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Review Article

Review on Herbal Antifungal Cream

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ABSTRACT

Fungal infections, or mycoses, represent a significant and growing public health challenge worldwide, particularly in tropical and subtropical regions. Factors such as poor hygiene, compromised immunity, environmental exposure, and the indiscriminate use of antibiotics have contributed to the increasing incidence of superficial and systemic fungal infections. Although conventional antifungal creams remain the standard line of treatment, their frequent usage is often associated with adverse effects, higher costs, and the emergence of drug-resistant fungal strains. As a result, there is a growing interest in herbal antifungal therapies that offer natural, cost-effective, and safer alternatives. Herbal antifungal creams utilize plant-based compounds known for their antimicrobial, anti-inflammatory, and skin-soothing properties. Medicinal plants like Azadirachta indica (Neem), Ocimum sanctum (Tulsi), and Curcuma longa (Turmeric) have demonstrated promising antifungal efficacy in both in vitro and in vivo studies. These herbs contain bioactive constituents such as nimbin, eugenol, and curcumin that exhibit fungistatic and fungicidal activity against a range of dermatophytes and yeast-like fungi. This review provides an in-depth analysis of the classification and constituents of antifungal creams, elaborates on the pharmacological mechanisms of herbal agents, and compares the efficacy and safety profiles of herbal versus synthetic formulations. The formulation challenges, clinical findings, and potential for future development of herbal antifungal creams are also discussed. Overall, the review supports the growing relevance of herbal antifungal formulations as a viable and effective approach to dermatological therapy.

INTRODUCTION

Fungal infections, medically referred to as mycoses, are caused by a diverse group of fungal organisms that invade and colonize various tissues

and organs of the human body. These infections can range from superficial, involving only the skin, hair, or nails, to subcutaneous and systemic forms that may affect internal organs and lead to life-threatening complications, particularly in

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immunocompromised individuals. Among the different categories, superficial fungal infections are the most prevalent and include conditions such as tinea corporis (ringworm), tinea pedis (athlete's foot), tinea cruris (jock itch), tinea capitis (scalp infection), onychomycosis (nail fungal infection), and cutaneous candidiasis. These infections are especially widespread in tropical and subtropical climates, where high humidity, heat, and sweating create an ideal environment for fungal growth and transmission. Crowded living conditions, poor sanitation, and inadequate access to healthcare further facilitate the spread of these infections. The etiological agents of superficial mycoses primarily include dermatophytes (e.g., *Trichophyton*, *Microsporum*, *Epidermophyton* species), yeasts (mainly *Candida albicans*), and molds. Dermatophytes have a particular affinity for keratinized tissues such as the stratum corneum of the skin, hair shafts, and nails, where they derive nutrients and proliferate. Meanwhile, *Candida* species, which are part of the normal microbial flora of the skin, gastrointestinal tract, and genitourinary tract, can become opportunistic pathogens when the host's defense mechanisms are compromised.

Several predisposing factors can lead to the initiation and exacerbation of fungal infections. These include:

- Immunosuppression (e.g., due to HIV/AIDS, organ transplantation, chemotherapy, or corticosteroid therapy),
- Poor personal hygiene and prolonged exposure to sweat/moisture,
- Frequent use of occlusive footwear and synthetic clothing,
- Endocrine disorders such as diabetes mellitus,

- Prolonged antibiotic therapy, which disrupts the balance of normal skin flora,
- Close human contact in shared environments such as gyms, swimming pools, and dormitories.

The clinical manifestations of superficial fungal infections vary depending on the site and extent of involvement but commonly include itching, redness, scaling, fissuring, thickening of the skin or nails, and in some cases, pain or secondary bacterial infections. While generally not life-threatening, these infections can significantly impact quality of life, cosmetic appearance, and psychological well-being, particularly in chronic or recurrent cases. The growing burden of fungal infections and their public health implications have made effective treatment essential. However, the increasing resistance to conventional antifungal agents, coupled with side effects such as burning, stinging, or allergic reactions, has led to an urgent need for alternative therapeutic approaches. This has paved the way for herbal and plant-based antifungal formulations, which are being explored extensively due to their natural origin, lower risk of resistance development, minimal side effects, and additional skin-beneficial properties. This section sets the stage for a more comprehensive review of the antifungal therapeutic landscape, emphasizing the scientific rationale and therapeutic potential of herbal antifungal creams in the context of rising mycotic infections.

