IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A Research article on "Pharmaceutico-Analytical & Antifungal Study of *Durvadi Lepa* & Its Cream"

Sachin [1], Dr. Usha Sharma [2], Sanjay Kumar Singh [3], Bhawana Mittal [4], Vipin Kumar [5].

1.P.G. final year scholar, department of Rasa Shastra & Bhaishajya Kalpana, Rishikul campus Haridwar,

2.Professor department of Rasa Shastra & Bhaishajya Kalpana, Rishikul campus Haridwar, UAU Dehradun.

3.Professor department of Roga Nidana and Vikruti Vigyan, Rishikul campus Haridwar, UAU Dehradun.

4.Assistant professor Department of Agad Tantra Rishikul campus Haridwar, UAU Dehradun.

5.Head & Assistant Professor department of Pharmaceutical Science, Gurukul Kangri University Haridwar,

ABSTRACT

The present research work titled "Pharmaceutico-Analytical & Antifungal Study of *Durvadi Lepa* & Its Cream" aims to investigate the pharmaceutical, analytical, and antifungal properties of two traditional *Ayurvedic* formulations: *Durvadi Lepa Churna* and Durvadi Cream. These formulations, derived from classical Ayurvedic texts, were analyzed using modern techniques, including High-Performance Thin-Layer Chromatography (HPTLC), and tested for their antifungal efficacy against 'Trichophyton rubrum' and 'Microsporum canis' two fungal pathogens responsible for dermatophytosis. The pharmaceutical study involved standardizing preparation methods to ensure consistency in quality. The HPTLC analysis provided a detailed chemical profile of the formulations, identifying bioactive compounds responsible for antifungal and therapeutic effects. Results showed that *Durvadi Lepa Churna* exhibited stronger antifungal activity, whereas *Durvadi* Cream, though less potent, was more user-friendly for daily application. Both formulations have potential applications in treating skin disorders, particularly fungal infections, with *Durvadi* Cream offering a convenient alternative to conventional antifungal treatments due to its ease of use and patient compliance.

Keywords: *Durvadi Lepa*, *Durvadi* Cream, HPTLC, Antifungal Activity, *Ayurvedic* Formulations.

INTRODUCTION

The skin, being the largest organ of the human body, plays a vital role in physical, emotional, and psychological health. It not only acts as a protective barrier but also reflects the internal health of an individual. Skin disorders, especially fungal infections, have a profound impact on one's quality of life due to their uncomfortable symptoms, such as itching, scaling, and redness, which can lead to social anxiety and embarrassment.

In *Ayurveda*, skin diseases are classified under '*Kushtha'* with *Dadru* (commonly identified as Tinea or ringworm) being a well-known condition. This fungal infection presents as scaly, itchy, and erythematous patches and is primarily linked with the imbalance of *Kapha* and *Pitta doshas*. The classical treatment for *Dadru* involves internal and external therapies, with external formulations such as *Durvadi Lepa* being a cornerstone in its management. *Durvadi Lepa*, as described in *Ayurvedic* texts like '*Chakradatta'* comprises ingredients like *Durva* (Cynodon dactylon), '*Haritaki'* (Terminalia chebula), *Saindhav Lavan'* (Rock Salt), and *Chakramarda* (Cassia tora), which are known for their antifungal, antimicrobial, and anti-inflammatory properties.

Despite the efficacy of traditional Lepas, they pose challenges in terms of application, as they tend to be greasy, difficult to remove, and inconvenient for modern users. As a result, there is a growing need to develop more user-friendly formulations, such as creams, that retain the therapeutic benefits of traditional *Lepas* while offering better ease of application and patient compliance. This study focuses on developing a cream formulation from *Durvadi Lepa* ingredients and compares its antifungal efficacy with the traditional paste to evaluate its suitability as a modern alternative.

MATERIAL AND METHOD

Procurement of Raw Materials

The raw materials for the study were sourced from certified *Ayurvedic herb* suppliers to ensure authenticity and quality. The primary ingredients for both *Durvadi Lepa* and *Durvadi* Cream included '*Durva'* (Cynodon dactylon), '*Haritaki'* (Terminalia chebula), '*Saindhav Lavan*' (Rock Salt), and '*Chakramarda*' (Cassia tora). These herbs were authenticated by botanists specializing in medicinal plants before being processed.

Preparation of *Durvadi Lepa* and Cream

The preparation of *Durvadi Lepa* followed traditional methods as outlined in the *Ayurvedic* text '*Chakradatta*'. The herbs were dried, cleaned, and ground into a fine powder (*churna*). This *churna* was then mixed with liquids like Kanji or Takra to form a paste, which is typically used as a topical application in *Ayurvedic* practices.

For the cream formulation, the same herbs were extracted using a hydroalcoholic solvent, and the extracts were combined with modern pharmaceutical excipients. Ingredients such as polysorbate 80 (a surfactant), cetomacrogol (a base), glycerin (a humectant), and carbopol (a thickener) were used to create a semi-solid, smooth cream that offers better spreadability and ease of application compared to the traditional *Lepa*.

