

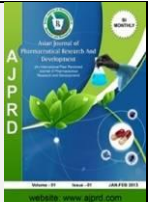


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Research Article

## Formulation and Evaluation of Herbal Transdermal Patches for Wound Healing

**Kapile Chinmay Rajendra\*, Bhalke Rasika Dnyandeo, Jagdale Rahul Changdev, Kumavat Samarth Sandip, Gaikwad Shubham Sarangdhar, Kumavat Prasad Sachin, Giri Mahendra Ashok**

Matoshri Institute of Pharmacy, Dhanore, Tal-Yeola Dist-Nashik (Maharashtra)

### ABSTRACT

These days, the most common problem is a fungal infection, and children are most likely to have acne. In this study, we reviewed at various herbal plants that are utilized for the creation of an herbal soap with antifungal and anti-acne properties. The most common kind of skin infection in Acne in humans is caused by a fungus and requires intensive care to both heal and maintain healthy skin. Saponification of fats with a base yields soap, which is used as a body cleanser that doesn't irritate skin and can be solid, foamy, or contain additional ingredients. Herbal ingredients like neem, aloe vera, Tulsi, turmeric, and rose are used to make this anti-fungal and anti-acne soap. Where the primary API, neem, has antifungal, anti-inflammatory and antimicrobial properties; aloe vera has a moisturizing effect; Tulsi has antibacterial properties and gives skin a youthful glow; turmeric helps remove tan; and rose is used as a perfume. Additional evaluation tests, including color, odor, shape, pH, foaming index, foaming height, and skin irritation, are used to assess the herbal anti-Microbial test. The formulated herbal soap was having yellowish brown color with oval shape. The Ph was found to be 5.5. The foam height was found to be 1 cm and foam retention was observed between 1 min to 4 min. It showed resisted 99% *S. aureus* within one minute. There was no skin irritancy found in herbal soap formulation.

**Keywords:** Anti-acne, Anti-Fungal, Neem, Aloe Vera, Tulsi, Soap.

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\*Address for Correspondence:

Aparna Sharma, Faculty of Pharmacy, Pacific Academy of Higher Education and Research University, Udaipur (Rajasthan)

### INTRODUCTION

To create a base that can be used to treat a range of skin conditions, one or more herbal substances are combined with other cosmetic ingredients to create herbal cosmetics. Shops are the main source of ingredient for new cosmetic and pharmaceutical products. Cosmetics are materials applied to the corridors of the mortal body, such as the face, hands to promoting beauty, calming the skin, and improving the appearance without altering the body bodily structures and functions. Nowadays, more and more people are using herbal cosmetics, and there is a great need for herbal cosmetics and skin care products in daily life. Herbal cosmetics are distributed according to the part of the body they are meant to be applied to, much like cosmetics for the skin, hair, nails, teeth, and mouth, in addition to being in lozenge form like cream, powder, detergents, or soap. The medical systems are deeply rooted in the basic idea of aesthetic skin care of homeopathy,

Ayurveda, Yajurveda, Unani, and the Rigved. These products are used in stores in passage or unrefined form. Herbs are crucial for promoting health and preventing illness.

### FUNGAL INFECTION:

Fungal infections are skin conditions caused by fungi and are commonly referred to as mycosis. There are a million different species of fungi. They are found on plants, in the soil, on microscopic details, and even on your skin. They may occasionally result in skin disorders like pustules or rashes. Fungal infections can be caused by a variety of fungus species. On occasion, fungi that are uncommon for being on or within your unchecked cell growth can have an impact on infection. Antifungal agents, also referred to as anti-mycotic drugs, are used to prevent and treat mycosis, which is similar to ring worm, athlete's bottom, candidiasis, and other serious systemic infections like

cryptococcal meningitis. Athlete's bottom, psoriasis, eczema, and many other fungal diseases are treated with topical antifungal cleansers. Herbal cleanser compositions are widely used to treat fungus infections because of their all-natural ingredients, wider range of efficacy, and numerous side benefits. These details are becoming more fashionable. These days, people are more susceptible to fungal infections. The recommended treatment allows people to count fungal infections and the discomfort they cause. Antifungal cleansers have the benefit of treating infections with little side products as well as in an economical manner.

