



**INTERNATIONAL JOURNAL OF  
PHARMACEUTICAL SCIENCES**  
[ISSN: 0975-4725; CODEN(USA): IJPS00]  
Journal Homepage: <https://www.ijpsjournal.com>



## Research Article

# Formulation And Evaluation Of Herbal Soap As A Anti-Fungal Activity

Akash Romade\*<sup>1</sup>, Mahesh B. Kshirsagar<sup>2</sup>, Sanjay Y. Garje<sup>3</sup>, Sayyed G. A.<sup>4</sup>

<sup>1</sup>Student, SAJVPM's collage of pharmaceutical science and research center kada.

<sup>2</sup>Assistant Professor, SAJVPM's collage of pharmaceutical science and research center kada.

<sup>3,4</sup>Associate Professor, SAJVPM's collage of pharmaceutical science and research center kada.

## ARTICLE INFO

Received: 10 May 2024

Accepted: 14 May 2024

Published: 17 May 2024

### Keywords:

Fungi, Yeast Infections,  
Ringworm, Anti-Fungal.

### DOI:

10.5281/zenodo.11210742

## ABSTRACT

Fungal infection, also known as mycosis, is a disease caused by fungi. Different types are traditionally divided according to the part of the body affected; superficial, subcutaneous, and systemic. Superficial fungal infections include common tinea of the skin, such as tinea of the body, groin, hands, feet and beard, and yeast infections such as pityriasis versicolor. Fungal diseases, also known as mycoses, are caused by fungi that infect various parts of the body. Athlete's Foot (Tinea Pedis) . Ringworm (Tinea Corporis) . Jock Itch (Tinea Cruris) . Yeast Infections (Candidiasis) . Nail Fungus (Onychomycosis) Fungal Dermatitis. Ayurvedic cosmetics are also known as herbal cosmetics. All herbal ingredients are easily available in the market of surrounding areas. Fungal skin infections are most common amongst people, requiring significant attention for treatment and also to maintain good and healthy skin. Some herbal plants have antifungal activity. The aim and objective of the present study is to formulate antifungal herbal bath soap using different herbal plants. The antifungal activity of the prepared formulation was tested using agar diffusion method against the organism *Candida albicans*. The prepared herbal soaps formulations exhibited a good antifungal effect. In which the study was done for the Formulation and Evaluation of Antifungal Herbal soap using some herbs. The method used for Formulation of Antifungal herbal soap involves Melt and pour method. Different evaluation methods were used to examine the quality of created product

## INTRODUCTION

A fungal infection, also called mycosis, is a skin disease caused by a fungus. There are million species of fungi. They live in dirt, on plants, on household surfaces, and on your skin. Sometimes,

they can lead to skin problems like rashes or bumps. Different types of fungi can cause fungal infections. In some cases, fungi that aren't typically found on or inside your body can multiply out of control and causes an infection.

\*Corresponding Author: Akash Romade

Address: Student SAJVPM's collage of pharmaceutical science and research center kada.

Email ✉: [romadeakash@gmail.com](mailto:romadeakash@gmail.com)

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



Fungal infections can be contagious. They can spread from one person to another. Currently, fungal skin infection is one most serious dermatological concerns in the world. It has been found that in developing and underdeveloped countries, about 40 million people have suffered from fungal infections. Herbal soap preparation is a medicine or drugs it contain Antibacterial & antifungal agents which e mainly uses of part of plants such as like leaves, stem, roots & fruits to treatment for a injury or disease or to achieve good health. This preparation possess antimicrobial property are administered topically and available to apply in various forms like creams ,lotion ,gel ,soap, solvent extract or ointment .the variety of creams & soap properties have been used to treat various skin disorders. Mostly skin infection are caused by fungi, staphylococcus aureus and streptococcus species. Ethnomedicinally, juice& extract from leaves of the plants are topically applied as antimicrobial and anti-inflammatory agents in treatment of skin disease including eczemas, ringworm and pruritus . The succulent gel form is used to disorders of psoriasis. Crude preparation of soapy plant are able to soften the skin epidermis enhance greater penetration and cleaning acne and also promote healing and resolution in quickly in time. In this review article herbal soap conataining neem , tulsi etc. as natural plant ingredients and this content gives or shows antibacterial antifungal & anti-inflammatory activity. In this soap, neem is main compound, and shows medicinal properties. Neem leaf and its extract exhibit immunomodulatory anti-inflammatory, antiulcer antimalarial, antifungal antibacterial antioxidant anticarcinogenic property. Tulsi has got the greatest medicinal value. tulsi to be effective for diabetis they reducing blood glucose level tulsi also used in severe acute respiratory syndrome. Juice of its leaves gives relief in cold fever bronchitis and cough. Tulsi reduce stress, enhance stamina relief

