WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 14, Issue 8, 494-504. Review Article ISSN 2277–7105

FORMULATION AND EVALUATION OF POLYHERBAL ANTIFUNGAL CREAM

Arati Gunjagi*, Priyanka Nandavade, Shardul Desai, Shailaja Parse, Sayali Tikka and Sanika Desai

Yashwant Redekar College of Pharmacy, Nesari.

Article Received on
25 February 2025,

Revised on 17 March 2025,
Accepted on 07 April 2025

DOI: 10.20959/wjpr20258-36254

***Corresponding Author**
Arati Gunjagi
Yashwant Redekar College of Pharmacy, Nesari.

ABSTRACT

Herbal cosmetics are the preparation used to enhance the human appearance. The aim of the present research was to formulate the herbal cream for purpose of moistening, Nourishing, Lightening and Treatment of various diseases of the skin. A polyherbal formulation is a formulation that contains two or more herbal drugs which act as active constituents and can show beneficial effects. Herbal medicines are being used by 80% of the world population primarily in the developing countries for primary health care. Herbal medicinal product is most preferable and safer with fewer side effects than synthetic product. The main objective of this work is to formulate and evaluate a cosmetic preparation. Polyherbal antifungal cream made from ocimum tenuiflorum contain two main components eugenol and linalool and Azadirachta Indica contain azadiradione used in the antifungal cream due to their potential antifungal properties. The polyherbal extract. The herbal antifungal cream represents a natural and safe to use and this herbal antifungal cream is beneficial for the reduction of fungal infection.

KEYWORD: Polyherbal, Antifungal, Cream, Fungal infection.

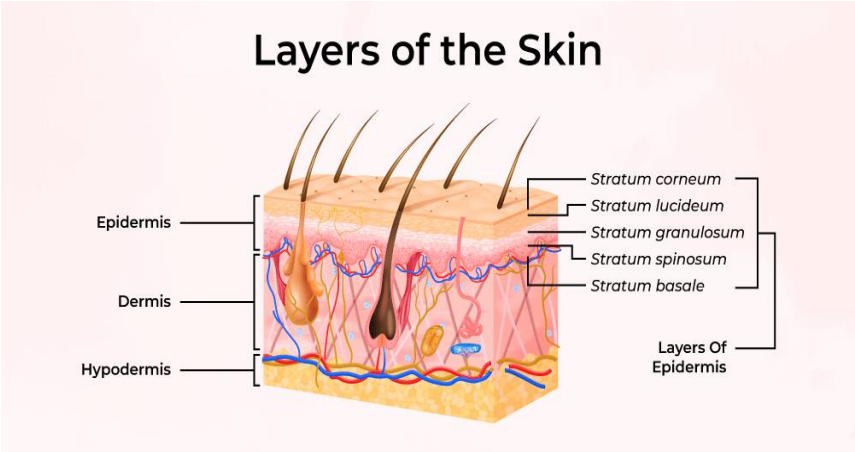
INTRODUCTION

Human skin is a significant target site for the application of the drugs. Especially in the treatment of local diseases, a topical drug delivery is an appropriate approach to restrict the beneficial effect on the affected are and to reduce total incrimination. In order to reach beneficial drug concentrations in certain skin layers, the uppermost wall, the stratum corneum (sc), has to be overcome. This process is affected by various factors, e.g. the physic-chemical

properties of the drug and the vehicle used for application. Diffusion enhancement with special preparation approaches is mostly based on the treatment of colloidal transporter. Colloidal transporters have attracted the main interest because they are promising systems having local effect. The transporters gather in SC or other upper skin layers are not expected to penetrate into viable skin. The mutual characteristic of all colloidal transporters is the submicron sized atoms which are intended to transport entrapped active molecules into the skin. The skin is the external layer of the body. In human, it is the major organ of integumentary system. Skin consists of 12-15% of total body weight.