### HERBAL SOAP:

Soap is a basic cleaning product that everyone is familiar with. There are several ways to describe soap, also referred to as cleanser. It could be any manufactured cleaning product is created by reacting mariners of sodium or potassium with various adipose acids that come from natural sources (swab of non-volatile adipose acids) in the

### MATERIALS AND METHODS:

**Herbs:** Below mentioned Herbs were obtained from Herbal Garden of Matoshri Institute of Pharmacy, Dhanore. Coconut oil was purchased from Local market of Yeola Dist. Nashik

Table No:1

| Sr.No | Herbs                                 | Source           |
|-------|---------------------------------------|------------------|
| 1.    | Neem ( <i>Azadirachta indica</i> )    | Leave of neem    |
| 2.    | Coconut oil ( <i>cocos nucifera</i> ) | Coconut fruit    |
| 3.    | Tulsi ( <i>Ocimum tenuiflorum</i> )   | Leaves of Tulsi  |
| 4.    | Turmeric ( <i>Curcuma longa</i> )     | Rhizomes         |
| 5.    | Aloevera ( <i>Aloe barbadensis</i> )  | Leaves of Leaves |
| 6.    | Rose ( <i>Rosa rubiginosa</i> )       | Petals of Flower |

**Chemicals:** The below mentioned chemicals were obtained from Vishal chem, Mumbai

Table 2: Chemical

| Sr.No | Chemical         |
|-------|------------------|
| 1.    | Vitamin E        |
| 2.    | Sodium hydroxide |
| 3.    | Glycerin         |

### Methods of Extraction of herbs:

#### Neem:

The neem leaves were collected & were washed with distilled water. The leaves were Wipe off the cotton cloth. Then the leaves placed in the mortar and pestles, were crushed into the smooth thin paste. The neem leaves paste on to the muslin cloth (plane weave cotton fabric). Strained the paste, the fresh neem leaves extract was obtained.

#### Coconut oil:

Six fully matured coconuts are taken and remove all husk from that coconut shell. They were Cut into 2 halves; the coconut water is discarded from it. The testa removed (the brown, thin skin of coconut) from the kernel of coconut properly. Wash the kernel (the fresh, white meat which we

eat) in distill water. Grating or pulverizing the fresh kernel. Put the grating coconut into clean cotton cloth and extract the coconut milk by squeezing the cloth tightly. Place the coconut milk into pan and boil it until the oil extracted.

**Tulsi extract:**

The 70gm of fresh leaves of Tulsi were taken & was washed with distill water. The leaves were Wipe off with cotton cloth. Leaves were put into the mortar and pestles, crushed the leaves into the smooth-thin paste. The Tulsi leaves paste was placed on the muslin cloth (plane weave cotton fabric). Strained the paste, the fresh Tulsi leaves extract was obtained.

**Rose petal extract:**

The 200 gm of fresh rose petals were collected & separate the healthy petals of rose flower & wash them with distill water. The petals Wipe off with cotton cloth. The petals

were put into the clean mortar and pestles, crushed the petals into the smooth-thin paste. Place the rose petals paste on to the muslin cloth (plane weave cotton fabric). Strained the paste, the fresh rose petals extract obtained.

**Preparation method:****Soap base preparation (100 gm of soap base):****Table: 3** Formula for soap base (100 gm):

| Sr.no | Ingredients | Quantity |
|-------|-------------|----------|
| 1.    | Water       | 66.6ml   |
| 2.    | NaOH        | 6.6gm    |
| 3.    | Glycerin    | 3.3ml    |
| 4.    | Coconut oil | 23.3ml   |

**Preparation of lye solution-**

The 10 gm of NaOH was dissolved into 100 ml distilled water with continuous stirring. The 5 ml of glycerin was added. The solution was stirred properly. Solution was Keep aside for 30 minutes.

