

Formulation Of Polyherbal Anti-Fungal Soap

VARUNI SAHU¹, DR. HARISH SHARMA², DEEPIKA CHANDRA³, PRERANA SAHU⁴, ANJALI SAHU⁵, RAJESH KUMAR NEMA⁶, GYANESH KUMAR SAHU⁷

^{1, 2, 3, 5, 7} Rungta Institute of Pharmaceutical Sciences and Research, Bhilai, Chhattisgarh

^{4, 6} Rungta Institute of Pharmaceutical Sciences, Bhilai, Chhattisgarh

Abstract— To create a polyherbal hygienic soap via the cold process method and assess its antifungal and antibacterial properties. Charcoal, cucumber, papaya, camphor (K Kapoor), rose water, lavender oil and various extract were added to the fundamental saponification reaction to create the soap. After preparing the herbal formulation, various concentrations of soap solution were used to compare it with a standard for examination of pH, foaming height, physical parameter, foam retention, test of skin irritation, and antifungal activity.

Index Terms— Herbal Soap, Antifungal, Saponification.

I. INTRODUCTION

Since skin conditions have a significant effect on both individuals and communities, they rank among the most important public health issues. They result in sorrow, anguish, a decline in normal functioning, and a lower standard of living. As more dangerous synthetic chemicals are added to skin care products, the prevalence of these skin conditions is rising. Fungi are the most prevalent cause of skin infections, which need to be treated carefully in order to keep the skin healthy in the long run [1, 2].

Herbal remedies are the finest means of treating skin infections, and skin-beneficial herbal soaps made entirely of natural ingredients have been discovered. These soaps' chosen herbs have therapeutic properties and healing activity that provide particular advantages for skin, including moisturizing, strengthening, nourishing, and healing. Additionally, coconut oil, which is healthy for skin and general health, is a component of these soaps. Additionally useful in treating a variety of skin conditions are herbal soaps. In addition to coconut oil, which is typically not used in commercial soaps, these soaps also contain glycerin [3, 4].

Herbal soaps are usually handmade and have 100% organic ingredients which impart only goodness to skin and are safe to environment too [5].

1.1 Fungal Infection:

A fungus causes a skin condition known as a fungal infection, or mycosis. Fungi come in millions of species. They reside on your skin, on home surfaces, on plants, and in the earth. They can occasionally result in skin issues like pimples or rashes [6]. A fungal skin infection might cause:

- Irritation
- Scaly skin
- Redness
- Itching
- Swelling
- Blisters

1.2 Types of Fungal Infections:

Fungal skin infection can happen anywhere on your body. Some of the most common are athlete' foot, jock itch, ringworm, and yeast infection [7].



Fig.1- Types of fungal infection

II. MATERIAL AND METHODS

2.1 MATERIALS

The plant material which are used in the formulation of the herbal soap were collect from farm house at Bhilai, Chhattisgarh. Because natural products have a great medical value, they may be used to treat practically any ailment, including skin conditions. Herbal products have demonstrated their affordability, accessibility, and suitability for skin for various formulation. The active ingredients that provide these

medical benefits are separated and used to treat skin related conditions as lotions, soaps, and ointments.

2.2 PHARMACOGNOSTICAL PROFILE OF ACTIVE INGREDIENTS

Table no 1: Pharmacognostical profile of active ingredients.

S. No.	Name	Biological Source	Chemical Constituents	Uses	References
1	Papaya	<i>Carica papaya linn.</i> (Caricaceae)	Alkaloids, saponin, tannins, flavonoids	Skin moisture, Antioxidants, Antifungal activity	[8]
2	Cucumber	<i>Cucumis sativus L.</i> (Cucurbitaceae)	Vitamin C&E, stearic acid, oleic acid, amino acid	Anti-inflammatory, Reduce swelling and irritation, anti-aging	[9]
3	Rose water	<i>Rosa damascena</i> (Rosaceae)	Citronellol, 2-phenyl ethyl alcohol, geraniol, aliphatic hydrocarbons	Antibacterial, anti-inflammatory, antifungal	[10]
4	Charcoal	Plant residues	Carbons, carbonaceous materials	Natural colorant, natural detoxifier, deep pore clean	[11]
5	Camphor (K Kapoor)	Cinnamomum camphor	Camphor, linalool, cineole	Antibacterial, anti ageing, aroma, cooling sensation	[12]

2.3 SOAP BASE FORMULATION:

9	Ethanol	5 ml	Solvent
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Table no 2: List of soap base ingredient

S. No.	Ingredients	Quantity	Activity
1	Coconut oil	40 ml	Anti-ageing, Moisturizer
2	Glycerin	10 ml	Humectants
3	Sodium hydroxide	9.5 gm	Lye
4	Distilled water	50 ml	Aqueous vehicle
5	Sodium lauryl sulphate (SLS)	10 ml	Soap foaming
6	Stearic acid	2gm	Hardening
7	Triethanolamine	9.5 gm	Thick paste
8	Soft paraffin	0.7 gm	Emollient

Cold process method:

For soap base formulation, first take 40 ml coconut oil in 500ml beaker. Placed it on the water bath and maintain the temperature about 40-45C.



