

Formulation And Evaluation of Herbal Soap For Acne Using Natural Ingredients

Sapana Laxam Kadve¹, Prof. Ashwani.A. Wakade², Dr. Megha Salve³
^{1, 2, 3} Shivajirao Pawar College Of Pharmacy

Abstract- The herbal soap is prepared using neem leaves, aloe vera, Tulsi, and vitamin C Ayurvedic cosmetics are very helpful and have no side effects. Ayurvedic cosmetics are also called herbal cosmetics. All the herbal ingredients are easily available in the markets of the surrounding areas. In modern times, cosmetics have become a part of skin and body parts care as a lot of pollution, especially UV rays, are harmful to the human body and cause damage to the skin. Neem also has other medicinal properties. Neem is alive and its chemical components have been proven to have anti-inflammatory, hyperglycaemic, anti-ulcer, anti-malarial, anti-fungal, anti-bacterial, anti-mutagenic and anti-cancer properties. Aloe vera is used as a moisturiser, to prevent signs of ageing, to lessen stretch marks, to lessen acne, to help lighten blemishes, and to minimise acne. Aloe vera also provides skin that is smooth and supple. It is also used to treat burns, psoriasis, and even acne. Tulsi has many benefits for people with: Skin, e.g. B. Purifies the skin. To treat acne, brightens the skin tone. Vitamin C and turmeric are also used. Herbal soap

It is a drug or agent that has medicinal properties such as antibacterial and antifungal action on the skin. The herbal medicines used in soap making have many medicinal or cosmetic properties. The plants used in soap making can soften the epidermis of the skin, improve its penetration and get rid of acne. As well as promote healing and healing in a short time. The plant that is used to make soap has the ability to soften skin epidermis, provide greater penetration, eradicate acne, and promote healing and resolution in a short period of time. Cosmetics are a component of taking care of the skin and other body parts because of the dangerous UV rays and other pollutants that are present in today's environment. The chemical components of neem, which also contain anti-inflammatory, anti-hyperglycaemic, anti-ulcer, anti-malarial, anti-fungal, anti-bacterial, antimutagenic, and anticarcinogenic qualities, have been scientifically proven to work. The plant used in soap preparation is able to soft the skin epidermis enhance greater penetration remove acne as well as promote healing and resolution in quickly in time.

Keywords- Herbal Soap, Neem, Tulsi , Vit C., Vit E., Aloe vera, Turmeric, Rose Water, Soap Base, Lavendar Essential Oil

I. INTRODUCTION

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 are exempt from the provisions of food drug and cosmetics act because even though section 201(i) of the act include " article for cleansing" in the definition of cosmetics. Most commercial soaps are available in Market incorporated with chemical agent's having antimicrobial activity with potential depilatory properties on skin pathogen. soaps are regarded as disinfectant required in daily practice hygiene. Soaps are cleaning agent which may solid, liquid, semi-solid, powder they are used to remove dirt, include dust, microorganism stains, bad smell to maintain health, beauty and bad odour from body.[1] This herbal soap effectively reduces the spread of infectious diseases. Medicinal plants have been used in traditional medicine since ancient times. Extracts of various medicinal plants from stems, roots and leaves are used as natural remedies to treat various diseases and infections. Many herbal products have been replaced by synthetic chemicals. Compared to chemical products, herbal medicines have fewer side effects, are more easily available, and are less expensive. The aim of this study was to develop a herbal soap using extracts of Azadirachta indica (Neem), Ocimum tenuiflorum (Tulasi), and Curcuma longa (Turmeric). [2]They have different medicinal and chemical properties that are useful in formulating herbal soaps. The aqueous leaf extracts contain various pharmacological properties such as antibacterial, antifungal, and anti-inflammatory effects. To study the antibacterial effect of the extracts against the major causative bacteria, the extracts with the highest antioxidant and antibacterial activity were added to the bar soap mixture. The finished herbal mixture must be standardized for sale and its physicochemical properties must be tested.[3] Neem is the most efficient because it demonstrates several properties, such as antibacterial and antifungal properties, or the ability to treat numerous skin issues. the neem leaves used to make the soap. Tulsi is also used in the soap preparation.it give many property like deep clean the skin, treat acne, lightens skin tone. Tulsi also used several acute respiratory syndrome. Tulsi also used in diabetic patients the reducing blood glucose levels. The juice of Tulsi leave gives relief in cold fever bronchitis and

