

CHAPTER 9

ANTIFUNGAL TREATMENT IN DERMATOLOGY PRACTICE

Dilek SEÇKİN¹

INTRODUCTION

This chapter will focus on treatment of superficial fungal infections of the skin in dermatology practice.

Superficial fungal infections can be treated with systemic and/or topical agents. Decision to choose a systemic or a topical medication depends mainly on the location and severity of infection, patient related factors such as age, comorbidities, concomitant medications, treatment compliance and previous history of antifungal treatment. Most commonly used antifungal agents belong to the class of azoles, allylamines and polyenes (Table 9.1) (1).

Table 9.1. Classification of antifungal agents.

Azoles*	<u>Systemic:</u> 1st generation (imidazoles): ketoconazole 2nd generation (triazoles): itraconazole, fluconazole 3rd generation: voriconazole, posiconazole, isavuconazole <u>Topical:</u> clotrimazole, sertaconazole, ketoconazole, miconazole, oxiconazole, bifonazole, econazole, luliconazole, lanoconazole, efinaconazole, eberconazole, fenticonazole
Allylamines*	<u>Systemic:</u> terbinafine <u>Topical:</u> terbinafine, butenafine, naftifine
Polyenes	nystatin, natamycin, amphotericin B
Hydroxypyridone	ciclopiroxolamine (topical)
Thiocarbamate	tolnaftate (topical)
Morpholine	amorolfine (topical)

(continue)

¹ Prof. Dr., Marmara University School of Medicine, Department of Dermatology, seckin_dilek@yahoo.com

REFERENCES

1. Khurana A, Sardana K, Chowdhary A. Antifungal resistance in dermatophytes: Recent trends and therapeutic implications. *Fungal Genet Biol* 2019; 132: 103255.
2. Weinberg JM, Koestenblatt EK. Treatment of interdigital tinea pedis: once-daily therapy with sertaconazole nitrate. *J Drugs Dermatol* 2011; 10: 1135-1140.
3. Korting HC, Tietz HJ, Bräutigam M, Mayser P, Rapatz G, Paul C. One week terbinafine 1% cream (Lamisil) once daily is effective in the treatment of interdigital tinea pedis: a vehicle controlled study. LAS-INT-06 Study Group. *Med Mycol* 2001; 39: 335-340.
4. Nenoff P, Krüger C, Paasch U, Ginter-Hanselmayer G. Mycology - an update Part 3: Dermatomycoses: topical and systemic therapy. *J Dtsch Dermatol Ges* 2015; 13: 387-410.
5. Gupta AK, Drummond-Main C, Cooper EA, Brintnell W, Piraccini BM, Tosti A. Systematic review of nondermatophyte mold onychomycosis: diagnosis, clinical types, epidemiology, and treatment. *J Am Acad Dermatol* 2012; 66: 494-502.
6. Ameen M, Lear JT, Madan V, Mohd Mustapa MF, Richardson M. British Association of Dermatologists' guidelines for the management of onychomycosis 2014. *Br J Dermatol* 2014; 171: 937-958.
7. Gupta AK, Studholme C. How do we measure efficacy of therapy in onychomycosis: patient, physician, and regulatory perspectives. *J Dermatolog Treat* 2016; 27: 498-504.
8. Lipner SR, Scher RK. Onychomycosis: Treatment and prevention of recurrence. *J Am Acad Dermatol* 2019; 80: 853-867.
9. Lipner SR. Pharmacotherapy for onychomycosis: new and emerging treatments. *Expert Opin Pharmacother* 2019; 20: 725-735.
10. Kreijkamp-Kaspers S, Hawke K, Guo L, Kerin G, Bell-Syer SE, Magin P, Bell-Syer SV, van Driel ML. Oral antifungal medication for toenail onychomycosis. *Cochrane Database Syst Rev* 2017; 7 (7): CD010031.
11. Tosti A, Piraccini BM, Iorizzo M. Management of onychomycosis in children. *Dermatol Clin* 2003; 21: 507-509.
12. Gupta AK, Stec N, Bamimore MA, Foley KA, Shear NH, Piguet V. The efficacy and safety of pulse vs. continuous therapy for dermatophyte toenail onychomycosis. *J Eur Acad Dermatol Venereol* 2020; 34: 580-588.
13. Vila TVM, Rozental S, de Sá Guimarães CMD. A new model of in vitro fungal biofilms formed on human nail fragments allows reliable testing of laser and light therapies against onychomycosis. *Lasers Med Sci* 2015; 30: 1031-1039.
14. Gilaberte Y, Robres MP, Frías MP, García-Doval I, Rezusta A, Aspiroz C. Methyl aminolevulinic photodynamic therapy for onychomycosis: a multicentre, randomized, controlled clinical trial. *J Eur Acad Dermatol Venereol* 2017; 31: 347-354.
15. Shen JJ, Jemec GBE, Arendrup MC, Saunte DML. Photodynamic therapy treatment of superficial fungal infections: A systematic review. *Photodiagnosis Photodyn Ther* 2020; 31: 101774.
16. Lopes AI, Tavaría FK, Pintado ME. Conventional and natural compounds for the treatment of dermatophytosis. *Med Mycol* 2020; 58 (6): 707-720.
17. Gupta AK, Chaudhry M, Elewski B. Tinea corporis, tinea cruris, tinea nigra, and piedra. *Dermatol Clin* 2003; 21: 395-400.
18. Hay RJ, Ashbee HR. Fungal infections. *In Rook's Textbook of Dermatology*, C Griffiths, J Barker, T Bleiker, R Chalmers and D Creamer (eds.). Wiley-Blackwell, UK, 2016, pp: 1329-1363.
19. Borges A, Brasileiro A, Galhardas C, Apetato M. Tinea faciei in a central Portuguese hospital: A 9-year survey. *Mycoses* 2018; 61: 283-285.
20. Bonifaz A, Ramirez-Tamayo T, Saúl A. Tinea barbae (tinea sycosis): experience with nine cases. *J Dermatol* 2003; 30: 898-903.