Layers of skin

1. Epidermis
2. Dermis
3. Hypodermis



Layers of epidermis

Epidermis contains five layers

1. Stratum corneum
2. Stratum lucidum
3. Stratum granulosum
4. Stratum basal
5. Stratum spinosum

Demis

1. Dermis is a second layer of the skin.
2. It is mainly consisting of connective tissue.

3. It contains blood vessels, glands, hair follicles and nerve endings.

Hypodermis

1. It is not actually the part of the skin and present below the dermis layer.
2. It attaches the skin to primary bones and muscles.
3. It helps in the storage of fats.

Function of skin

1) Provide protection to the body.
2) Helps in absorption of various drugs such as lotion, gel and ointment.
3) Regulates the body temperature.
4) Skin contains millions of nerve endings that act as sensory receptors.
5) Helps in secretion of sweat glands.[20]

Cream

"Cream is semisolid preparation of a medication for topical use that contains a water base. Fundamentally, it is a formulation of oil in water. An ointment is preparation for topical use."

Antifungal cream

Cream which is used for destroying fungi or inhibiting their growth.

Advantages of cream

1. Able to calm inflammation.
2. Promote skin tone.
3. Keep wrinkles and acne away.
4. Increase cell metabolism and blood circulation.
5. Easily water washable. Easy to wipe away.
6. Less greasy compared to ointment
7. Easy to spread on the skin's surface
8. Suitable for sensitive, dry and fair skin.
9. Suitable for acute lesions.[6]

Classification of fungal infection

1. Superficial

Causative fungus: Trichophyton rubrum, Aspergillus fumigates.

Ex: Tineaversicolor, White piedra, Tinea nigra

2. Cutaneous

Causative fungus: Microsporum, Epidermophyton.

Ex: Tinea barbae, Tinea faciei, Tinea capitis, Tinea manuum

3. Subcutaneous

Causative fungus: Candida albicans

Ex. Chromomycosis.[23]

Some ingredients which are required for preparation of polyherbal cream

1) Neem

Biological source- It contains of all aerial parts of Azadirachta indica.

Family- Meliaceae

Uses- Treats fungal infection.[3]

2) Tulsi

Biological source- Fresh and dried leaves of Ocimum sanctum

Family- Labiatae

Uses - Heals infection.[2]

3) Turmeric

Biological source- Dried rhizomes of the plant Curcuma longa

Family- Zingiberaceae

Uses - Reduce inflammation.[1]

4) Guava leaves

Biological source- Dried leaves of psidium guajava

Family- Myrtaceae

Uses- Anti-inflammatory.[2]

METHODOLOGY

1. Weigh all ingredients accurately.
2. Separately prepare oil phase and aqueous phase.
3. For aqueous phase, add methyl paraben, propyl paraben and rose water.
4. In oil phase, add Extract of Tulsi, Neem, Turmeric, Guava leaves, Aloe Vera, Petroleum jelly and Twin 80.
5. Heat both phase till there temperature is same such as 60 to 75°c.
6. Then add aqueous phase into oil phase and mix continuously till thick cream is formed.[9]

Evaluation of cream

1. Organoleptic properties

This refers to the sensory properties of the cream, such as it's appearance, color, odor and texture. Evaluating this properties can give as idea of the cream's overall quality and user experience. The formulations are visually inspected for it's clarity and presence of any foreign particles.

2. Safety

There should not be any adverse response or side effects related with the cream.

3. Homogenicity

The preparations were tested for the homogenicity, visual examination and touch.

4. Phase separation

The prepared cream transferred in a suitable wide mouth container. Then stored the cream for visualization after 24 hours, We will visualise the oil phase separation.

5. Irritancy

Formulations was applied on the skin and leave for few minutes and the effect was studied.

6. Wash ability

Wash ability test was carried out by applying a small quantity of cream on the surface of the hand and wash under tap water.

7. PH Determination

Take a strip of PH paper apply cream on one side of strip and note down the color. Compare the color of the strip to a color chart to get the PH reading. PH strips is inexpensive and easy to use but they are not very precise and many require multiple strip per product. Approximately 1gm of the cream was taken and dissolved in 100ml of distilled water and stored for 2 minute. The measurement of PH by using PH meter.