**Main procedure-**

The 50 ml coconut oil was added into beaker& heat it up to 70- 75°. Then the cooled lye solution was added, the temperature was maintained under 80°C. the solution was Heated for 10 minutes and the solution was filtered. The solution was Poured into the silicon soap mold and set it for 24 hours.

**Anti-fungal soap preparation method:**

In a beaker 42ml distill water was taken, 15 gm of NaOH was added into it. It is Set aside.

The soap base was melted in the water bath.

In a beaker the 50 ml coconut oil further mixed with 42 ml of neem extract& is stirred Vitamin E capsule oil is added into above mixture solution and 5 gm of turmeric powder is also added. Then the extract of aloe vera & Tulsi mixture is added. This solution mixture is melted in soap base. After that, 2 ml of fresh rose petal extract& 1 ml of glycerin added into the mixture and stirred it properly. Then this solution mixture is transferred into silicon soap mold and cover it by using cardboard paper. It is set to solidify for 2 days.

**Table 4:** Formula for anti-fungal soap

| Sr.no | Ingredients        | Quantity |
|-------|--------------------|----------|
| 1.    | Soap base          | 89.5gm   |
| 2.    | Neem extract       | 2ml      |
| 3.    | Aloe vera          | 2ml      |
| 4.    | Rose petal extract | 4ml      |
| 5.    | Turmeric           | 1gm      |
| 6.    | Tulsi extract      | 1ml      |
| 7.    | Vitamin E          | 0.5ml    |

**Phytochemical Screening tests:**

| Sr.No | Herbs       | Evaluation test for extract                                             | Procedure                                                                                                                                               | Observation                                                                                                       |
|-------|-------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 1.    | Neem        | Alkaloid test (Dragendorff's Test)                                      | Add few drops of dragendorff's reagent to 1ml of filtrate                                                                                               | Formation of orange brown precipitate                                                                             |
| 2.    | Coconut oil | Translucent spot test                                                   | Place drop of extracted coconut oil on piece of filter paper. Gently heat or allow it to evaporate for few minutes.                                     | The oil creates a greasy, translucent spot on Paper that does not disappear or leave a dry ring upon evaporation. |
| 3.    | Tulsi       | 1.Flavonoid test (Shinoda test)<br>2.Tannin test                        | 2ml Tulsi extract+ few fragments of magnesium ribbon few drops conc. HCl<br>1ml Tulsi extract+ 2ml distilled water+2 to 3 drops of 5% FeCl <sub>3</sub> | Solution turns magenta, red or pink.<br>Dark blue or greenish black color.                                        |
| 4.    | Rose        | 1.Tannin test (ferric chloride test)<br>2.Alkaloid test (Wagner's test) | Extract+FeCl <sub>3</sub><br>Add few drops of Wagner reagent to 2ml prepare extract.                                                                    | Formation of dark green or blue black color<br>Development of reddish-brown precipitate                           |

### Evaluation of anti-fungal soap:

**Color& shape:** Using the unaided eye, color and shape were examined.

**pH:** The digital pH meter is utilized to ascertain pH of the soap.

**Odor:** The Wafting Technique

**Foam height:** A sample of soap weighing 0.5 grams was dissolved in 25 milliliters of distilled water. After that, it was moved in to a 100 ml measuring cylinder, and water was added to bring the volume up to 50 ml. After 25 strokes, the aqueous volume was measured up to 50 milliliters, and the foam height above the aqueous was measured. A measurement of volume was made.

**Foam retention:** The 100 ml graduated measuring cylinder was filled with 25 ml of the 1% soap solution. Ten shakes were given while the cylinder was covered with a hand. For four minutes, the amount of foam was measured at one-minute intervals.

