

# Formulation And Evaluation of Polyherbal Antifungal Medicated Soap as A Cosmeceuticals

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**Abstract**— In this research, we looked at the herbal plants that are used to make herbal anti-fungal soap. Many naturally occurring herbal plants include a range of chemical components that are used in cosmetic formulations. Because they have a high activity level and no negative effects, herbal cosmetics are particularly significant. Fungi is the most common type of skin infection in people, and it requires special care to keep the skin healthy and to cure. A specific type of soap called "anti-fungal soap" is used to treat different types of fungal infections. Both conventional herbal medicines. People are most commonly affected by fungal skin infections, which need careful attention both during treatment and in order to preserve healthy skin. Certain herbal plants possess antifungal properties. The current study's goal is to create antifungal herbal bath soap by combining several herbal plants. Using the agar diffusion method, the produced formulation's antifungal activity was evaluated against the organism *Candida albicans*. The formulations of the generated herbal soaps showed good antifungal activity. It is claimed in Ayurveda that certain herbs are utilized to heal illnesses in a specific quantity. A polyherbal formulation is one that includes two or more herbal medications that function as active ingredients and have potential health benefits. Numerous phytoconstituents in the polyherbal formulation provide an enhanced impact with minimal harmful effects and pharmacological efficacy. The formulation's active constituents are Formulate F1& F2 combining plant extracts as the active ingredient with base ingredients such as Soap base, Bees wax, Glycerin, SLS, EDTA, Citric acid, Jasmine oil. We tested the *in vitro* antifungal activity of every produced compound against fungi.

**Index Terms**—Antifungal Herbal soap, polyherbal, phytoconstituents, antifungal activity.

## 1. Introduction

The majority of store-bought soaps and detergents include chemicals that may be damaging to skin. As an alternative, using natural herbal soap and detergents can be beneficial. Natural herbs and substances that are healthier and advantageous for human health are used to make herbal soaps and detergents. People are more conscious of the contents in cosmetic goods these days.

The advantages of plant-based products and the negative consequences of chemical additives. The soap and detergent business are extremely profitable, has a huge market potential, and has high future prospects. It is advised that numerous

additional small- and cottage-scale units be built in order to satisfy market demand.

Herbal cosmetics are divided into categories based on the dosage form (cream, powder, soaps, solutions, etc.) and the body area or organ they are intended for (cosmetics for the skin, hair, nails, teeth, and mouth, for example). The fundamental principles of skin care cosmetics are deeply ingrained in the medical systems of the Rigveda, Yajurveda, Ayurveda, Unani, and homoeopathy. These are the goods that contain either crude or extracted herbs.

### A. Skin

The body's outermost layer is called the skin or cutaneous membrane. In terms of weight and surface area, it is the largest organ in the body. The skin's functions include regulating body temperature, serving as a blood reservoir, providing protection from the outside world, cutaneous sensations, excretion and absorption, and the creation of vitamin D. The immune system on the outside stops microbial microbes from entering the body. The largest exterior defence system is the skin.

In addition to serving as the body's outermost layer of defence, skin serves other purposes. It acts as a mechanical wall dividing the body's interior from the outside environment. The temperature of the skin can vary from 30 to 40°C, depending on the surrounding circumstances.

One of the human body's easiest organs to administer topically is the skin, which serves as the primary route for topical medication delivery systems.

Manuscript revised May 01, 2024; accepted May 03, 2024. Date of publication May 05, 2024.

This paper available online at [www.ijprse.com](http://www.ijprse.com)

ISSN (Online): 2582-7898; SJIF: 5.59

The goal of topical penetration, a reasonable approach to topical formulation, and the fundamental elements of topical drug delivery systems are all covered in detail by this research. Ointment absorption via the skin is dependent on several parameters, the most significant of which are concentration, duration of contact, drug solubility, and physical state of exposed skinlayer and body part.

