitive skin and appealing to those seeking eco-friendly options. They may also offer various therapeutic benefits, such as antimicrobial and anti- inflammatory properties.

This study aims to formulate a natural, skin-friendly, and eco-conscious alternative to conventional soaps using herbal ingredients. The herbal soap was prepared using a glycerine base combined with plant-derived components such as neem powder, tulsi, turmeric, aloe vera, beeswax, citric acid, sandalwood oil, and vitamin E. These ingredients were selected for their proven medicinal and dermatological benefits, including antimicrobial, anti-inflammatory, and antioxidant properties.

The study concludes that herbal soap prepared from natural plant extracts offers a safer and potentially more therapeutic alternative to commercially produced soaps that may contain harsh chemicals. The final product supports the integration of traditional medicinal knowledge into modern skincare and serves as a cost-effective solution for individuals with sensitive or problematic skin.

Herbal soaps use plant-based ingredients like herbs, oils, and extracts. They can be gentler on the skin than conventional soaps, especially for sensitive skin.

Studies often focus on formulating herbal soaps with specific ingredients and evaluating their properties, such as pH, foaming, and skin compatibility.

The growing demand for natural and eco-friendly personal care products has led to increased interest in herbal formulations.

Keywords: Soap base, Neem Leaves, Turmeric, Aloe vera, Vitamin E, Sandalwood oil, Tulsi leaves, citric acid, bees wax.

Corresponding author:

Shivshankar A. Padghan,

Assistant Professor,

Department Of Pharmacy. PRMSS,

Anuradha College Of Pharmacy (0299), Chikhli. Dist. Buldhana.

Maharashtra, India.

QR code

Please cite this article in press Shivshankar A. Padghan et al., Preparation & Evaluation Of Herbal Soap., Indo Am. J. P. Sci, 2025; 12(05).

INTRODUCTION:

The drawbacks of commercial soaps now people led more inclined towards herbal formulation. Herbal soaps do not contain artificial color flavors etc., As compared to the contents of commercial product.Herbs are the natural products found in treatment of almost all diseases and skin problems owing to their high medicinal value.

Soaps are water soluble sodium or potassium salts of fatty acids. Soaps are made from fats and oils by treating them chemically with a strong alkali, soap is different the way in which people commonly used the word. Soap is exempt from the provisions of the food drug and cosmetics act because even though section1 of the act includes " article for cleansing" in the definition of cosmetics.

Neem (*azadirachta indica*) is the most common tree found in India and other country of world. The Sanskrit name 'Nimba' comes from the term *"Nimbati Swasthyamdadti*" which means to give good health.

Azadirachta indica contains many natural substances it indifferent leaves, seeds, bark has many biological activities against disease causing organisms and it contains about 140 chemical compounds.

The leaves and seeds of neem tree contain Active material known asazadiractrin have the ability kill the disease-causing fungi viruses and parasites.

The herbal medicine Turmeric is the common name used for the curcuma longa plant, and it belongs to the family zingiberaceae.

Aloe vera plant has been known and used for centuries for its health, beauty, medicinal and skin care properties. The name aloe vera derived from the Arabic word "alloeh" means shining bitter substance while "vera" in Latin means true.

Ongoing research continues to enhance the pharmacological understanding of traditional medicinal plants. India, known for its indigenous systems of medicine like Ayurveda and Siddha, has a long-standing tradition of using herbs for healing.

The World Health Organization reports that around 80% of people in developing nations depend on traditional medicine for their primary healthcare.

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) Flavored Soap 3) Animal Soap 4) Luxury Soap Perfume

Based on method of manufacture:-

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

Advantages:-

1) They do not provide allergic reactions and do not have negative side effects.
2) They are easily incorporated with skin and hair with small quantity.
3) They are very effective compared to synthetic soap.
4) Extract of plant decreases the bulk property of cosmetics and gives appropriate pharmacological effect.
5) Easily available and found in large variety and Quantity, Easy to manufacture & Chief in cost.

Disadvantages:-

1) Soap is not suitable in hard water.
2) They have weakly cleaning property than detergents.

HUMAN SKIN :

Skin, as the body's largest and most multifunctional organ, acts as a primary barrier and supports overall health. It consists of three primary layers, each with specialized roles:

Epidermis: The outermost layer provides a protective, waterproof barrier, shielding the body from pathogens, chemicals, and UV light. This layer contains melanocytes, which produce melanin, contributing to skin color and offering UV protection. Constantly renewing, the epidermis replaces old cells with new ones approximately every 28 days.