### Anti-Microbial Test:

#### Results of evaluation test:

#### Phytochemical constituents test

| Sr. No | Herbs       | Evaluation test for extract                                               | Observation                                                                             | Inference          |
|--------|-------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------|
| 1.     | Neem        | Alkaloid test (Dragendorff's Test)                                        | Formation of orange brown precipitate                                                   | Present            |
| 2.     | Coconut oil | Fixed oil Test Translucent spot test                                      | leave a dry ring upon evaporation.                                                      | Present            |
| 3.     | Tulsi       | 1. Flavonoid test (Shinoda test)<br>2. Tannin test                        | Solution turns pink.<br>Dark blue color.                                                | Present<br>Present |
| 4.     | Rose        | 1. Tannin test (ferric chloride test)<br>2. Alkaloid test (Wagner's test) | Formation of dark green or blue black color<br>Development of reddish-brown precipitate | Present<br>Present |

**Color& Shape:** Herbal anti-fungal soap was identified as having an oval shape and a yellowish-brown color

**pH:** When the pH of herbal anti-fungal soap was measured using pH meter, it was discovered to be between 5.5

**Odor:** Odorless

**Foam height:** In a measuring cylinder, the soap's foaming height was discovered to be 2 cm.

**Foam retention:** The foam retention was recorded for one to four minutes.

#### Anti-Microbial test:

Herbal Soap shows significant activity over base due to presence of Phyto constituents like azadirachtin, thymol, eugenol.

**Table 8:** Microbial test Result at different concentration

| Sample            | Organism         | ZOI     | % Reduction in 1min |
|-------------------|------------------|---------|---------------------|
| Herbal Soap 10%   | <i>S. aureus</i> | 17±1 mm | 92.92%              |
| Plain Base 10%    | <i>S. aureus</i> | 9±1mm   | 85.4%               |
| Chlohexidine 0.1% | <i>S. aureus</i> | 22±1mm  | 95.99%              |

**Skin Irritation:** The Herbal soap patches did not produce any irritation, and no allergic conditions were observed.

### RESULT:

Neem extract and several other excipients were used to make the herbal anti-fungal and anti-acne soap. The soap's pH was determined to be between 5 and After application, the right amount of foam was created. It is odorless and has

Media: The Mueller-Hinton agar for bacteria, sabourad dextrose agar for fungi taken at Ph 7.2-7.4 20-25 ml in petri plate.

Bacteria: *Staphylococcus aureus* was culture for 18-24hr.

Sample Preparation: The 1g herbal soap dissolve in 10 ml of sterile water.

Wells: 6mm wells punch with sterile borer. Added 50-100µl soap solution per well

Incubate: Bacteria 37°C for 18-24 hr.

Control: positive 0.1% chlorhexidine or 1% gentamicin.

Negative: Sterile water or Plain Soap Base without herb

### Skin Irritation:

The skin irritation potential of the formulated patch was evaluated using the single 24h patch test on healthy human volunteers, adapted from OECD guidelines and standard dermatological practice. The study protocol was approved by institutional ethics committee.

a yellowish-brown color according to multiple evaluation tests. Good antimicrobial activity against yeast, mold, and Propionibacterium acne-causing bacteria is revealed by microbiological research.

### CONCLUSION:

As an antifungal agent, neem extract can be utilized in the production of herbal soap.

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## REFERENCE:

1. Mr. Shaikh Awais Danish Mazhar Jamal, Miss. Gayatri Anil Patil, Miss. Gayatri Punjaram Mahale, Mr. Chetan Motilal Chaudhari, Dr. Swapnil Dilip Deo, Dr. Gajanan Tulshiram Duffel, A Brief Review on Herbal Antifungal Soap.
2. Priyanka Balu Khamkar, Nayan S. Warkad, Prajakta S. Waghmare, Formulation and Evaluation of Anti- Fungal Polyherbal Soap, Arihant College of Pharmacy, Ahmednagar, 414001.
3. Biswas K, Chattopadhyay I, Banerjee RK, Bandyopadhyay U. Biological activities and medicinal properties of Neem (*Azadirachta indica*). *Curr Sci*. 2002;82(11):1336–45.
4. Salian, Varsha dan Pushparaja Shetty. 2018. *Journal of Clinical and Diagnostic Research* 12(1)
5. Kasbate Tatyaba, Ghodke P. L., and Dr. Prachi Udaipur Formulation & Evaluation of Herbal Soap of Neem and Tulsi 2023 IJNRD | Volume 8, Issue 5 May 2023 | ISSN: 2456-4184 | IJNRD.ORG
6. Sharma R, Sharma G and Sharma M. Additive and inhibitory effect of antifungal activity of *Curcuma longa* (Turmeric) and *Zingiber officinale* (Ginger) essential oils against *Pityriasis Versicolor* infections. *Journal of Medicinal Plants Research* 2011; 532: 6987-90.
7. Formulation And Evaluation of Aloe Vera Herbal Soap Rodge Rani Sopan, Ms. S. A. Ghadge, Dr. Santosh Jain Aditya Institute of Pharmaceutical Beed, Dr. Babasaheb Ambedkar Technological University Lonere.
8. Akram, M.; Riaz, M.; Munir, N.; Akhter, N.; Zafar, S.; Jabeen, F.; Ali Shariati, M.; Akhtar, N.; Riaz, Z.; Altaf, S.H.; et al. Chemical constituents, experimental and clinical pharmacology of *Rosa Damascena*: A literature review. *J. Pharm. Pharm.* 2020,72, 161–174.
9. Formulation and Evaluation of Anti- Fungal Polyherbal Soap Priyanka Balu Khamkar, Nayan S. Warkad, Prajakta S. Waghmare Arihant College of Pharmacy, Ahmednagar, 414001.
10. Sayed, A. M., Kulkarni, A. D., Pardeshi, P. U., Kapile, C. R., & Nehe, A. D. (2022). Oral Fast Disintegrating Films of Phytochemicals: A Novel Drug Delivery System. *\_Journal of Drug Delivery and Therapeutics*.
11. Kapile, C., Kulkarni, A., Pardeshi, P., Sayed, A., & Nehe, A. (2022). Review on Floating Drug Delivery System. *\_Journal of Drug Delivery and Therapeutics*, 12\_(2-S), 180–184.
12. Kapile, C., Kulkarni, A., Pardeshi, P., Sayed, A., & Nehe, A. (2022). *\_Journal of Drug Delivery and Therapeutics*, 12\_(2-S), 180–184.
13. Sayed, A. M., Kulkarni, A. D., Pardeshi, P. U., Kapile, C. R., & Nehe, A. D. (2022). <https://doi.org/10.22270/jddt.v12i3.5379>
14. Pardeshi, P. U., Kapile, C. R., Kulkarni, A. D., Gulecha, V. S., Zalte, A. G., & Gedam, S. S. (2022). Phytochemical-based vesicular system for the treatment of vitiligo: A review.
15. Lonare, P. R., Kapile, C. R., Chandak, S. S., & Sonawane, S. D. (2024). Global Impact of Antibiotic Resistance. *\_International Journal for Research in Applied Science & Engineering Technology*.
16. Mote, S. B., Jagtap, G. G., Jadhav, M. R., & Kapile, C. R. (2025). Formulation and Evaluation of Polyherbal Transdermal Patches for Wound Healing. *\_International Journal of Novel Research and Development*, 10(5), c309–c319.
17. Kalyankar, S. H., Patil, B. P., Chakor, P. K., Jagdale, R. C., & Kapile, C. R. (2025). Formulation and evaluation of herbal mouthwash by using green tea leaf for gingivitis. *\_International Journal of Novel Research and Development*, 10(4), g205–g213.
18. Sonawane, S., Lonare, P., Chandak, S., Kapile, C., & Jagdale, R. (2024). *Phyllanthus Emblica* Linn: A Phytoconstituent and Pharmacologically Important Plant Review. *\_International Journal of Research Publication and Reviews*, 5(12), 1695–1703. Paper ID: IJRPR 2024 12 a6b2.