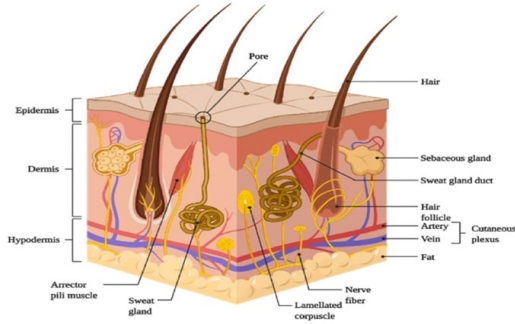


Fig.1. Structure of Skin

**B. Fungal Infection**

A fungus is the cause of a fungal infection, which is also referred to as mycosis. Fungi come in millions of species. They reside on your skin, in household surfaces, on plants, and in the earth. They can occasionally result in skin issues like pimples or rashes. Fungal infections can be caused by a variety of fungus species. Fungi that aren't normally found on or inside your body might occasionally grow uncontrollably and infect you. It is possible to spread fungus diseases. They have the ability to spread among individuals. Fungal skin infections are among the world's most serious dermatological issues at the moment. It has been estimated that 40 million or more people in developing and poor nations have fungal diseases.



Fig.2. Fungal infection

**2. Materials And Methods**

**A. Chemicals List**

A list of the compounds found in castor oil, coconut oil, SLS, EDTA, bees wax, and soap base.



Fig.3. Soap Mould

Table No.1.  
Plant & Active Materials



SNO.	MATERIALS	CONTENT
01.		<b>CHARCOAL</b> Wood, coal, coconut shells, peat, or petroleum can all be used to make common charcoal. Common charcoal and "activated charcoal" are comparable. Charcoal that has been treated with intense acid or base and heat or pressure combined is known as activated charcoal.
02.		<b>VIBHUTI</b> Another name for it is Thiruneeru, vibhuti. Thiruneer is also excellent for preventing colds and the headaches associated with them. It guards against skin allergies, particularly when formulated with several herbs.

Table No.2.  
Composition Of Herbal Soap's

S.NO.	INGREDIENTS	CHARCOAL	VIBUTHI
01.	<b>HERBAL POWDER</b>	5 gm	5 gm
02.	<b>SOAP BASE</b>	33.5 gm	33.5 gm
03.	<b>BEE'S WAX</b>	5 gm	5 gm
04.	<b>GLYCERIN</b>	4.2 ml	4.2 ml
05.	<b>SLS</b>	1.5 gm	1.5 gm
06.	<b>EDTA</b>	0.5 gm	0.5 gm
07.	<b>CITRIC ACID</b>	0.5 gm	0.5 gm
08.	<b>JASMINE OIL</b>	2 ml	2 ml



Fig.4. Ingredients



Fig.5. Charcoal



Fig.6. Vibhuti

## B. Formulation Of Herbal Soap

### 1) Procedure:

The prepared basic glycerine soap was broken down into small pieces.



Put into the pan and melted on the water bath below 60°C



To make a homogenous liquid, the materials for the oil phase were weighed and blended while stirring continuously at a temperature of 120°C.



To create a homogeneous liquid, the water phase elements were weighed and combined while being stirred continuously at 80°C.



As a preservative, the oil phase was added to the water phase at 80°C while being continuously stirred to achieve a semisolid consistency.

Stirring continuously helped the soap bases achieve a consistent dispersion of the ingredients.



The soap foundation is poured into the appropriate soap mould, which is then kept at room temperature and assessed.



Fig.7. Soap Mould

## C. Evaluation Of Herbal Soaps:

### 1) Physical parameter

The prepared herbal soap's were inspected visually for their colour, weight variation, odour, appearance. The pH was measured in each cream, using a pH meter.



Fig.8. Colour

to the 100 millilitre measuring cylinder. measured the height of the foam using 25 strokes above the aqueous volume.

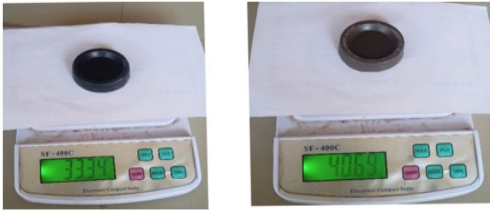


Fig.9. Average Weight



Fig.10. Digital PH metre

Table.3.  
Physical Parameter

S.No	FORMULATION	COLOUR	ODOUR	AVERAGE WEIGHT	PH
01.	Charcoal F1	Black	Aromatic	46.02	9.32
02.	Vibuthi F2	Grey	Aromatic	46.22	8.03

### 2) Solubility

Add 10ml of solvents to 2g of soap, shake for 2 minutes, and observe the solubility result.