Dermis: Situated beneath the epidermis, this layer contains a dense meshwork of collagen and elastin, granting skin its strength and flexibility. The dermis houses blood vessels, hair follicles, sweat and oil glands, and nerve endings, playing a role in temperature regulation, waste removal, and sensory perception. This layer also supports skin repair and healing.

Hypodermis (Subcutaneous Layer): The innermost layer, primarily made of fat cells and connective tissue, provides insulation, energy storage, and shock absorption. It secures the skin to underlying muscles and bones, giving it flexibility and allowing movement.

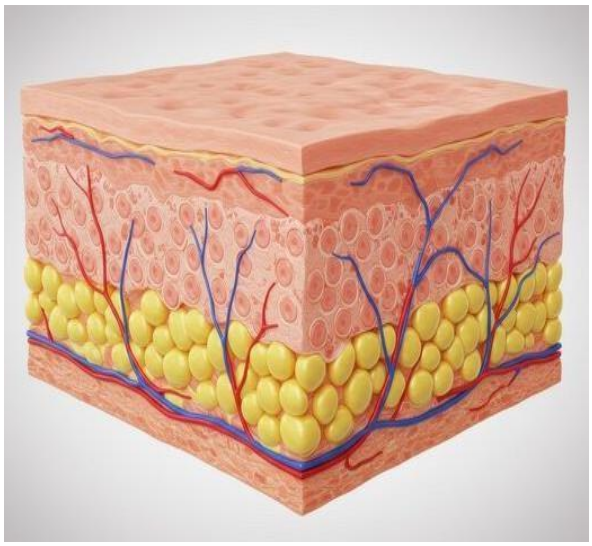


Fig.Hypodermis

Fig.Epidermis

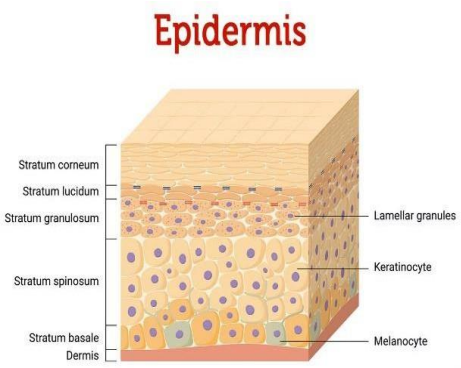
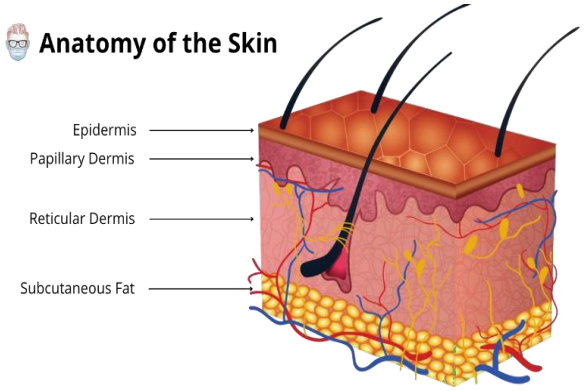


Fig.Dermis



HERBAL INGREDIENTS USED IN FORMULATION OF SOAP :

DRUG PROFILE :

NEEM PLANT :

Fig.1 Neem leaves

Neem plant is tropical evergreen trees to Indian subcontinent and easily available. It has been used in Ayurvedic medicine for more than 4000 years due to its medicinal properties. Most of the plant parts such as fruits, leaves, seeds, bark and root contain compounds with proven antiseptic, antiviral, antipyretic, anti-inflammatory, antiulcer, antifungal etc.

SYNONYM :
Margosa, Neem tree, Azadirachta indica, Melia Azadirachta, Arishth, Nimtree.

BIOLOGICAL SOURCE :
Neem consists of almost all parts of the plants which are used as drug. Some **important** morphological parts are the dried tembark, root bark, leaves and fruits of Azadirachta indica also, known as Melia azadirachta.

FAMILY : Meliaceae.
GEOGRAPHICAL SOURCE :
It is found in India, Pakistan, Shri Lanka, Malaya, Indonesia, Japan, tropical region of Australian Africa. In India it is found in Uttar Pradesh, Maharashtra, Tamil Nadu, Rajasthan, MP.

