

Ketoconazole tablets in a topical vehicle as treatment for pityriasis versicolor in a 32-year-old male: Case report

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ABSTRACT

A case is presented of a 32-year-old male patient who attended the clinic due to erythematous-desquamative macular lesions generalized on the trunk and upper extremities, with 8 months of evolution. Pityriasis versicolor was clinically suspected, a diagnosis confirmed by direct microscopy of desquamative cells, revealing yeast-like forms and short hyphae compatible with *Malassezia* spp. Topical treatment with 2% ketoconazole cream was considered, but the patient had economic limitations preventing access to the commercial presentation. As an alternative, a magistral formulation was institutionally prepared by crushing 200 mg ketoconazole tablets and incorporating them into a moisturizing base cream to achieve a 2% concentration. The patient applied the cream twice daily for seven days. One week after starting treatment, complete clinical resolution of the lesions was evidenced, and direct microscopy was negative for fungal elements. This case demonstrates that magistral formulation of topical ketoconazole from tablets constitutes an effective, safe, and low-cost alternative for pityriasis versicolor in resource-limited settings.

Keywords: Antifungals, ketoconazole, magistral formulation, *Malassezia*, tinea versicolor



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Introduction

Pityriasis versicolor is a superficial mycosis caused by fungi of the genus *Malassezia*, dimorphic lipophilic microorganisms that are part of the skin microbiota [1].

Under specific environmental conditions, the fungus adopts a parasitic mycelial morphology, producing hypopigmented, hyperpigmented, or erythematous macules with fine scaling on the trunk, neck, and upper extremities [1,2].

In this regard, Latin American studies report that hyperhidrosis, the practice of sports, and travel to warm areas favor its appearance and recurrence [3].

On the other hand, the diagnosis is confirmed through direct microscopy of squamous cells, observing yeast-like and mycelial forms in a characteristic distribution described as "spaghetti with meatballs" [4]. Regarding treatment, 2% ketoconazole cream is the most commonly used topical antifungal for this condition [1]. However, for patients with limited resources, access to commercial formulations constitutes a significant barrier to timely treatment [5].

In contexts of health crises and medication shortages, the search for galenic alternatives based on magistral formulations becomes particularly relevant, as it allows for addressing therapeutic needs with locally available resources.

Therefore, the case of a patient with tinea versicolor is presented, in whom a 2% ketoconazole magistral formulation was implemented, prepared from 200 mg tablets, with the purpose of highlighting the viability of this alternative in settings with economic limitations and access to commercial drugs.

Case presentation

A 32-year-old male patient, detained in a penitentiary in Mérida, Venezuela, presented on October 15th, 2025,

to the Dermatology Service of the Instituto Autónomo Hospital Universitario de Los Andes (IAHULA; Autonomous University Hospital of Los Andes) with 8-months generalized skin lesions, which began days after his admission to the prison.

He described rounded, erythematous, and scaly lesions on his chest, which converged until they compromised his trunk and upper limbs (Figure 1-2). He denied any prior medical history or treatments.

Figure 1. Primary lesions on the trunk and upper extremities.



Erythematous-desquamative macular lesions confluent on the trunk and upper extremities at the time of diagnosis. Fine superficial scaling is observed. The black boxes were placed to protect the patient's identity (tattoos). Dermatology Service, Autonomous University Hospital of the Andes (IAHULA), October 15, 2025.

Upon physical examination: multiple erythematous-desquamative macules confluent on the trunk and upper limbs, with fine scaling. Generalized pityriasis versicolor was impressed.

Figure 2. Primary lesions on the trunk and upper extremities.



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The Wood's lamp showed characteristic yellow-green fluorescence (**Figure 3**). Direct microscopy (adhesive tape, methylene blue) revealed clustered yeast-like forms and short hyphae, classified as Positive (+++), confirming infection by *Malassezia* spp. (**Figure 4**).

Figure 3. Fluorescence with Wood's lamp



Characteristic yellow-green fluorescence at the level of the scaly epidermis upon examination with a Wood's lamp, a finding suggestive of infection by yeasts of the genus *Malassezia* spp. Dermatology Service, Autonomous University Hospital of the Andes (IAHULA), October 15, 2025.

Topical ketoconazole at 2% in cream was prescribed, but the patient could not afford the commercial presentation. The Dermatology Service and the Pharmacy Department of IAHULA prepared a magistral formulation as an alternative.