cough. Tulsi gives more property it reduces stress, enhance stamina relief information also used as main compound in this herbal soap. Aloe vera is used for the prevent sing of aging , Reduce acne, help lighten plamishes, reduce stretch mark, sunburn and moisturiser. Aloe vera is also give smooth and supply skin. The rose water is used in soap preparation for moisturised skin. This soap is mainly give more property antibacterial, antifungal, lightness skin, acne remove and smooth or moisture skin. [4]

What is soap?

Soap is a sodium and potassium salts of the long chain carboxylic acid. The long hydrocarbon chain of a soap molecule has a carboxylic acid group at one end that forms an ionic bond with a metal ion, typically potassium or sodium. The ionic end is soluble in water, but the hydrocarbon end is non-polar and highly soluble in nonpolar substances.

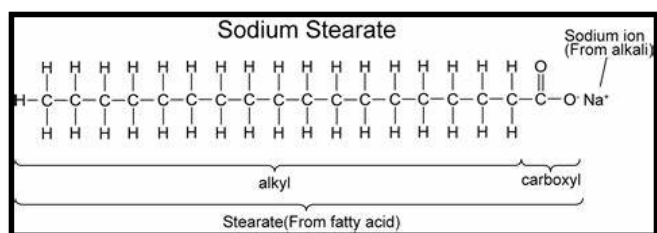


Figure 1: Chemical Structure of soap

Herbal soap

Herbal soap preparation uses plant parts such leaves, roots, seeds, rhizomes, and nuts to treat diseases and promote health. It is a medicine having antibacterial, anti-aging, anti-oxidant, or anti-septic properties. As compared to the content of commercial soap, herbal soap does not contain artificial colours, Flavors, fluorides, etc. herbs are natural items that are typically used in the treatment of almost all diseases and skin conditions. They having high medicinal value, cost-effectiveness, availability, and compatibility. The chemistry of herbal soap includes saponification, the chemical reaction that happens when fats or oils are combined with an alkali, usually potassium hydroxide (KOH) or sodium hydroxide (NaOH).[5]

ADVANTAGES OF HERBAL SOAP:

- Natural components: Plant-based natural components like extracts, essential oils, and herbs are used in their production. These natural ingredients provide comfort and nourishment and are often mild on the skin. without creating skin irritation or dryness to the skin.
- Hypoallergenic: As compared to synthetic soaps, herbal soaps are often less likely to causing allergic reactions.

- Environmentally Friendly: Since herbal soaps frequently biodegrade and don't contain dangerous chemicals, they are usually thought to be more environmentally friendly than synthetic soap.
- Aromatherapy: Essential oils, which are present in many herbal soaps, have the potential to provide aromatherapy benefits. During the bathing process, these essential oils may aid to promote mental clarity, emotional stability, and a sense of well-being.

DISADVANTAGES OF HERBAL SOAP:

- Variable Quality: Herbal soaps are available in a wide range of formulations, and the quality may vary. Some herbal soaps may contain lower quality ingredients or lack the desired efficacy, which can affect their performance.
- Shorter Shelf Life: Herbal soaps may have a shorter shelf life compared to synthetic soaps, as they do not typically contain preservatives. This means that they may spoil or become less effective over time.
- Higher Cost: Herbal soaps may be more expensive compared to synthetic soaps, as they often contain higher quality natural ingredients. This can make them less affordable for some consumers.[6]

II. MATERIAL AND METHOD

Chemical

Rose water, lavender essential oil, and a glycerine soap base.

Extraction and collecting

Neem leaves are harvested from living plants, carefully washed and dried. A similar approach was adopted for Tulsi Leaves. Extraction of Neem leaves involves blending the leaves into a mixture and extracting them using the same techniques as Tulsi leaves. Genuine Aloe Gel Extract. The soap results from this extract are excellent.[7]

Plant Profile

1. NEEM



Biological name : Azadirachta indica.
Family: Meliaceae

Part used : Leaf.

Colour: Green.