8. Spreadability

Take 1 gm of sample is put in center of glass plate and another plate of glass was placed over it carefully. Gently apply the pressure both the slide after that cream was uniformly spread on the both slide.[7]

Antifungal activity of cream

Formulation table for nutrient media of lactose agar

Sr. No.	Ingredint	Quantity
1.	Beef Extract	0.05gm
2.	Peptone	0.05gm
3.	Lactose	0.05gm
4.	Agar	1.5gm
5.	Distilled water	100ml

Procedure

1. Weight accurately all ingredient.
2. Mix the lactose, peptone, beef extract and agar-agar into 100ml of distilled water.
3. This mixture is heated for 10-15 mins to form semisolid consistency.
4. Pour the semisolid mixture into petridish.

5. Keep the petri dish in incubator at 37c for 24 hrs.
6. Hence lactose agar media is prepared.

Cup plate method

In this method, heating is performed for melting the agar and cooled upto 45c. The agar medium is incubated with the test microorganisms and poured into a sterile petridish.

In the cup plate method, when the inoculated agar has been solidified, holes of about 9mm in diameter are made by cutting the medium with sterile cork borer and the antifungal agents are directly placed into these holes.[21]

Future prospective of polyherbal antifungal cream

Polyherbal antifungal creams, combining multiple plant extracts, hold promise as a natural potentially more effective, and safer alternative to synthetic antifungal treatments, particularly in combating fungal resistance. The above herbal cream for purpose of moistening, nourishing, lightening and treatment of various diseases of the skin. The herbal antifungal cream represents a natural and safe to use and this herbal antifungal cream is beneficial for the reduction of fungal infection.

1. Market Growth and Consumer trends

The worldwide antifungal medicines market size was estimated at USD 15.8 billion in 2023 and is planned to grow at a compound annual growing speed (CAGR) of 3.8% from 2024 to 2030. The growing prevalence of fungal infections such as Aspergillus and Candida albicans is one of the key factors propelling the market. Herbal medicine is being used by about 80% of the world population primarily in developing countries for primary health care. The polyherbal antifungal cream does not enhance other infections. The use of herbal ingredients such as Neem, Turmeric, Guava, Tulsi which does not show any side effects to the skin.

2. Innovation and R&D in polyherbal antifungal cream

Research and Development are critical for the advancement of polyherbal antifungal cream

Companies develop polyherbal antifungal creams designing to reduce the growth of specific fungus and also minimizing the symptom such as rashes, red patches, itching.

3. Health and Environmental Benefits

The polyherbal antifungal cream are often free from dangerous chemicals, making them safer for Short-term use. Their decomposable nature makes them an environmentally friendly choice.

4. Challenges and Limitations

Despite their advantages, polyherbal antifungal cream face several challenges: Higher costs: The production of polyherbal antifungal cream often involves higher costs due to the obtaining of natural ingredients, which can limit approachability.

Shelf life: Polyherbal antifungal cream usually have a very short shelf life.

5. Government and Regulatory support

Government and regulatory bodies are increasingly promoting the use of herbal and organic products. Initiatives to certify and stabilize herbal product can increase consumer trust and facilitate market growth.[24]

CONCLUSION

The in vitro evaluation of the polyherbal formulation comprising neem, tulsi, guava leaves and turmeric demonstrates promising antifungal activity against various fungal pathogen. The synergistic effect observed in this study underscore the potential of combining multiple herbal extract to enhance antifungal efficacy. Neem known for its broad spectrum antimicrobial properties exhibited strong antifungal effects contributing significantly to the overall activity of the formulation. The future trajectory of the herbal antifungal cream is marked by sustainability, safety and efficacy making them a compelling choice in the evolving landscape of antifungal treatment. While challenges remain ongoing research and development efforts hold promises for establishing this formulation as a cornerstone in antifungal treatment, addressing the growing demand for safe, effective and sustainable therapeutic option.

