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

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Review Article

A Review on Antifungal of Transdermal Patches of Luliconazole

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ARTICLE INFO

Published: 31 May 2025
Keywords:
Luliconazole, Transdermal Patch, Skin, Transdermal drug delivery system
DOI:
10.5281/zenodo.15557822

ABSTRACT

The purpose of topical dosage forms is to conveniently deliver drugs across a localized area of skin. To develop an ideal dosage form one must take into account the flux of drug across skin, retention of dosage form on the skin surface, the reservoir capacity of the dosage form, and patient acceptability of the formulation. Luliconazole, an optically active Renantiomer Lanoconazole, with better patient compliance due to its shorter course of therapy, higher efficacy and better tolerance. The compound has high potency against filamentous fungi, including dermatophytes while maintaining the broad antifungal spectrum of an imidazole. The Transdermal patch of Luliconazole prepared. The Physical appearance of the patches revealed that F1-F4 formed from which the best patch comes out was F4. Transdermal Patch of Formulation F4 was formed with uniform Size, Free from stickiness and homogenous.

INTRODUCTION

Oral route is the most popular route of drug delivery system but it has some disadvantages including first pass metabolism, drug degradation etc in gastrointestinal tract due to enzymes, pH etc. To overcome these problems, a novel drug delivery system was developed by Chien in 1992, Banker in 1990, Guy in 1996. It was Transdermal patches or Transdermal delivery system. In this system medicated adhesive patches are prepared which deliver therapeutically effective amount of drug across the skin when it placed on skin. They are available in different sizes & having more than one ingredient.

Drug can penetrate through skin via three pathways:

a) Through hair follicals.

b) Through sebaceous glands.

c) Through sweat duct.

Benefits of Luliconazole Transdermal Patches

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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.

- **Improved patient compliance**: Transdermal patches can reduce the need for frequent oral dosing or topical applications, making treatment more convenient.
- **Sustained release:** Transdermal patches can release the medication in a controlled manner, potentially reducing peak-to-trough fluctuations and improving therapeutic efficacy.
- **Reduced side effects:** Transdermal delivery may minimize gastrointestinal side effects associated with oral administration.

Characteristics of Luliconazole Transdermal Patches

- **Vesicle size:** Optimized luliconazole invasomes gel has shown vesicle sizes around 139.1 ± 4.32 nm.
- **Entrapment efficiency**: The entrapment efficiency of luliconazole in invasomes gel can range from 88.21 ± 0.82%.
- **Skin permeation:** Luliconazole invasomes gel has demonstrated 2.47-fold higher permeation than pure luliconazole gel.
- **Antifungal activity:** Luliconazole invasomes gel has shown significant inhibition of fungal infections in animal studies .

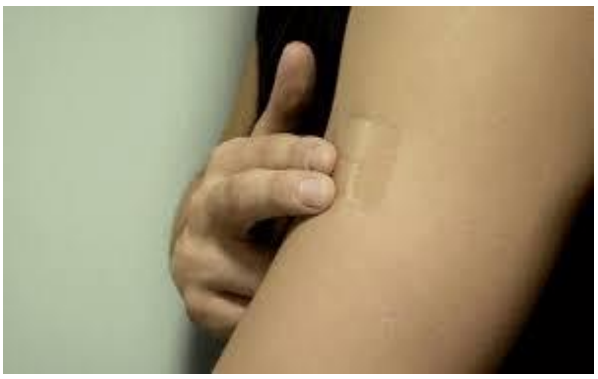

Fig1. Transdermal Patches

Formulation Table :

Formulation batches	Luliconazole	Polyethylene glycol	Pthalic unhydride	Polyvinyl alcohol	Gelatin	D.W.
F1	1 mg	5ml	0.5 mg	2gm	1.5 mg	5ml
F2	1mg	5ml	1mg	2.5gm	1mg	5ml
F3	1mg	5ml	0.5mg	3gm	1mg	5ml

Evaluation Parameter:

1.Thickness :

The thickness of the transdermal patches was measured using a digital micrometer screw gauge at three different places, and the mean value along with SD was calculated.

2.Drug content:

A 2x2 cm size transdermal patch was dissolved in 100 ml methanol and shaken continuously for 24 h. The whole solution was then ultrasonicated for 15 min. After filtration, the drug's content was measured using spectrometry at wavelength of 292.

3.Swelling study

The formulated transdermal patches were weighed (W1) individually and incubated at 37±0.5 ° C separately in agar gel (2%) plate. The patches were removed from the petri dish at regular time intervals of every 15 min up to 1 h and the excess water on the surface was removed carefully with filter paper. The swollen patches were reweighed (W2) and the swelling index was calculated by using the formula :

Swelling index = W2 − W1÷W1×100

4. Physical appearance

The patches were visually inspected for colour, flexibility, smoothness .

5. Folding endurance:

The prepared patches were measured manually for folding endurance. The folding of the patches was repeated at the same place till they broke. The accurate value of folding endurance was given by the number of times the patches could be folded at the same place without breaking .

6.Weight variation study:

Three randomly selected patches from each formulation were used. For weight variation test, 3 films from each batch were weighed individually and the average weight was calculated.

CONCLUSION:

Transdermal patches of luliconazole offer a promising approach for treating fungal infections, providing:

1. Controlled release

2. Improved bioavailability

3. Reduced systemic side effects

4. Enhanced patient compliance

These patches have potential advantages over traditional topical formulations, including:

1. Sustained antifungal activity

2. Improved skin penetration

3. Reduced application frequency.

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HOW TO CITE: Rahane Vaishnavi*, Kamble Rachanna, Vaid Harshada, A Review on Antifungal of Transdermal Patches of Luliconazole, Int. J. of Pharm. Sci., 2025, Vol 3, Issue 5, 5036-5039. https://doi.org/10.5281/zenodo.15557822