inflammation and also shows antifungal activity so tulsi is also used as main compound in this herbal soap. The main antifungal activity of Tulsi serves to be beneficial in soap formulation. Reetha is an exceptional cleanser. Hence it's a perfect substitute for soap and facewash due the presence of saponin. It is also good for use on sensitive skin. The main of herbal antifungal soap is to provide a natural and effective solution for preventing and treating fungal infections of the skin. The objectives of soap such as Antifungal Action, Prevention of Infections, Promotion of Skin Health. Most of the commercial soaps and detergents contain chemicals that can be harmful to the skin. Using a natural herbal soap and detergents can be a good alternative. Herbal soaps and detergents are made using natural herbs and ingredients that are healthier and beneficial for the skin. Now a day people are very much aware of the ingredients in cosmetics products. The benefits of plant products and harmful effects of chemical ingredients. The Soap and Detergent industry is profoundly lucrative with splendid market potential as well as bright future scope. In order to meet the requirement of market demand, many more new units are recommended to be established on small and cottage scale. The skin or cutaneous membrane covers the external surface of the body. It is the largest organ of the body in surface area and weight. The function of the skin is body temperature regulation, a reservoir for blood, protection from the external environment, cutaneous sensations, excretion and absorption, and vitamin D synthesis.



**MATERIALS AND METHODOLOGY:**

Sr.no	Botanical Name	Common Name	Properties
1	Ocimum tenuiflorum	Tulsi	Antifungal
2	Azadirachta indica	Neem	Antiviral, antibacterial
3	Aloe barbadensis miller	Aloe vera	Antimicrobial
4	Allium sativu	Garlic	Antimicrobial

**Formulation Table: -**

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Neem oil	5ml	-	-		2.5ml		2.5ml	2.5ml		2.5ml
Aloe vera	-	5ml	-	-	-	-	-	-	2.5ml	2.5ml
Tulsi	-	-	5ml	-	2.5ml	2.5ml	2.5ml	-	-	2.5ml
Garlic Oil	-	-	-	5ml	-	2.5ml	-	2.5ml	2.5ml	2.5ml
Sodium Hydroxide	10gm	5gm	10gm	7.5gm	10gm	10ml	10ml	10ml	10ml	7.5ml
Coconut Oil	10ml	10ml	5ml	10ml	5ml	5ml	5ml	5ml	5ml	2.5ml
Glycerin	5ml	10ml	10ml	7.5ml	10ml	10ml	10ml	10ml	10ml	10ml
Water	20ml	20ml	20ml	20ml	20ml	20ml	20ml	20ml	20ml	20ml
Perfume	Q. S	Q. S	Q. S	Q. S	Q. S	Q. S	Q. S	Q. S	Q. S	Q. S
Preservative	Q. S	Q. S	Q. S	Q. S	Q. S	Q. S	Q. S	Q. S	Q. S	Q. S

**PROCEDURE:**

The oil phase ingredients were weighed mixed with continuous stirring at the temperature 120°C to form uniform liquid. The water phase ingredients were weighed mixed with continuous stirring at the temperature 80°C to form uniform liquid. The oil phase was incorporated in the water phase at 80°C with continuous stirring until the semisolid consistency is obtained and added as preservative. Continuous stirring to soap bases till the uniform dispersion of the ingredients was achieved. The soap base fill the suitable soap mould stored the room temperature and its evaluated.