CHEMICAL CONSTITUENT :
1) Nimbin, 6-desacetylnimbinene.
2) Nimbinene, Nimbandiol, nimbolide.

USES:
Almost everyone has some minor skin issues but if you wash your body with neem, it becomes clean and radiant. If you rub your body with neem paste before having a bath, let it dry for some time, and then wash it off with water, it will act as a good antibacterial cleanser. Alternatively, you can soak a few neem leaves in water overnight and bathe with this water in the morning.

TURMERIC:

Fig.2 Turmeric

Turmeric is a plant that has a very lengthy history of medicinal use since almost 4000 years southeast as turmeric is used no longer as an important spice but also used in spiritual ceremonies it is used due to its wonderful yellow color turmeric is likewise called Indian saffron.

SYNONYM :
Curcum longa, Curcuma domestica, Herbaceous plant, Seasoner Saffron, Indian Haladi Curcumae
BIOLOGICAL SOURCE :
Turmeric is the dried rhizome of curcuma longa Linn. Belonging to family zingiberaceae.

GEOGRAPHICAL SOURCE :
They grow in warm, humid climates and thrive only in temperatures above 60°FB (29.8°C). India, shri Lanka, the east Indies, Fiji, and Queensland (Australia) all have climates that are conducive to growing turmeric.
CHEMICAL CONSTITUENTS :
1) Curcuminoids-non-volatile coloring matter.
2) Curcumin, a diferuloylmethane; dimethoxy dicinnarmoyl methane; bidesmethoxycurcumin.
3) Volatile oils
4) Sugars-arabinose, fructose & glucose.
5) Bitter substances,
6) Fixed oil & acid.

USES :
1) Anti-inflammatory agent
2) Stimulant

3) Tonic
4) Aromatic and carminative.

ALOE VERA :

Fig.3 Aloe vera

Aloe vera is a wonder plant with health and benefits so 11ydrox and as to unding that hardly any part of human body remains uninfluenced by its healing touch. It has 11ydr used for medicinal value for several thousand years its applications have been recorded in ancient cultures of India 11ydro 11ydrox Rome and China.

Aloe also contains aloe insides A and B, O-glycosides of aloin in which L-rhamnose is combined with OH of hydroxymethyl group at 11-.C. atom. Barbaloin on hydrolysis yields aloe emodin an throne and glucose. Besides aloe-emodin anthrone, aloe-emodin anthranol and aloe- emodin are also present. Aloe vera contains a resin, which is ester of P. coumaric acid or P. 12ydroxyl cimammic acid esterified with aloe resinotanno.

USES :

1) Aloe and aloin are strong purgative and inhigher doses may act as abortifacient.
2) It uses alone, aloe causes griping and is usually combined with carminatives or Anti spasmodic like belladonna or hyocyamus.
3) Ointment of aloe gel is used in sun burns, thermal burns, radiation burns and skin irritation and prevent ulceration and malignancy.

VITAMIN E :

Fig.4 Vit-E

USES :

1) Vit-E oil can be used on your face as an overnight anti-aging treatment.
2) Vitamin E is highly rich in antioxidants.

CITRIC ACID :

Fig.5 Cirtic Acid

USES :

1) Food additive
2) Preservative
3) Cleaning agent

SANDLE WOOD ESSENTIAL OIL :

Fig.6 Sandal Wood Oil

BIOLOGICAL SOURCE : Santalum album
FAMILY : Santalaceae
MEDICINAL USES :
Sandle wood essential oil is used for removing dark spots and scars & reduced tanning
TULSI :

Fig.7 Tulsi

SYNONYM : Gauri, bahumanjari, pavani, gramya, surasa
BIOLOGICAL SOURCE : Ocimum sanctum *Linn*
GEOGRAPHICAL SOURCE :
Native to the Indian subcontinent and its thought to have originated in north India.

CHEMICAL CONSTITUENTS :
Phytochemicals: Eugenol, Rosmarinic acid, apigenim, myretenal, luteolin carsonic acid.Others other chemicals : Oleanolic acid, Ursolic acid, carvacrol, linalool, andcaryophyllene Trace amounts;Zn, Mn and Na.