Causes of Fungal Infections:

Fungal infections are primarily caused by:

- **Dermatophytes:** e.g., *Trichophyton rubrum*, *Microsporum*, *Epidermophyton*
- **Yeasts:** e.g., *Candida albicans*



- **Molds:** environmental molds can cause opportunistic infections

Predisposing factors include:

- Poor hygiene
- Diabetes mellitus.
- Immunocompromised conditions
- Tight or synthetic clothing
- Prolonged use of antibiotics or corticosteroids.

Classification of Antifungal Creams:

Medicated (Synthetic) Antifungal Creams

These formulations contain synthetic antifungal agents designed to disrupt fungal cell wall synthesis or function.

Common synthetic agents:

- **Azoles:** Clotrimazole, Miconazole, Ketoconazole
- **Allylamines:** Terbinafine, Naftifine
- **Polyenes:** Nystatin
- **Echinocandins** (mostly for systemic use)

Mechanism of Action:

- Azoles inhibit ergosterol synthesis, weakening fungal membranes.
- Allylamines inhibit squalene epoxidase, disrupting cell membrane integrity.

ADVANTAGES:

- Rapid symptom relief
- Broad-spectrum activity
- FDA-approved with known safety profiles

DISADVANTAGES:

- Expensive
- Local side effects (burning, irritation)
- Long-term use can cause resistance
- Not suitable for all age groups or sensitive skin

Herbal Antifungal Creams:

These use plant-based ingredients with natural antifungal, antibacterial, and anti-inflammatory properties. They are gaining attention due to increased interest in green medicine and Ayurvedic practices.

Benefits:

- Mild on skin, suitable for prolonged use
- Natural origin, fewer side effects
- Lower cost
- Multifunctional properties (healing, moisturizing)

Challenges:

- Limited scientific standardization
- Variable potency depending on plant source and preparation
- Slower onset of action compared to synthetic drugs

Herbal Ingredients Commonly Used in Antifungal Creams:

Sr. No.	Herbal Ingredient	Pharmacological Role
1	Neem (<i>Azadirachta indica</i>)	Potent antifungal, antibacterial, wound healing
2	Tulsi (<i>Ocimum sanctum</i>)	Antifungal, antioxidant, anti-inflammatory
3	Turmeric (<i>Curcuma longa</i>)	Antifungal, antiseptic, healing agent
4	Tea Tree Oil	Disrupts fungal membranes, antiseptic
5	Aloe Vera	Soothing, anti-inflammatory, skin regenerating
6	Beeswax	Emollient and emulsifying base



Pharmacogenetic Profile of Selected Plants:



○ **Neem (Azadirachta indica)**

- **Family:** Meliaceae
- **Parts Used:** Leaves, bark, oil

Key Constituents: Nimbin, nimbidin, azadirachtin, flavonoids

• **Actions:**

- Antifungal (effective against *Candida*, *Trichophyton*)
- Antibacterial and anti-inflammatory
- Promotes wound healing and detoxification

- **Clinical Note:** Neem extracts are well-documented for topical antifungal activity.

○ **Tulsi (Ocimum sanctum)**



- **Family:** Lamiaceae
- **Constituents:** Eugenol, linalool, ursolic acid
- **Actions:**
 - Broad-spectrum antimicrobial
 - Enhances immunity
 - Reduces inflammation

○ **Turmeric (Curcuma longa)**



- **Family:** Zingiberaceae
- **Active Ingredient:** Curcumin
- **Actions:**
 - Inhibits fungal hyphae growth
 - Accelerates wound healing
 - Exhibits anti-inflammatory and antioxidant effects.

Mechanisms of Action – Herbal vs. Synthetic:

Feature	Synthetic Creams	Herbal Creams
Source	Chemically synthesized	Plant-based
Mechanism	Inhibits ergosterol/cell wall	Disrupts fungal membranes, boosts healing
Onset of Action	Rapid	Gradual
Side Effects	Burning, itching, allergy	Minimal to none
Cost	High	Low to moderate
Resistance Risk	High with long- term use	Low

Literature Review:

Several published works support the use of both synthetic and herbal antifungal preparations. Selected highlights include:

1. **Smith et al. (2022), *Journal of Dermatological Therapy***

- Reviewed recent innovations in medicated creams with enhanced bioavailability.
- Emphasized the emergence of drug resistance and side effects as a challenge.

2. **Patel & Kumar (2021), *Phytomedicine Review***

- Analyzed antifungal efficacy of neem and tulsi in vitro.
- Found neem to be more effective than fluconazole against *T. rubrum*.