**EVALUATION OF HERBAL SOAPS:**

1. Physical Parameter The prepared herbal soap's were inspected visually for their color, weight variation, odour, appearance. The pH was measured in each cream, using a pH meter.
2. Weight Variation Collected 10 soap's to calculate the individual weight finally calculated the average weight of herbal soap's.
3. Percentage Yield :-The empty container was Weighed in which the herbal soap's formulation was stored then again the container was weighed with herbal soap's formulation. Then subtracted the empty container weighed with the container with herbal soap's formulation then it gives the practical yield. Then the percentage yield was calculated by the formula.
 
$$\text{Percentage Yield} = \frac{\text{Practical Yield}}{\text{Theoretical Yield}} \times 100$$
4. Solubility 2gm of soap added 10ml of solvents and shake it 2min view the solubility result.
5. Determination of Percentage Free Alkali Dissolved 5 gm of prepared herbal soap in 50 ml of neutralized alcohol in a conical flask. Then boiled under the reflux on a water bath for 30 minutes. Then cooled and added 1 ml of phenolphthalein solution as an indicator. Then the solution was titrated with 0.1 HCL.
6. Foam Height Dissolved 0.5 gm of prepared soap in distilled water then make up the volume up to 50 ml with distilled water in 100 ml measuring cylinder. Measured the foam

height, above the aqueous volume by given 25 strokes.

7. **Foam Retention** Prepared the 25 ml of the 1% soap solution and transferred into the 100 ml of measuring cylinder. Then the cylinder was shaken 10 times. The volume of foam was recorded at one minute for 4 to 5 minutes.



**Fig no 1 Soap Base**



**Fig no 2 Formulated Soap**

### RESULTS AND DISCUSSION: -

Formulation code	Color	odor	Avg. weight	Percentage Yield
F1	Greenish brown	Fragrant	44.07 gm	93.5%
F2	Dark green	Fragrant	44.11 gm	93.8%
F3	Light brown to green	Fragrant	43.88 gm	91.8%
F4	Brown	Fragrant odor	45.43 gm	97.6%
F5	Greenish brown	Fragrant	45.31 gm	90.5%
F6	Dark green	Fragrant	41.88 gm	85.9%
F7	Dark brown to green	Fragrant	46.0 gm	98.5%
F8	Brown	Fragrant odor	46.22 gm	87.5%
F9	Greenish brown	Fragrant	40.06	83.7%
F10	Dark green	Fragrant	46.22 gm	99.3%

### Physical Parameters: -

Formulation code	pH	Free alkali	Foam height	Foam retention
F1	7.9	0.35	26 cm	03 min
F2	7.4	0.31	28 cm	03 min
F3	8.0	0.47	24 cm	04 min
F4	7.5	0.51	22 cm	03 min
F5	6.8	0.40	29 cm	05 min
F6	7.7	0.43	30 cm	04 min
F7	7.2	0.39	25 cm	04 min
F8	6.9	0.50	27 cm	06 min
F9	7.8	0.44	26 cm	03 min
F10	6.4	0.55	31 cm	06 min

**Solubility: -**

Formulation code	Hot water	Cool water	Ethanol	Acetone
F1	+++	+++	+++	++
F2	+++	+++	+++	++
F3	+++	+++	+++	++
F4	+++	+++	+++	++
F5	+++	+++	++	++
F6	+++	+++	++	++
F7	+++	+++	+++	+++
F8	+++	+++	+	++
F9	+++	+++	+++	+
F10	+++	+++	++	+

**Skin irritancy Test:-**

Formulation code	2 Hr	4 Hr	8 Hr	16 Hr
F1	NIL	NIL	NIL	NIL
F2	NIL	NIL	NIL	NIL
F3	NIL	NIL	NIL	NIL
F4	NIL	NIL	NIL	NIL
F5	NIL	NIL	NIL	NIL
F6	NIL	NIL	NIL	NIL
F7	NIL	NIL	NIL	NIL
F8	NIL	NIL	NIL	NIL
F9	NIL	NIL	NIL	NIL
F10	NIL	NIL	NIL	NIL

**CONCLUSION:-**

In this study finally concluded that antifungal soaps form herbal origin are prepared and hence we can conclude that the neem, aloe vera, turmeric and tulsi can be combined to make soap that has antifungal properties that can be used on a variety of skin conditions as well as in daily life for healthy skin. Herbal antifungal soaps shows better activity and less side effects as compare to the synthetic soaps. Extensive use of synthetic antifungal soaps may show resistant or side effects to the body but in the case of herbal soaps there is no resistant nor the side effect. They are safe to use, Herbal soaps have a strong impact on the skin, in terms of making it soft, smooth and supple. On the contrary, chemical soaps are full of damaging substances that can harm the skin as well as health. The present work involves the formulation of herbal soap by using different oil