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Preparation procedure:

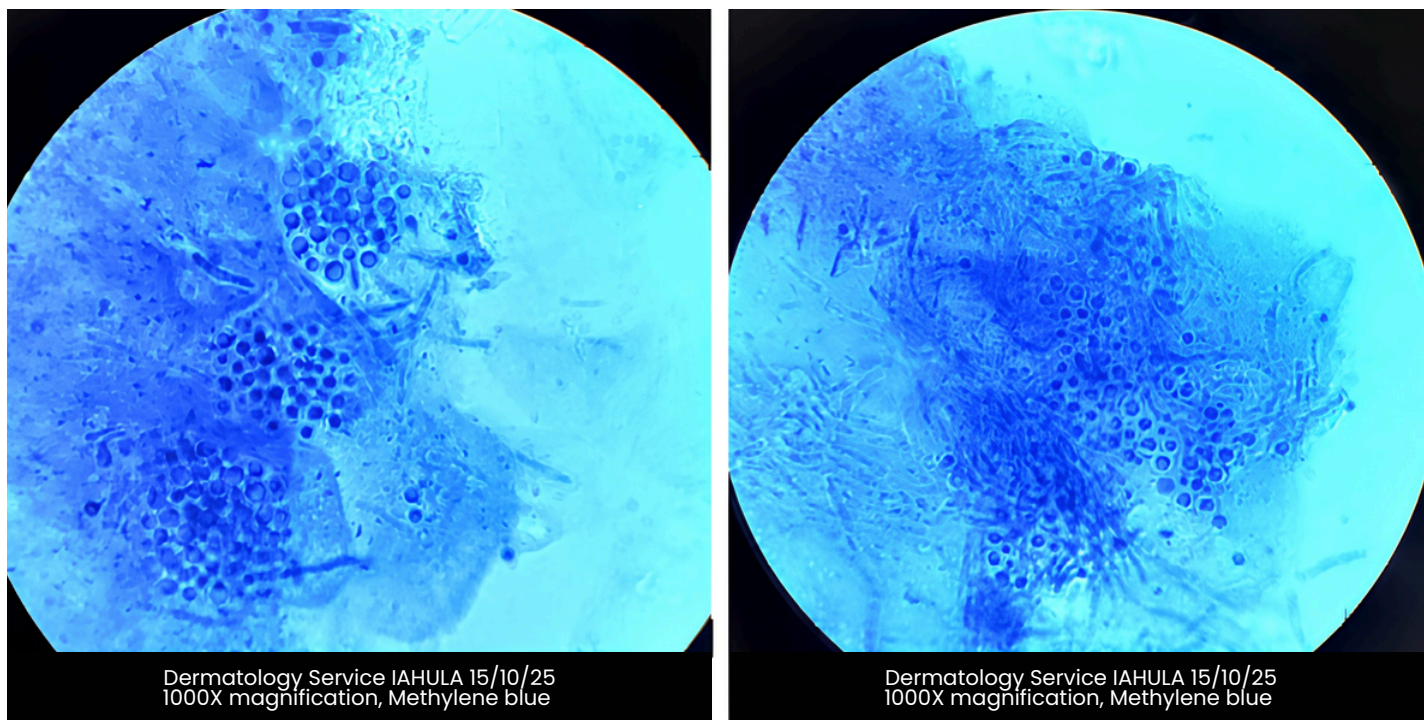
40 tablets of 200 mg ketoconazole were crushed in a sterile mortar with a pestle until a fine powder was obtained, ensuring the absence of lumps. The powder was gradually incorporated into 400 mL of emollient moisturizing base cream with enveloping movements for 10 minutes until complete homogeneity was achieved.

The preparation was packaged in a sterile amber glass jar and labeled as "2% Ketoconazole Cream." It should be noted that the average weight of each tablet was 0.4 g, so the 40 crushed tablets amount to 16 g of mass, of which 8 g correspond to inert excipients.

Considering that the density of the emollient moisturizing base cream is approximately 1 g/mL, the total mass of the preparation (400 mL of cream + 16 g of tablets) was ~416 g, which resulted in a final ketoconazole concentration of 1.92%, close to the estimated 2%.

The presence of excipients may have slightly modified the viscosity and pH, although the favorable clinical response suggests that it was not enough to inhibit efficacy.

Figure 4. Initial direct microscopy (positive for Malassezia spp.)



Direct microscopic examination of a sample obtained using transparent adhesive tape, stained with 0.05% methylene blue (1000X magnification). Abundant yeast-like structures grouped in clusters and numerous short hyphae are evident, corresponding to a Positive (+++) classification for Malassezia spp. Dermatology Service, Autonomous University Hospital of the Andes (IAHULA), October 15, 2025.