ACKNOWLEDGMENT

Sincere thanks to principal my guide and management of Yashwant Redekar College of Pharmacy, Nesari, India. for providing necessary facilities throughout this study.

REFERENCE

1. Kajal Nivrutti Tangadkar, Talekar Sakshi., in formulation and evaluation of herbal moisturizing cream.
2. Ms. Jigyasa Patidar, Mr. Rahul Pandey., formulation and evaluation of polyherbal antifungal cream using guava leaves extract and Ocimum Sanctum oil.
3. Kirtikar, K. R. and Basu, B. D., in Medicinal Plants (eds Blatter, E., Cains, J. F., Mhaskar, K. S.), Vivek Vihar, New Delhi, 1975; 536.
4. Sarvanthi Mulagada, Srikavya Shekarmahanthi., Preparation and evaluation of anti acne soap by using tulsi and mint leaves.
5. Rajashri R. Dhonnar, Mrs. Mona Y. Agarwal., Formulation of antifungal polyherbal formulation and evaluation of in – Vitro Antifungal activity.
6. Arati D. Powar and Dr. Sachin A. Nitave., World Journal of Pharmaceutical Research.
7. Jincy V. Varghese, Krishnapriya E. P., A Review on formulation and evaluation of polyherbal antifungal cream.
8. Prashant Chavan, Mallinath Kalshetti., Formulation and evaluation of polyherbal cream.
9. Abhishek Bisai, Vinita Singh., Formulation and Evaluation of Herbal Antifungal Cream.
10. Pratik Balasaheb Panhalkar, Pawar Ganesh Kalyan., Overview on Polyherbal Antifungal Cream.
11. Sourabh J. Chougule, Seema Shinde and Nilesh Chougule., Formulation and Evaluation of Polyherbal Antifungal cream by using neem, guduchi and mint plant extract.
12. Tadwee, I.K., Gore, S. and Giradkar, P., Advances in topical drug delivery system: A review. Int. J. of Pharm. Res. And all. Sci, 2012; 1(1): 14-23.
13. Akalonu, E.O., Superficial Fungal Infections Among Primary School Children in A Rural Community. Faculty of Paediatrics, 2005.
14. Venugopalan Santhosh Kumar, Visweswaran Navarantnam. Neem (Azardirachta indica): Prehistory to contemporary medicinal uses to humankind. Asian Pacific Journal of Tropical Biomedicine, 2013; 3(7): 505-514.
15. Nisha Devi., et al. "A review on Herbal Cosmetics". World Journal of Pharmaceutical Research, 2022; 7.08: 298-310.
16. C.k. Kokate; A. P. Purohit; S. B. Gokhale; Textbook of Pharmacognocy; Nirali Prakashan; Fifth edition; Sept, 2014; 16.67 – 16.68.
17. Deosarkar S. S; Khedkar C.D; Kalyankar S. D; Sarode A.R; the Encyclopedia of Food.

18. More B. H; Sakharwad S. N; Tembhurne S. V; Sakarkar D. M; Evaluation for Skin Irritacy Testing of Developed Formulation Containing Tulsi Oil for Its Topical Application, International Journal of Toxixology and Pharmacology, 2013; 10-13.
19. Parmar P. B. Baria A. H; Faldu S. D; Tank H. M; Design and Evaluation of Herbal.
20. Deepa K. Ingawale, Satish K. Mandlik, A Text book of Human Anatomy and Physiology.
21. Vijay R. Tahinyani, Technical pharmacy series textbook of Pharmaceutical microbiology.
22. Purnima Chandrakant Dhumane, Shivani M. Suryawanshi., Exploring the efficacy of polyherbal antifungal cream: A comprehensive Review.
23. Formulation and Evaluation of Ketoconazole Gel for Topical use.
24. Adnan Siddiqui., Future Prospective on polyherbal Shampoo.