USES :
1) Holy basil contains vitamin C and antioxidants such as eugenol, which protects the heart from the harmful effects of free radicals. Eugenol also prove suseful in reducing cholesterol levels in the blood.
2) Vitamin C and A, phytonutrients, in Holy Basil are great antioxidants and protect the skin from almost all the damages caused by free radicals.
3) Tulsi acts a mild diuretic & detoxifying agent which helps in lowering the uric acid levels in the body. Acetic acid present in holy basil helps in the breakdown of the stones.

BEES WAX :

Fig.8 Bees Wax

SYNONYM : Pure beeswax, raw beeswax, or simply beeswax
BIOLOGICAL SOURCE : Beeswax is a natural wax produced by honeybees
GEOGRAPHICAL SOURCE :
Regions with suitable climates & large floral resources for honeybee food sources.

CHEMICAL CONSTITUENTS :
It is composed primarily of esters of fatty acids and alcohols, hydrocarbons and free fatty acids.
Main constituents - esters, particularly myricyl palmitate and also includes cerotic and melissic acids.
Minor constituents - free fatty acids, free fatty alcohols and alkanes.

USES :
1) Moisturizing, protective, and antibacterial properties.
2) Used in skincare, cosmetics, food preservation.

TABLE NO.1 FORMULATION TABLE :

Sr. No	Ingredients	Quantity
1	Neem Powder	2 g
2	Tulsi Powder	2 g
3	Turmeric	1 g
4	Aloe	5 ml
5	Citric Acid	0.5 g
6	Glycerine Soap Base	88 g
7	Sandal Wood Oil	2 – 3 drops
8	Vitamin E	2 – 3 drops
9	Bees Wax	3 g

METHOD OF PREPARATION :

1) Soap base preparation: Melt 88 g of the glycerine soap base using a double boiler.
2) Addition of herbal extracts: Once melted, mix in 2 g of Neem Powder, 2g of Tulsi Powder, 5ml of aloe vera gel into the soap base, 3g of Bees wax.
3) Incorporating active ingredients: Add 1g of turmeric powder, and the contents of 2-3 drops vitamin E from vitamin E capsules, 0.5g citric acid.
4) Essential oils: Once all ingredients are well-mixed, add 2-3 drops of sandalwood essential oils for fragrance.
5) Pouring into moulds: Pour the liquid soap mixture into silicone molds and allow it to set for 24 hours at room temperature.

Fig. 9 Aloe Juice

Fig. 10 Soap Base

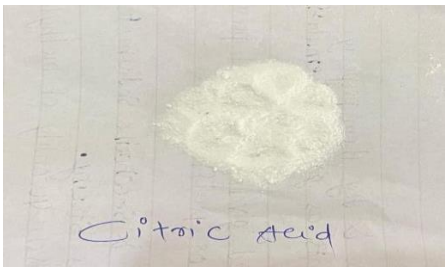


Fig. 11 Citric Acid

Fig. 12 Turmeric

Fig. 13 Neem Powder

Fig. 14 Tulsi

Fig. 15 Vitamin E Capsules

Fig. 16 Sandal Wood Oil

EVALUATION OF HERBAL SOAP :

1) Physical appearance
2) Thermal stability
3) Determination of PH
4) Microbial growth
5) Foaming stability
6) Consistency
7) Foam retention

1) **Physical appearance**: The prepared formulation of soap was evaluated in terms of clarity. The prepared soap shows greenish dark colour.
2) **Thermal stability:** Thermal stability of the formulation was determined by the humidity chamber controlled at 65-75/ RH at room temperature. This soap is mainly stable at room temperature and if increases it is mainly unstable.
3) **Determination of PH:** 5.5 to 6.5 g of the soap was weighted accurately in a 100ml beaker 40ml water was added and dispersed the soap in it the pH of solution is determined by PH meter, the pH of soap is 7.4.
4) **Microbial growth:** Using agar plates the plates were placed in to the incubator and are incubator at 37°C for 24 hours and compared with standard. No microbial Growth found.
5) **Foaming ability and foam stability:** Foaming ability was determined by using cylinder shake method brittle 40ml of the formulation soap solution was placed graduate cylinder. It was covered with and hand and shaken 10 times the total volume of the foam content after 1 minutes of shaking recovered foam stability was evaluated. The foam was stable for about 2 to 3 minutes on hands.
6) **Consistency:** The consistency of formulated soap was determined by hand. Take pinch of soap and rubbed it with finger. The consistency was smooth.
7) **Foam retention:** About 1% soap solution was prepared and from this, 25ml was taken in A 100ml measuring cylinder the cylinder was covered with hand and shaken for 10 min the volume of format 1 min intervals for 4 min was recorded. The foam retention was found to be 45ml.