Patient instructions:

It was indicated to apply twice a day to affected areas, store in a cool and dark place (to avoid degradation of the active ingredient), and discontinue use if burning, itching, or any local discomfort appeared, reporting it at the follow-up appointment.

Clinical evolution:

At 7 days, complete resolution of the lesions was observed (**Figure 5-6**) and the Wood's lamp examination was negative.

Patient's perspective:

The patient expressed satisfaction with being able to afford the treatment, reported ease of application, a sensation of freshness, no adverse effects (burning, itching, erythema), and complete adherence to the regimen.

Microbiological confirmation:

The direct control microscopy was Negative, with no yeast-like structures or hyphae (**Figure 7**).

Continuation:

It was indicated to continue the treatment for an additional week to reduce the risk of recurrence.

Figure 5. Complete resolution of the lesions at 7 days of treatment.



Complete resolution of skin lesions within 7 days of treatment with a compounded 2% ketoconazole cream (applied twice daily). No macules, erythema, or scaling are observed. Dermatology Service, Autonomous University Hospital of the Andes (IAHULA), October 22, 2025

Figure 6. Complete resolution of the lesions at 7 days of treatment



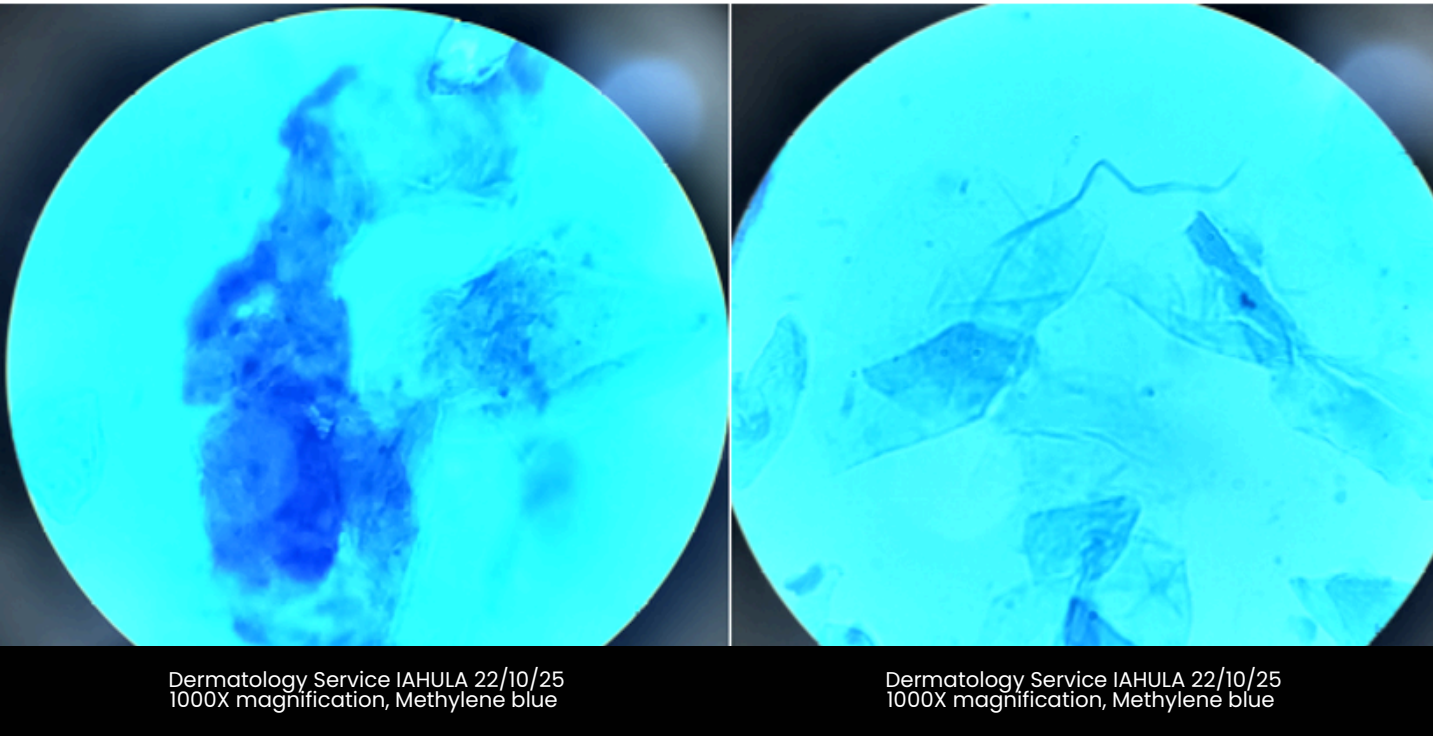
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Discussion and conclusions

