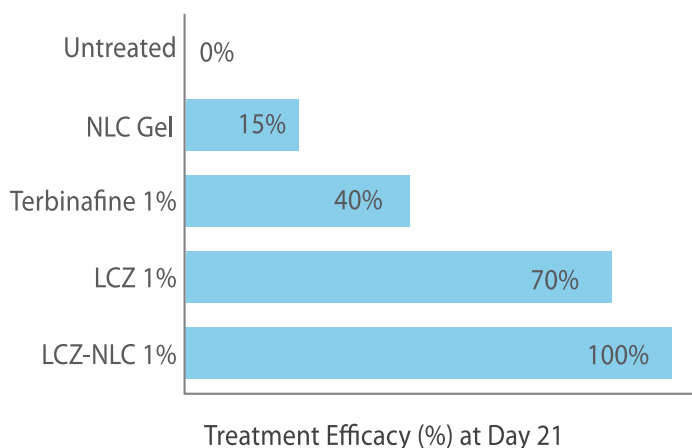


# Antifungal efficacy of luliconazole-loaded nanostructured lipid-carrier gel in an animal model of dermatophytosis

- ❖ Dermatophytosis affects about one-fourth of the global population and is increasingly complicated by terbinafine-resistant *Trichophyton indotineae*. These resistant infections cause chronic inflammation and are difficult to manage with standard antifungals. Traditional topical drugs suffer from poor solubility and limited skin penetration, resulting in slow recovery.
- ❖ To address these limitations, this study evaluated a nanostructured lipid carrier (NLC) gel loaded with luliconazole (LCZ), aiming to improve absorption, retention, and clinical efficacy in an animal model of resistant dermatophytosis.

Study Design		In vivo experimental study (guinea pig model of tinea corporis)		
Animal Model	Treatment Groups	Duration	Outcome Measures	Key Findings
30 guinea pigs infected with terbinafine-resistant <i>T. indotineae</i>	Untreated, NLC Gel, Terbinafine 1%, LCZ 1%, LCZ-NLC 1%	28 days, topical application twice daily	Lesion score reduction, mycological cure, histopathology, skin tolerance	LCZ-NLC 1% achieved complete cure by day 21; LCZ 1% by day 28; terbinafine and placebo showed limited efficacy

Treatment efficacy against terbinafine resistant *T. indotineae* infection



## Conclusion

- ❖ The luliconazole-NLC gel showed markedly improved skin permeation, retention, and antifungal performance compared to the conventional formulation.
- ❖ These enhancements led to faster lesion resolution, complete mycological cure, and reduced inflammation, with no irritation or adverse effects observed.
- ❖ Collectively, the NLC-based luliconazole gel offers a promising, well-tolerated alternative for treating terbinafine-resistant dermatophytosis, supporting shorter, safer, and more effective therapeutic courses.

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# Luliconazole: A Novel Imidazole for Superficial Fungal Infections



Intelligence applied. Benefits multiplied

## Drug Review

### An overview of dermatophytosis

- Fungal infections (superficial and invasive) are a major health problem and an important cause of morbidity. Superficial fungal infections affect as many as 20%–25% of the world's population and are associated with interference with daily activities, poor quality of life, and health care expenditure.
- Dermatophytosis usually remain localized to the superficial layers of the skin, hair, or nails. They are also commonly known as ringworms for its characteristic ring-shaped lesions.

### Challenges in the treatment of fungal infections

- Adequate treatment of cutaneous mycoses with current antifungals often requires long courses, but patients discontinue early once symptoms subside, leaving fungi behind and causing relapses. Short-course, fungicidal agents that ensure mycological clearance are therefore highly needed.
- The ideal topical antifungal should provide broad-spectrum fungicidal activity at low doses, convenient once-daily use, keratinophilic/lipophilic action, high cure rates with reservoir effect, minimal resistance or relapse, good safety, and affordability.

### Luliconazole: redefining standards in topical antifungal therapy

Luliconazole is a novel, optimally micronized imidazole antifungal designed to address the persistent challenges in dermatophytosis management. Its clinical efficacy, rapid action, and patient-friendly regimen make it a superior choice in topical antifungal therapy. It has:

- **Robust antifungal activity:** Demonstrates strong fungicidal action against common dermatophytes, ensuring comprehensive pathogen clearance.
- **Simplified treatment regimen:** Once-daily dosing with short treatment duration (1 week for tinea cruris/corporis, 2 weeks for tinea pedis), improving adherence and compliance.
- **Enhanced skin penetration:** Micronized formulation (<25 microns) achieves deeper tissue penetration for effective eradication of residual fungi.
- **Proven clinical outcomes:** Randomized trials confirm high clinical and mycological cure rates with significantly lower relapse compared to vehicle.
- **Excellent safety profile:** Well-tolerated with minimal localized adverse events (<1%), ensuring high patient acceptability.

Table 1: Efficacy results at 4 weeks post-treatment- interdigital tinea pedis

	Study 1		Study 2	
	LULICONAZOLE Cream, 1% N= 106 n (%)	Vehicle Cream N= 103 n (%)	LULICONAZOLE Cream, 1% N= 107 n (%)	Vehicle Cream N= 107 n (%)
Complete Clearance	28 (26%)	2 (2%)	15 (14%)	3 (3%)
Effective Treatment	51 (48%)	10 (10%)	35 (33%)	16 (15%)
Clinical Cure	31 (29%)	8 (8%)	16 (15%)	4 (4%)
Mycological Cure	66 (62%)	18 (18%)	60 (56%)	29 (27%)

Table 2: Efficacy results at 3 weeks post treatment- tinea cruris

	LULICONAZOLE Cream, 1% N= 165 n (%)	Vehicle Cream N= 91 n (%)
Complete Clearance	35 (21%)	4 (4%)
Effective Treatment	71 (43%)	17 (19%)
Clinical Cure	40 (24%)	6 (7%)
Mycological Cure	129 (78%)	41 (45%)

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