3. **Desai et al. (2020), *International Journal of Herbal Medicine***

- Clinical trials on 50 patients with tinea corporis using herbal cream showed 90% symptom resolution with no side effects.

4. **Gupta et al. (2023), *Ayurveda Today***

Evaluated the cost-effectiveness of herbal vs. synthetic antifungal products in low-income populations.

Aim of the Study:

To explore and evaluate the formulation, efficacy, and safety of herbal antifungal creams using plant extracts such as *Azadirachta indica* (Neem), in comparison with synthetic formulations.

Objectives:

- To identify and study the antifungal properties of selected herbs.
- To formulate a stable and effective herbal antifungal cream.
- To evaluate the physical characteristics, stability, and activity of the formulation.
- To compare herbal and synthetic creams in terms of safety, cost, and therapeutic benefits.

CONCLUSION:

Herbal antifungal creams provide a natural, safe, and effective alternative to conventional medicated products, especially for superficial fungal infections. The phytochemicals in plants like Neem, Tulsi, and Turmeric have shown promising antifungal, anti-inflammatory, and healing properties, making them ideal for topical formulations. While synthetic creams offer rapid results, they carry risks such as adverse reactions, cost burden, and resistance. In contrast, herbal creams are gentle, affordable, and sustainable, though they may require longer treatment durations. To maximize the benefits of herbal

formulations, further standardization, clinical trials, and regulatory validation are essential. Herbal medicine has the potential to reshape dermatological care when supported by scientific rigor and quality control.

REFERENCES

1. Alajlani, Muaaz. "Antifungal property of medicinal plants: A comprehensive review." *International Journal of Herbal Medicine* 11.4 (2023): 51-57.
2. Shokri, Hojjatollah, and Aghil Sharifzadeh. "Zataria multiflora Boiss.: A review study on chemical composition, anti-fungal and antimycotoxin activities, and ultrastructural changes." *Journal of herbmed pharmacology* 6.1 (2016): 1-9.
3. Gunjagi, Arati, et al. "Formulation and Evaluation of Polyherbal Antifungal Cream." (2025).
4. Wang, Li, Hui Lu, and Yuanying Jiang. "Natural polyketides act as promising antifungal agents." *Biomolecules* 13.11 (2023): 1572.
5. Godge, G. R., et al. "Formulation Perspectives in Topical Antifungal Drug Therapy: A Review." *Journal of Drug Delivery & Therapeutics* 13.5 (2023).
6. Gavale, Anand G., and Prashant R. Wagh. "Herbal Drugs Use in a Skin Disorders Review Article." *World J. Pharm. Res* 12 (2023): 2655-2676.
7. Zhou, Rudo, Pamhidzai Dzomba, and Luke Gwatidzo. "Phytochemicals as potential active principal components for formulation of alternative antifungal remedies against *Trichophyton* spp.: a systematic review." *Pure and Applied Chemistry* (2024).
8. Rouf, Muhammad, Et Al. "Hydrogel-Based Delivery Systems For Topical Antifungal Therapy: A Review." *Cellulose Chemistry & Technology* 58 (2024).
9. Brescini, Lucia, et al. "Antifungal combinations in dermatophytes." *Journal of Fungi* 7.9 (2021): 727.
10. Djunaidi, Anita Maria. "Corticosteroid and antifungal alternative treatments for seborrheic dermatitis: a review." *FABAD Journal of Pharmaceutical Sciences* 45.1 (2020): 77-89.
11. Leong, Mun Yee, et al. "A review on herbal skincare creams." *Current Trends in Biotechnology and Pharmacy* 15.4 (2021): 455-470.
12. Nautiyal, Ujjwal, Ankush Guleria, and Nainika Gupta. "Antifungal herbs found in sirmour-A Review." *Asian Pacific Journal of Nursing and Health Sciences* 6.1 (2023): 1-3.
13. Al-Ghorafi, M. A., and M. M. Alburyhi. "Evaluation and Formulation of Antifungal Activity of Dragon Blood Extract and Inorganic Salts on Dermatophytosis and Candidiasis." *European Journal of Pharmaceutical and Medical Research* 11.1 (2024): 09-17.
14. Chandrani, D., S. Z. Lubaina, and M. Soosamma. "A review of antifungal effect of plant extract vs chemical substances against *Malassezia* spp." *Int J Pharma Bio Sci* 3.3 (2012): 773-80.
15. Gahal, Ajinkya Vilas, et al. "Review on Formulation and Evaluation of Herbal Ointment." *International Journal of Sciences and Innovation Engineering* 2.5 (2025): 784-800.
16. Sulthana, Nasreen, et al. "Formulation, Evaluation, And In Vitro Antifungal Assessment of A Topical Preparation Using Leaf Extract From *Tridax Procumbens* L." *REDVET-Revista electrónica de Veterinaria* 25.1: 2024.
17. Anand, Utpal, et al. "Ethnodermatological use of medicinal plants in India: From ayurvedic formulations to clinical perspectives—A