Pityriasis versicolor is one of the most common superficial mycoses in tropical and subtropical regions of Latin America. In Colombia, Ortiz-Flórez et al. they reported that 78% of the patients had a history of travel to warm climate areas and 64% reported hyperhidrosis [3], factors that match the conditions of our patient, confined in an overcrowded environment with a temperate-warm climate in Mérida. Ketoconazole exerts its antifungal action by inhibiting the synthesis of ergosterol through the blockade of the enzyme lanosterol 14- α -demethylase [1]. When administered orally, the drug reaches systemic concentrations, but it carries risks of hepatotoxicity. On the contrary, in a topical vehicle, its action is limited to the stratum corneum, with minimal or undetectable percutaneous absorption [7].

Its high molecular weight (531.43 g/mol) and lipophilicity favor its retention in the corneal layer without crossing the epidermal barrier [6].

Figure 7. Direct control microscopy (negative)



Direct microscopic control examination 7 days after treatment (staining with 0.05% methylene blue, 1000X magnification). No yeast-like structures or hyphae were observed, result corresponding to a Negative classification for *Malassezia* spp. Dermatology Service, Autonomous University Hospital of the Andes (IAHULA), October 22, 2025.

Pharmacokinetic studies have shown that concentrations in the stratum corneum are up to 14 times higher than those of miconazole [8], which justifies the safety of magistral formulations from oral tablets. There are previous reports of this type of formulations in contexts of shortages, although with scant documented evidence. Topical ketoconazole is more active than placebo and at least as active as clotrimazole in superficial fungal infections [9].

Dermatology guidelines recommend commercial presentations, but do not address magistral preparation as an alternative in case of supply chain failures [1,2,5], highlighting a gap in knowledge. In the present case, the magistral formulation had an approximate cost of <3 USD per 100 mL of cream (considering 40 tablets of 200 mg ketoconazole and 400 mL of moisturizing emollient cream base) compared to 15-20 USD for a commercial 30 g presentation, highlighting a significant economic benefit for vulnerable populations. From an ethical perspective, this practice constitutes an imperative of distributive justice in contexts of scarcity.

This report has limitations: it is a single case, no stability tests or exact analytical quantification were performed, batch homogeneity was not evaluated, there is a potential risk of microbial contamination, and the follow-up was only two weeks.

Such a limited period does not allow for the assessment of the risk of late relapse, especially in a patient who remains in conditions of overcrowding and warm climate, factors that favor recurrence [3]. Long-term follow-up studies are required to compare recurrence rates between magistral and commercial formulations.

However, the present case demonstrates that the magistral formulation of 2% topical ketoconazole from tablets is an effective, safe, and low-cost alternative for pityriasis versicolor in contexts of economic limitation.

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Ketoconazole exerts its antifungal action by inhibiting ergosterol synthesis through the blockade of the enzyme lanosterol 14- α -demethylase [1].

When administered orally, the drug reaches systemic concentrations, but it carries risks of hepatotoxicity. On the contrary, in a topical vehicle, its action is limited to the stratum corneum, with minimal or undetectable percutaneous absorption [7].

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Complete clinical resolution and microscopic negativity at seven days confirm its efficacy. Given its broad spectrum, this formulation could be extended to other superficial mycoses, although additional studies are required.

This approach highlights the value of local drug production and opens a line of research around "drug recycling": using oral active ingredients in topical form through simple processes that any hospital pharmacy service could implement.

Finally, the importance of documenting these experiences to generate evidence that supports alternative therapeutic strategies in resource-limited settings is highlighted.

Ethical considerations

The confidentiality of the patient's data was respected at all times.

Informed written consent was obtained from the patient for the publication of this case report, including the clinical photographs, after explaining the nature of the manuscript and ensuring anonymity. The identifiable tattoos in the images were concealed with black boxes, as shown in the figures. This report was prepared following the guidelines of the Declaration of Helsinki and international ethical standards for the publication of clinical cases.

Conflict of interest

The authors declare that they have no conflicts of interest related to the preparation of this case report. No external funding was received for the conduct of the study or for the preparation of the manuscript. The magistral formulation described was prepared with institutional resources from the Dermatology Service and the Pharmacy Department of the Autonomous University Hospital of Los Andes (IAHULA), without commercial sponsorship. The authors have no employment, economic, intellectual property, or any other type of relationship with the laboratories commercializing ketoconazole or the moisturizing emollient base cream used.

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