Chemical Constituents : flavonoids, Alkaloids, Azadirone, nimbin, nimbidin, terpenoid, steroids.

Uses: Treat dry skin and wrinkles, Heal wounds, treat acne, promote the formation of collagen, and reduce scars. neem leaves are used to treat head lice, skin diseases, wounds or skin ulcers.

2. Tulsi



Biological name : *Ocimum tenuiflorum*.

Family : Lamiaceae

Part used : leaves.

Colour: green

Chemical constituents : eugenol germacroceterpens.

Uses : Blackheads, acne, pimples that causes early aging, and other insect bites can all be treated with tulsi. In addition, tulsi is used to cure respiratory problems, fight acne, remove kidney stones, prevent aging, and relieve headaches.

3. Aloe vera



Biological name : Aloe Vera.

Family: Liliaceae

Part used : leaf latex

Colour: green

Chemical constituents : - vitamin, enzyme, minerals, sugars, lignin, saponin, salicylic acid and amino acid.

Uses : Treat sunburns, act as a moisturizer, treat acne, promote wound healing, function as an antibacterial, and manage radiation-damaged skin and herpes sores.

4. Turmeric



Biological name: *Curcuma longa*

Family:-Zingiberaceae

Part used: root

Colour: Yellow

Chemical constituents : curcumin, demethoxycurcumin, and bisdemethoxycurcumin

Uses:- It treats dull skin and may help heal acne. It aids with eczema treatment. It reduces hyperpigmentation. Protects Against Environmental Damage. Prevents Premature Aging

5. Lavendar essential oil.

6. rose water

7. Soap wax / glycerine

Formulation of herbal soap

Sr.No	Ingredient	Quality	Role
1	Neem	5 gm	Antibacterial
2	Tulsi	3 gm	Antifungal
3	Aloe vera gel	5 ml	Anti-aging
4	Turmeric	1 gm	Antibacterial
5	Lavendar essential oil	1 ml	antiseptic
6	Rose water	5 ml	perfume
7	Glycerines	30 gm	Soap base

Procedure of herbal Soap Formulation:

1. Add 5 gm of neem powder to a beaker, then to this beaker add 2 gm of tulshi, 5ml aloe vera gel, 5 ml of rosewater, and 1gm of turmeric, and stir for two to three minutes at temperature at below 60 °C.
2. Giving a span on induction and adding some rose water, then taking a tiny amount of water and adding 30 g of glycerine soap base in the container, causes the glycerine soap base to melt using the two fold heat technique.
3. Mix when base has melted. All of the soap's ingredients are melted, combined, and heated to a final temperature before the addition of lavender essential oil to the preparation solution is given in a little, soap-shaped container.
4. The final soap has been prepared and is pouring.
 - Neem – antibacterial properties treat acne.
 - Aloe vera – moisturizer or sunburn.
 - Turmeric – antimicrobial agents lightning anti wrinkle wound Heald.
 - Tulsi – antimicrobial agents.
 - Rose water – cooling agent emollient.[8]

Evaluation for herbal soap

Physical properties

(1) **colour** – dark green.

(2) **Thermal stability**

The thermal stability of the formulation was measured at room temperature in a constant humidity chamber with humidity of 60-70%. This Soap is almost stable at room temperature, but becomes almost unstable as the temperature increases.

(3) **Measurement of pH value**

5-6 g of soap was accurately weighed into a 100 ml beaker and 40 ml of water was added to disperse the soap. The pH value of the solution was measured using a pH meter. The pH value of the soap is 9.5.

(4) **Stability Study**

The stability study was carried out according to ICH guidelines. The soap was bottled and stored in humidity chambers at 30:2, 60:5, and 70:5/RH for 2 months. At the end of the study, the physical properties and viscosity of the samples were analyzed. High moisture levels can affect the soap.

(5) **Microbial Growth Agar**

plates were used and the plates were incubated at 37°C for 24 hours before being compared with the standard.[9]

(6) **Foaming and Foam Stability**

The foaming properties were evaluated by the cylinder shaking method. Each cylinder was filled with 40 ml of soap formulation solution. After shaking for 1 minute, the entire foam content was collected. The foam stability was evaluated by the amount of foam produced after 1 and 4 minutes, which was 80-93%. It was covered with one hand and shaken 10 times.