Then add this to NaOH (9.5 gm) for a lye and 50 ml water and continuously stir for a10 min.



Then 10 ml glycerin as a humectant, 0.7 gm soft paraffin as a emollient, and 9.5 gm Triethanolamine for a thick paste was added with continuously stir.



Solution with continuously agitation for 20-3- min molten mixture become homogeneous.



Then pour the solution into mold and kept it for cool. After the cool down, take out the soap base from the mold.



Fig. 2- Soap base in mold

2.4 PROCEDURE FOR POLYHERBAL SOAP

Step 1: The prepared basic glycerin soap base was broken down into small pieces and put into the pan and melted on the water bath below 60 °C.



Fig. 3- Melting of soap base

Step 2: To create a homogeneous liquid, the water phase elements were weight and combined while being stirred continuously at 80°C.

Step 3: All the herbal ingredients Papaya fruit & seed juice, cucumber juice, charcoal powder and camphor was taken and added to the mixture with continuously stir.



Fig. 4- After adding of herbal ingredient in soap base mixture

Step 4: 2gm stearic acid for hardening 5ml ethanol as a solvent, and rose water as per required for perfume was added to the mixture and stir continuously helped the soap achieve a consistent dispersion of the ingredients.

Step 5: Then the soap foundation is poured into the appropriate soap mold, which is then kept at room temperature and assessed.

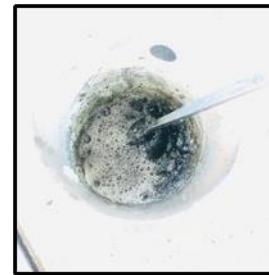


Fig. 5- Thick paste of Herbal mixture

III. EVALUATION

3.1 PHYSICAL PARAMETER

The prepared soap formulations were inspected visually for their color, odor and appearance.



Fig. 6- Formulated herbal soap

3.2 pH

The pH was measured of formulated herbal soap, using a digital pH meter.



Fig.7- Digital pH meter

3.3 Foam Height

0.5 gram of prepared soap were dissolved in 100 ml of distilled water, and the remaining 50 ml were added to the 100 ml measuring cylinder. measured the height of the foam using 25 strokes above the aqueous volume.



Fig.8- Foam height of formulated herbal soap

3.4 Solubility

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



Fig. 9- Solubility test

3.5 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.

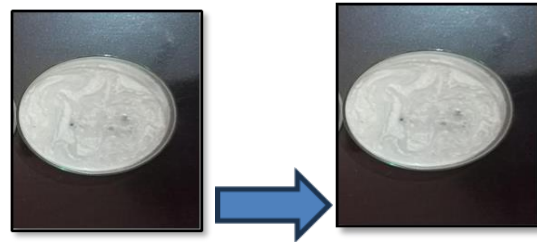


Fig. 10- Before and after fungal activity

3.6 Irritation

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

IV. RESULT AND DISCUSSION

Table 3. Result parameter of formulated herbal soap

S. No.	Parameter	Result
1	Color	Black
2	Odor	Aromatic
3	Average weight	40.68 gm
4	pH	9.32
5	Solubility	Soluble
6	Foam height	31cm

7	Foam retention	3 minutes
8	Irritation	Nil

The above given table describes the color, odor shape, pH, irritation, foam height and foam retention of the poly herbal soap. The color of all the f formulation were Black. The odor of all the formulation was aromatic. The shape of all the formulation was oval. As per evaluation test formulation is may be the most standard formulation compared to other formulation because the pH of formulation is 9.23 which is likely close to skin pH and there is no irritation beside foam retention and foamability of Soap is may be much better than other formulations.

CONCLUSION

The prepared polyherbal soap was formulated using cold process technique with antioxidant and Antibacterial properties. The anti-bacterial and anti-oxidant properties may exhibit due to the presence of Papaya, Cucumber, Charcoal and Camphor. The further clinical studies of this formulation can elevate the use of polyherbal soap. The most important thing that polyherbal soap possess is that free from chemicals and are more eminent than synthetic soaps. Thus, in this research paper, the prepared polyherbal soap possess anti-oxidant and anti- bacterial properties that can be used as beauty regime.

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