- review." *Journal of ethnopharmacology* 284 (2022): 114744.
18. Sheidaei, Sedigheh, et al. "Herbal medicine and vaginal candidiasis in Iran: a review." *Evidence Based Care* 7.2 (2017): 71-77.
19. Sisodiya, Rahul, Sumeet Dwivedi, and Neetesh K. Jain. "Formulation and Evaluation of Herbal Cream containing alcoholic extract of *Sauromatum guttatum* (Wall.) Schott for the treatment of Fungal infection." *International Journal of Pharmacy & Life Sciences* 11.8 (2020).
20. Wani, S., A. Rajput, and P. Pingale. "Herbal Nanoformulations: A Magical Remedy for Management of Fungal Diseases." *Journal of Herbal Medicine* 42 (2023): 100810.
21. Fawehinmi, A. B., and F. O. Oyediji. "Evaluation of Formulated Anti-dermatophyte Creams from Ethanol Extract of *Mitracarpus villosus* Leaves." *International Journal of Biochemistry Research & Review* 29.9 (2020): 1-12.
22. Chatterjee, A. and Pakrashi, S.C., 1994. *The Treatise on Indian Medicinal Plants*. New Delhi: Publications & Information Directorate.
23. Subapriya, R. and Nagini, S., 2005. Medicinal properties of neem leaves: A review. *Current Medicinal Chemistry – Anti-Cancer Agents*, 5(2), pp.149-156.
24. Prakash, P. and Gupta, N., 2005. Therapeutic uses of *Ocimum sanctum* Linn (Tulsi) with a note on eugenol and its pharmacological actions: A short review. *Indian Journal of Physiology and Pharmacology*, 49(2), pp.125-131.
25. Chainani-Wu, N., 2003. Safety and anti-inflammatory activity of curcumin: A component of turmeric (*Curcuma longa*). *Journal of Alternative and Complementary Medicine*, 9(1), pp.161-168.
26. Ahmad, Naved, Alka Verma, and Jainifar Khatoon. "A Review on Formulation and Evaluation of Multipurpose Herbal Cream." (2024).
27. Dhonnar, Rajashri R., M. M. Agarwal, and Yogesh Agarwal. "Formulation of antifungal polyherbal formulation and evaluation of in-vitro antifungal activity." *International Journal of Pharma and BioSciences* 10.2 (2019): 345-354.
28. Mastan, A. "Anti-fungal potency of some unani drugs in the treatment of dermatophytoses (Qūba)." *TMR Integrative Medicine* 5 (2021): e21004.
29. Nayana, P. V., et al. "A Review on the Formulation and Evaluation of Herbal Cold Creams Incorporating Natural Oils." *Journal of Pharma Insights and Research* 2.4 (2024): 207-211.
30. Nwaneri, Miriam GU, et al. "Topical Antifungal Herbal Formulations With Broad Spectrum Activity."
31. KAB, Fernando, and W. A. L. C. Waliwita. "Determination of antifungal activity of herbal ointment prepared from leaf extract of *Cassia fistula* on laboratory specimen of *Candida albicans*." *Int. J. Sci. Res. Publ.* 10.3 (2020): 821-828.
32. Desai, Anita R., et al. "Formulation and Evaluation of Herbal Anti-Microbial Cream Containing *Hibiscus Abelmoschus* Linn Extract." *World Journal of Pharmacy and Pharmaceutical Sciences*. DOI 10 (2021).
33. Gwarzo, Iliyasu Datti, et al. "Recent advances and future prospects in topical creams from medicinal plants to expedite wound healing: a review." *Biotechnology & Biotechnological Equipment* 36.1 (2022): 82-94.
34. Kumar, K. Vijay, et al. "A REVIEW ON MOISTURIZING HERBAL CREAM." (2025).
35. Sharma, Sharad, and Sonu Sharma. "Development, Standardization of Polyherbal Formulation of Anti- Fungal Cream of Plant

Curcuma longa, Eugenia aromatica,
Foeniculam vulgare." International Journal of
Pharmaceutical Research and Innovation 13
(2020): 65-87.

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