base. Literatures regarding, herbal soap form preparation, excipients selection, manufacturing method, etc., has been collected and reviewed. based on the optimization of the parameters concluded that herbal soap can be prepared by using soap base. Hence all the formulation F1 to F10 which satisfied all the for herbal soap like shape, color, odour, total fatty matter, skin irritation test. The anti fungal activity evaluated by agar medium, the F1 , F2 , F3 , F9 formulation compare to other formulation good antifungal activity was evaluated. The multiple benefits of herbal soaps make them the right choice for better skin care and optimal health outcomes Natural soaps have less side effects such as rashes, irritancy,etc as compared to the synthetic soaps. Herbal soaps prepared by all these herbs satisfied the evaluation

**ACKNOWLEDGEMENT: -**

It is with pleasure of immense gratitude that I express my most cordial and humble thanks to my esteemed guide, Mr. Mahesh B. Kshirsagar, M.Pharm (Assistant Professor) for his valuable guidance, keen interest, perennial inspiration and everlasting encouragement. I am greatly indebted to Dr. Sayyed G.A. honorable Principal of SAJVPM's collage of pharmaceutical science and research center Kada and the all management committee of SAJVPM's collage of pharmaceutical science and research center Kada for providing necessary facilities to carry out my work and for constant support. I owe my warmest and humble thanks to Dr. Garje S.Y. (Project Coordinator) SAJVPM's collage of pharmaceutical science and research center Kada to encourage me throughout my study. I would like to express my love and gratitude to my beloved Parents, My Aai-Baba, My lovely sister and brother, their blessings always inspire me to work hard and to overcome all the difficulties throughout my life. I would express my special thanks to my admirable friends Sahil, Sachin, Pradip, Akash. I would like to thank Mrs. Dalvi madam (Librarian) for providing books continuously and constant support. My thanks to Mr. Thorve Sir for help in laboratory performance. Last but not least I would like to specially thank to all teaching and non-teaching staff of SAJVPM's collage of pharmaceutical science and research center Kada for his & her support in each and every moment during project work.

#### REFERENCES :

1. Petruzzello, Melissa. "Neem". Encyclopedia Britannica, 28 Apr. 2023
2. Alzohairy, Mohammad A. "Therapeutic Role of *Azadirachta indica* (Neem) and Their Active Constituents in Diseases Prevention and Treatment." Evidence-based complementary and alternative medicine : eCAM vol. 2016.
3. Reddy, I.V.Srinivasa & Palagani, Neelima. (2022). *Neem (Azadirachta indica): A Review on Medicinal Kalpavriksha*. International Journal of Economic Plants.
4. Mahmoud, D A et al. "Antifungal activity of different neem leaf extracts and the nimonol against some important human pathogens." Brazilian journal of microbiology : [publication of the Brazilian Society for Microbiology] vol. 42,3 (2011).
5. Britannica, T. Editors of Encyclopaedia (2023, May 5). *garlic*. Encyclopedia Britannica.
6. El-Saber Batiha, Gaber et al. "Chemical Constituents and Pharmacological Activities of Garlic (*Allium sativum* L.): A Review." Nutrients vol. 12,3 872. 24 Mar. 2020.
7. Ansary, Johura et al. "Potential Health Benefit of Garlic Based on Human Intervention Studies: A Brief Overview." Antioxidants (Basel, Switzerland) vol. 9,7 619. 15 Jul. 2020.
8. Choudhari S, Sutar M, Chavan M, Formulation, Evaluation and Antibacterial Efficiency of herbal hand wash, Indo American Journal of Pharmaceutical Research 2016.
9. Ruckmani K, Krishnamoorthy R, Samuel S, Kumari H. L. J, Formulation of Herbal Bath Soap from *Vitex negundo* Leaf Extract, Journal of chemical and pharmaceutical sciences, 2014.
10. Wijetunge W. M. A. N. K, Perera B. G. K, Preparation of Medicinal Soap Products Using The Leaf Extracts of *Punica granatum* Pomegranate, International Journal of Pharmacy and Biological Sciences, 2016.
11. Moghadamtousi S. Z, Kadir H. A, Hassandarvish P, Tajik H, Abubakar S, Zandi K, A Review on Antibacterial, Antiviral and Antifungal Activity of Curcumin, BioMed Research International, 2014.