(7) Determination of Moisture Content

A 10-gram sample of soap was right weighed and recorded as the "wet weight of the sample." This wet sample was dried to a constant weight at a temperature not to exceed 115 °C using the proper drying apparatus. The material was weighed again after cooling to determine its "dry weight." The moisture content of the sample was determined using the following formula.

$$\% \text{Weight} = A-B/B \times 100$$

Where,

% Weight = % of moisture in sample,

A = weight of wet sample ,

B = weight of dry sample.[10]

III. RESULT AND DISCUSSION

Antibacterial herbal soap was prepared and evaluated. The physicochemical parameters of the produced soap were measured and summarized. The formulation showed good appearance and pH was in the range of 5.8 which corresponds to the desired pH. Other parameters like foam height percentage, foam resistance, water content etc. were also measured. The results of various parameters are listed in tabular form. The pH of the herbal formulation was 7-8 which is optimal for use on the skin. Higher or lower pH value of the soap indicates harmful effects on the skin. Foam Index .The foam retention time of a particular herbal formulation was found to be 16.5 as against 3 minutes. This means that the soap has good and stable foaming and good moisture content. The herbal soap was measured to be 3.5%. The higher the moisture content, the more the sample deteriorates. The antibacterial activity was investigated. The zone of inhibition of the formulation against Staphylococcus aureus and Bacillus subtilis was 18mm and 24mm respectively. It showed a significant zone of inhibition and is effective against bacteria on the skin, which may cause symptoms such as: It can also be used to treat bacterial infections.

IV. SUMMARY AND CONCLUSION

In the present work, antibacterial herbal soap with appropriate size, shape, thickness and with good foaming ability were prepared. Neem and tulsi has been Extensively used in Ayurveda, Unani and Homoeopathic medicine to treat

bacterial infections. The herbal soap was prepared by using melt & pour process technique. The prepared formulation showing good physical characteristic and Formulation provide excellent foaming property, non-irritant, acceptable colour and odour with antibacterial properties. Extraction of components of neem plant, tulsi, turmeric and aloe vera were studied. The prepared formulation gave good results in various tests. It does not cause any skin inflammation as demonstrated by the use of this soap by some volunteers. This proves that the soap does not cause skin irritation. The prepared soap was also standardized by evaluating various physicochemical properties such as pH, appearance, odor, etc. and its effects were good. The most promising finding of this study is that herbal soaps are free of chemicals, have better effects than synthetic soaps, and can be used as beauty treatments.

[10]Rangari V. D, Pharmacognosy and phytochemistry, 2nd edition reprint.career publication; Nashik; May 2012, 115.

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.
- [2] Ashlesha Ghanwat, Sachin Wayzod and Vanjire Divya. "Formulation and Evaluation of Herbal Soap" Current Trends in Pharmacy and Pharmaceutical Chemistry,2020, pg. no.21-26.
- [3] Satish Kumar Sharma* and Suruchi Singh, "Herbal Soap Formulation" Journal of Pharmaceutical Research International, 2020; Article no.JPRI.63592.
- [4] Pravin V. Gomase*, Mo. Javed Ahamad, Mohd Danish Salahuddin, "Development and Evaluation of Antibacterial Polyherbal Soap". IJPPR, 2019 Vol.:15, Issue:3.
- [5] G. Sucharita, V. Ganesh, B. Siva Krishn, D. Sireesha,S. Pavan kumar, N. Sai Sasidhar, S. Revathi, Dr. P. Venkatesh. "Evaluation of Poly Herbal Anti Bacterial Soap" IJESC Volume 10, issue no 8, 2020.
- [6] Development and Characterization of Herbal Soap Using Borassus flabellifer and Curcumaedoaria.Devipriya Nisha P*, Nivetha L, Deepak Kumar U.Int. J. Pharm. Sci. Rev. Res., 69(2), July – August 2021; Article No. 20, Pages: 134-139.
- [7] 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.
- [8] 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.
- [9] Kokate C. K, PurohitA. P, Gokhale. B, Pharmacognosy. 29th edition, published by Nirali Prakashan; Pune; 2009.