TABLE NO.2 OBSERVATION TABLE :

Evaluation Parameters	Observation
Physical Appearance	Greenish Dark
Thermal Stability	Stable at Room Temperature Soap Melt at 55°C
Determination of PH	7.4
Stability Studies	No Colour Change
Microbial Growth	No Microbial Growth
Foaming Ability	Stable Soap
Foam Retention	45 ml

Fig.17 Final Soap

RESULT :

The herbal soap was successfully prepared using natural ingredients and evaluated through various parameters. It exhibited good physical properties, including smooth consistency, stable foam, and a suitable pH of 7.4. The formulation showed no microbial growth and remained stable at room temperature. Overall, the herbal soap proved to be effective, safe for skin use, and had potential antiseptic and anti-tanning benefits.

SUMMARY AND CONCLUSION:

The project successfully formulated and evaluated a herbal soap using natural ingredients like neem, tulsi, turmeric, aloe vera, and sandalwood oil. The soap showed favorable results in physical appearance, pH balance (7.4), thermal stability, and microbial resistance. It was found to be skin-friendly, eco-safe, and free from synthetic chemicals. This herbal soap offers a cost-effective, natural alternative for skincare, especially for individuals with sensitive or problem-prone skin.

REFERENCES:

1) Kuril M, Yadav Y, Sahil A.K, Shukla K, Formulation and evaluation of polyherbal soap, in journal of innovation and invention in pharmaceutical science. 1July 2020 Volume I (JIPPS).
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.
3) Das, K., Tiwari, R. K. S., & Shrivastava, D. K. (2010). Techniques for evaluation of medicinal plant products as antimicrobial agents: Current methods and future trends. Journal of Medicinal Plants Research, 4(2), 104-111.
4) Sahu,R.K.,Kar,M.,& Routray,R.(2013).Radical scavenging and antibacterial activity of methanol extract of Oryza sativa L. Asian Pacific Journal of Tropical Biomedicine, 3(9), 723- 728.
5) Gupta, S. C., Sung, B., Kim, J. H., Prasad, S., Li, S., & Aggarwal, B. B. (2013). Multi targeting by turmeric, the golden spice: From kitchen to clinic. Molecular Nutrition & Food Research, 57(9), 1510-1528.
6) Lougheed, S. C. (2017). Natural properties of aloe vera in skincare. Journal of Clinical Dermatology & Therapy, 4(2), 11-15.
7) Carson, C. F., & Hammer, K. A. (2006). Antimicrobial activity of the major components of Melaleuca alternifolia (tea tree) oil. Journal of Applied Microbiology, 94(5), 980-987.
8) Haque, M. R., & Dhar, A. K. (2015). Effect of nutmeg seed oil on skin inflammation. Journal of Herbal Medicine, 5(4), 222-230.
9) Wang, R., Li, J., & Ma, Y. (2019). Evaluation of the antioxidant properties of Oryza sativa extracts. Journal of Agricultural and Food Chemistry, 67(45), 12765- 12772.
10) Kaur, G., et al. (2020). Benefits of turmeric in dermatology and skin care. Journal of Dermatological Science, 50(1), 56-63.
11) Packer, L., Weber, S. U., & Rimbach, G. (2001). Molecular aspects of alpha- tocotrienol antioxidant action and cell signaling. Journal of Nutritional Biochemistry, 12(1), 2-10.
12) International Organization for Standardization (ISO). (2006). Cosmetic soap standards. ISO 22716:2006.
13) Gopala Krishnan, S. M., & Sekar, R. (2018). Antibacterial and antifungal efficacy of sandalwood essential oil. International Journal of Essential Oil Therapeutics, 5(2), 109- 115.
14) Parvez, S., et al. (2006). Plant polyphenols as skin-lightening agents. Drug Discovery Today, 11(23–24), 1107-1114. 14. Mistry, K. B., & Shah, A. A. (2019). Evaluation of natural foaming agents in herbal soaps. International Journal of Applied Science, 4(3), 45-52.
15) Pravin V. Gomse, MO. Javed Ahmed, Mohddanish salahuddin, Deshmukh. NI, khan G.J, Development and evaluation of antibacterial polyherbal soap, vol.15, Issue 3, June 2019, 230-239.