12. Ariza T, The things well make, Homemade Glycerin Soap Recipe (from scratch), August 2017, Available from:
13. Afsar Z, Khanam S, Formulation and Evaluation of Poly Herbal Soap and Hand Sanitizer, *International Research Journal of Pharmacy*, 2016.
14. Stevens, J. (2001). Fungal skin infections. School of Medicine, University of New Mexico.
15. White, S. (2006). Fungal skin infections. Davis, USA: University of California.
16. Choudhari S, Sutar M, Chavan M, Formulation, Evaluation and Antibacterial Efficiency of herbal hand wash, *Indo American Journal of Pharmaceutical Research* 2016; 6(04): 5202-2503.
17. Ruckmani K, Krishnamoorthy R, Samuel S, Kumari H. L. J, Formulation of Herbal Bath Soap from Vitex negundo Leaf Extract, *Journal of chemical and pharmaceutical sciences*, 2014; (2): 95.
18. Wijetunge W. M. A. N. K, Perera B. G. K, Preparation of Medicinal Soap Products Using The Leaf Extracts of Punica granatum Pomegranate, *International Journal of Pharmacy and Biological Sciences*, 2016; 6(2):07-16.
19. Moghadamtousi S. Z, Kadir H. A, Hassandarvish P, Tajik H, Abubakar S, Zandi K, A Review on Antibacterial, Antiviral and Antifungal Activity of Curcumin, *BioMed Research International*, 2014: 02.
20. Ariza T, The things well make, Homemade Glycerin Soap Recipe (from scratch), August 2017, Available from: <https://thethingswellmake.com/homemade-glycerin-soap-recipe-from-scratch/>.
21. Afsar Z, Khanam S, Formulation and Evaluation of Poly Herbal Soap and Hand Sanitizer, *International Research Journal of Pharmacy*, 2016; 7(8): 54-57.
22. Stevens, J. (2001). Fungal skin infections. School of Medicine, University of New Mexico.
23. White, S. (2006). Fungal skin infections. Davis, USA: University of California.
24. Londhe J, Jagtap S. D, Doshi C, Jagade D, Formulations of Herbal Hand Wash with Potential Antibacterial Activity, *International Journal of Research in Advent Technology*, 2015: 11.
25. Majekodunmi S. O, Essien A. A, Development and evaluation of antimicrobial herbal formulations containing the methanolic extract of Cassia alata for skin diseases, *Journal of Coastal Life Medicine*, 2014; 2(11): 872-875.
26. Basmatekar G, Jais N, Daud F. Aloe vera: A valuable multifunctional cosmetic ingredient, *International Journal of Medicinal and aromatic plants*, 2011;1:338- 341.
27. Saikia A.P., Ryakala V.K., Sharma P., Goswami P., Bora U., (2006). Ethnobotany of medicinal plants used by Assamese people for various skin ailments and cosmetics. *Journal of Ethnopharmacology*.106(2): 149-157.
28. Ainie K, Hamirin K, Peang-Kean L, Assessment of the Physicochemical Properties of Selected Commercial Soaps Manufactured and Sold in Kenya *J. Am. Oil Chem. Soc.*, 1996, 73,105-108p.
29. Moghadamtousi S. Z, Kadir H. A, Hassandarvish P, Tajik H, Abubakar S, Zandi K, A Review on Antibacterial, Antiviral and Antifungal Activity of Curcumin, *BioMed Research International*, 2014: 02.
30. Padalia RC, Verma RS, Velusamy S, Chauhan A, Chanotiya CS, Yadav A. Volatile terpenoid compositions of leaf and rhizome of Curcuma amada Roxb. From Northern India. *J Essential Oil Res* 2013;25:17-22.
31. Randeep G, Vandna K, Amandeep S. Phytochemical investigation and evaluation

of anthelmintic activity of *Curcuma amada* and *Curcuma caesia* comparative study. *J Ethnopharmacol* 2011;2:1-4.

**HOW TO CITE:** Akash Romade, Mahesh B. Kshirsagar, Sanjay Y. Garje, Sayyed G. A., Formulation And Evaluation Of Herbal Soap As A Anti-Fungal Activity, *Int. J. of Pharm. Sci.*, 2024, Vol 2, Issue 5, 897-904. <https://doi.org/10.5281/zenodo.11210742>