Fig.11. Solubility

Formulation	Hot water	Cool water	Ethanol	Acetone
F1	Soluble	Soluble	Soluble	Soluble
F2	Soluble	Soluble	Weakly Soluble	Partially soluble

### 3) Foam height

0.5 gram of prepared soap were dissolved in 100 millilitres of distilled water, and the remaining 50 millilitres were added

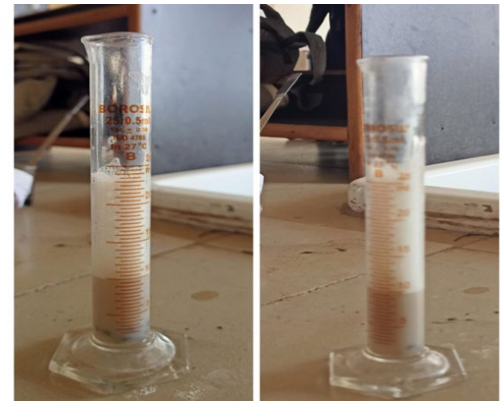


Fig.12. Foam height

F	Foam height
F1	33 cm
F2	25 cm

### 4) Foam Retention

Prepare the 1% soap solution in 25 millilitres and put it into a 100 millilitre measuring cylinder. Then shakes of the cylinder were then applied. For four to five minutes, the volume of foam was measured once per minute.

F	Foam retention
F1	04 min
F2	06 min

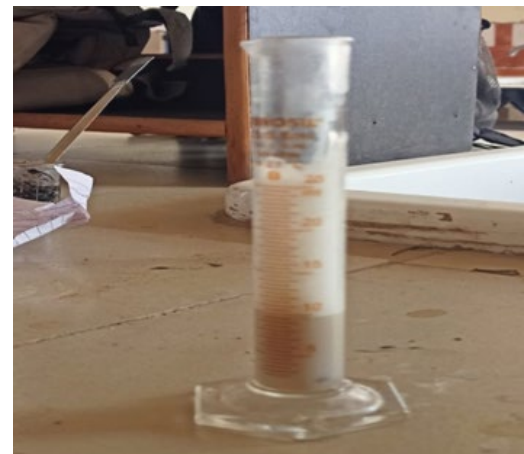


Fig.13. Foam retention

### 5) Test for Skin Irritation

On the dorsal surface of the left hand, mark a square centimetre. After applying the herbal soap to the designated area, the time was recorded. For a full day, irritability, erythema, and edoema were monitored at regular intervals and reported.



Fig.14. Applying the Charcoal soap



Fig.15. Applying the Vibuthi soap

F	2 hr	4 hr	8 hr	16 hr	24 hr
F1	NIL	NIL	NIL	NIL	NIL
F2	NIL	NIL	NIL	NIL	NIL

#### 6) Anti-fungal activity

In the agar diffusion procedure, the manufactured herbal soap was used to prepare a control sample of Amphotericin-B, which was then inoculated into the plates. After being put in the incubator, the plates are incubated for 24 hours at 37 °C. Following the period of incubation, plates were removed, and the microbial growth is examined by contrasting it with the control.

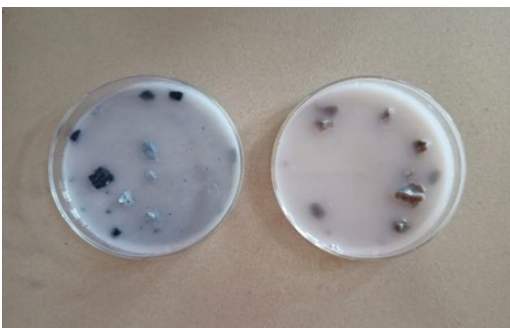


Fig.16. Before



Fig.17. After

F	Microorganisms	Control	10	20	30	40	Amphotericin-B
F1	Candida albicans	-	5	6	8	8	10
F2	Candida albicans	-	3	4	5	6	10

### 3. Conclusion

Using various oil bases, herbal soap is being formulated in this work. The literature on preparation of herbal soap forms, choice of excipients, manufacturing process, etc., has been gathered and examined. According to the results of the parameter optimisation, soap base charcoal, Vibuthi, glycerin, beeswax, SLS, EDTA, citric acid, & Jasmin oil can all be used to make herbal soap. Thus, all of the formulations, F1 through F2, met all requirements for herbal soap, including those related to shape, colour, scent and skin irritation test. Agar medium was used to assess the antifungal activity, and the formulations were shown to have good antifungal activity when compared to other formulations.

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