21. Drago L, Micali G, Papini M, Piraccini BM, Veraldi S. Management of mycoses in daily practice. *G Ital Dermatol Venereol* 2017; 152: 642-650.
22. Veraldi S, Schianchi R, Benzecry V, Gorani A. Tinea manuum: A report of 18 cases observed in the metropolitan area of Milan and review of the literature. *Mycoses* 2019; 62: 604-608.
23. Chen X, Jiang X, Yang M, Bennett C, González U, Lin X, Hua X, Xue S, Zhang M. Systemic antifungal therapy for tinea capitis in children: An abridged Cochrane Review. *J Am Acad Dermatol* 2017; 76: 368-374.
24. Gupta AK, Mays RR, Versteeg SG, Piraccini BM, Shear NH, Piguet V, Tosti A, Friedlander SF. Tinea capitis in children: a systematic review of management. *J Eur Acad Dermatol Venereol* 2018; 32: 2264-2274.
25. Mayser P, Nenoff P, Reinelt D, Abeck D, Brasch J, Daeschlein G, Effendy I, Ginter-Hanselmayer G, Gräser Y, Hipler UC, Höger P, Kolb-Mäurer A, Ott H, Schaller M, Zidane M. S1 guidelines: Tinea capitis. *J Dtsch Dermatol Ges* 2020; 18: 161-179.
26. Hammer TR, Mucha H, Hoefler D. Infection risk by dermatophytes during storage and after domestic laundry and their temperature-dependent inactivation. *Mycopathologia* 2011; 171: 43-49.
27. Gupta AK, Foley KA, Versteeg SG. New antifungal agents and new formulations against dermatophytes. *Mycopathologia* 2017; 182: 127-141.
28. Gupta AK, Lane D, Paquet M. Systematic review of systemic treatments for tinea versicolor and evidence-based dosing regimen recommendations. *J Cutan Med Surg* 2014; 18: 79-90.
29. Hald M, Arendrup MC, Svejgaard EL, Lindskov R, Foged EK, Saunte DML, Danish Society of Dermatology. Evidence-based Danish guidelines for the treatment of *Malassezia*-related skin diseases. *Acta Derm Venereol* 2015; 95: 12-19.
30. Faergemann J, Gupta AK, Al Mofadi A, Abanami A, Abu Shareeah A, Marynissen G. Efficacy of itraconazole in the prophylactic treatment of pityriasis (tinea) versicolor. *Arch Dermatol* 2002; 138: 69-73.
31. Taudorf EH, Jemec GBE, Hay RJ, Saunte DML. Cutaneous candidiasis - an evidence-based review of topical and systemic treatments to inform clinical practice. *J Eur Acad Dermatol Venereol* 2019; 33: 1863-1873.
32. López-Martínez R. Candidosis, a new challenge. *Clin Dermatol* 2010; 28: 178-184.
33. de Wet PM, Rode H, van Dyk A, Millar AJ. Perianal candidosis—a comparative study with mupirocin and nystatin. *Int J Dermatol* 1999; 38: 618-622.