Pharmaceutical Standardization

Both formulations underwent rigorous standardization procedures to ensure consistent quality across batches. Critical parameters such as particle size, pH, and High-Performance Thin-Layer Chromatography (HPTLC) was used to chemically profile both formulations at three wavelengths: 254 nm, 366 nm, and 540 nm. The HPTLC analysis identified key bioactive compounds, including phenolics, flavonoids, alkaloids, glycosides, and saponins, which are known for their therapeutic properties.

Antifungal Study

An in vitro antifungal study was conducted using the agar well diffusion method to evaluate the efficacy of both formulations. Two common fungal strains—'Trichophyton rubrum' and 'Microsporum canis'—were selected, as they are major causes of dermatophytosis (Tinea infections). The formulations were tested for their ability to inhibit fungal growth, and the diameter of the zone of inhibition was measured for both *Durvadi Lepa* and *Durvadi* Cream to assess their antifungal activity.

PHARMACEUTICAL STUDY

HPTLC Fingerprinting

The HPTLC analysis of both *Durvadi Lepa* and *Durvadi* Cream revealed the presence of several bioactive compounds. At 254 nm, distinct bands corresponding to alkaloids and glycosides were observed, which are known for their antimicrobial properties. At 366 nm and 540 nm, prominent bands of flavonoids and phenolics were detected. These compounds possess antioxidant and wound-healing properties, making them critical components for the therapeutic action of the formulations. The chemical profiling through HPTLC confirmed the consistency and reliability of the formulations, ensuring their efficacy in treating skin infections.

Physicochemical Parameters

Physicochemical analysis demonstrated that both *Durvadi Lepa* and *Durvadi* Cream maintained an appropriate pH range (5.62), making them safe for topical application. The moisture content of the formulations was measured to ensure long-term. Durvadi Cream exhibited better spreadability and was less greasy compared to *Durvadi Lepa*, making it more convenient for everyday use. Its non-staining nature and easier removal also contribute to better patient compliance, addressing the limitations associated with traditional *Lepa* formulations.

OBSERVATION AND RESULT

Antifungal Activity

The antifungal efficacy of both *Durvadi Lepa* and *Durvadi* Cream was tested against 'Trichophyton rubrum' and 'Microsporum canis'. The results indicated that both formulations were effective in inhibiting fungal growth, with *Durvadi* Lepa demonstrating a larger zone of inhibition than *Durvadi* Cream. This suggests that *Durvadi Lepa* has stronger antifungal properties, making it more suitable for treating severe fungal infections. However, *Durvadi* Cream, while less potent, showed sufficient antifungal activity for treating mild to moderate infections and offers a more practical application for daily use.

Comparative Analysis

A comparative analysis of the two formulations highlighted their distinct advantages and limitations. *Durvadi Lepa*, being a paste, provided stronger antifungal action, but its greasy texture and difficulty in removal made it less convenient for regular use. On the other hand, *Durvadi* Cream, with its smooth texture and easy application, was more user-friendly, making it an ideal choice for daily use or for treating less severe fungal infections. The cream also improved patient compliance due to its non-sticky and easily washable properties, which is a significant advantage in modern lifestyles.

DISCUSSION

This study highlights the efficacy of traditional *Ayurvedic* formulations like *Durvadi Lepa* in treating fungal infections, while also addressing modern challenges related to application and patient compliance by transforming the *Lepa* into a cream form. The transformation into a cream addresses the limitations of traditional pastes, making it more practical for daily use in contemporary healthcare settings. The HPTLC analysis confirmed the presence of bioactive compounds, such as phenolics, flavonoids, alkaloids, and saponins, which contribute to the antifungal, anti-inflammatory, and wound-healing properties of the formulations.

Durvadi Lepa's stronger antifungal activity can be attributed to its higher concentration of active compounds, making it effective for severe fungal infections. *Durvadi Cream*, though slightly less potent, offers ease of application, better patient compliance, and sufficient efficacy for routine use. The study provides a scientific basis for the continued use of *Ayurvedic* formulations in managing skin disorders, particularly fungal infections, and opens up avenues for further research into optimizing these traditional formulations for modern-day use.

CONCLUSION

The pharmaceutico-analytical and antifungal study of Durvadi Lepa and its cream formulation underscores the therapeutic potential of *Ayurvedic* medicine in managing fungal infections. *Durvadi Lepa*, with its potent antifungal activity, is effective for treating severe infections, while *Durvadi* Cream provides a practical and user-friendly alternative for daily use. The study emphasizes the importance of integrating traditional *Ayurvedic* knowledge with modern pharmaceutical techniques to create formulations that are both effective and convenient for contemporary healthcare needs. Further research is recommended to explore the clinical applications of these formulations and to optimize them for broader use in treating

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