

to be reduced in patients with hepatic impairment (see below).

Reviews.

1. Letscher-Bru V, Herbrecht R. Caspofungin: the first representative of a new antifungal class. *J Antimicrob Chemother* 2003; **51**: 513–21.
2. Deresinski SC, Stevens DA. Caspofungin. *Clin Infect Dis* 2003; **36**: 1445–57.
3. Denning DW. Echinocandin antifungal drugs. *Lancet* 2003; **362**: 1142–51.
4. McCormack PL, Perry CM. Caspofungin: a review of its use in the treatment of fungal infections. *Drugs* 2005; **65**: 2049–68.
5. Morris MI, Villmann M. Echinocandins in the management of invasive fungal infections, part 1. *Am J Health-Syst Pharm* 2006; **63**: 1693–1703.
6. Morris MI, Villmann M. Echinocandins in the management of invasive fungal infections, part 2. *Am J Health-Syst Pharm* 2006; **63**: 1813–20.
7. Falagas ME, et al. Caspofungin for the treatment of fungal infections: a systematic review of randomized controlled trials. *Int J Antimicrob Agents* 2007; **29**: 136–43.
8. Hope WW, et al. The pharmacology and clinical use of caspofungin. *Expert Opin Drug Metab Toxicol* 2007; **3**: 263–74.
9. Waters L, Nelson M. The use of caspofungin in HIV-infected individuals. *Expert Opin Invest Drugs* 2007; **16**: 899–908.

Administration in children. Caspofungin is not licensed for use in paediatric patients, but has been prescribed.¹ A retrospective study² of 25 immunocompromised children with a median age of 9.8 years, given at least one dose of caspofungin, found that it appeared to be safe and well tolerated. Patients weighing less than 50 kg had a dose of 0.8 to 1.6 mg/kg daily, while those over 50 kg were given 50 to 75 mg daily. Another retrospective review³ of 64 immunocompromised children with a median age of 11.5 years, reported a success rate of 67.7% with caspofungin at a median daily maintenance dose of 1.07 mg/kg, either as monotherapy or with another antifungal. A case series⁴ of 10 neonates (9 preterm) with invasive candidiasis not responsive to amphotericin B and/or fluconazole reported that *Candida* spp. were cleared from the blood in all patients in a mean of 4.3 days after starting caspofungin therapy. Nine neonates were given an initial dose of 1 mg/kg daily for the first 2 days followed by 2 mg/kg daily for 15 to 21 days; the other was given a lower dose.

1. Lehrnbecher T, Groll AH. Experiences with the use of caspofungin in paediatric patients. *Mycoses* 2008; **51** (suppl 1): 58–64.
2. Franklin JA, et al. Retrospective study of the safety of caspofungin in immunocompromised pediatric patients. *Pediatr Infect Dis J* 2003; **22**: 747–9.
3. Groll AH, et al. Treatment with caspofungin in immunocompromised paediatric patients: a multicentre survey. *J Antimicrob Chemother* 2006; **57**: 527–35.
4. Odo CM, et al. Caspofungin therapy of neonates with invasive candidiasis. *Pediatr Infect Dis J* 2004; **23**: 1093–7.

Administration in hepatic impairment. Patients with mild hepatic impairment do not require dosage adjustment. In patients with moderate hepatic impairment, a daily dose of caspofungin 35 mg should be used after the initial dose of 70 mg; appropriate doses for patients with severe hepatic impairment have not been established.

Preparations

Proprietary Preparations (details are given in Part 3)

Arg.: Candidas; **Austral.:** Candidas; **Belg.:** Candidas; **Braz.:** Candidas; **Canada.:** Candidas; **Chile.:** Candidas; **Cz.:** Candidas; **Denm.:** Candidas; **Fin.:** Candidas; **Fr.:** Candidas; **Ger.:** Candidas; **Gr.:** Candidas; **Hong Kong.:** Candidas; **Hung.:** Candidas; **Irl.:** Candidas; **Israel.:** Candidas; **Ital.:** Candidas; **Malaysia.:** Candidas; **Neth.:** Candidas; **Norw.:** Candidas; **NZ.:** Candidas; **Philipp.:** Candidas; **Pol.:** Candidas; **Port.:** Candidas; **Rus.:** Candidas (Кандида); **Singapore.:** Candidas; **Spain.:** Candidas; **Swed.:** Candidas; **Switz.:** Candidas; **Thai.:** Candidas; **Turk.:** Candidas; **UK.:** Candidas; **USA.:** Candidas; **Venez.:** Candidas.

Chlormidazole Hydrochloride (BANM, rINN)

Chlormidazole, Chlorhydrate de; Chlormidazoli Hydrochloridum; Clomidazole Hydrochloride; Hidrocloruro de clomidazol. 1-(4-Chlorobenzyl)-2-methylbenzimidazole hydrochloride.

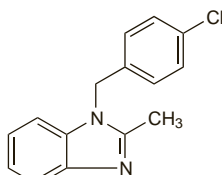
Хлормидазола Гидрохлорид

$C_{15}H_{13}ClN_2 \cdot HCl = 293.2$.

CAS — 3689-76-7 (chlormidazole); 54118-67-1 (chlormidazole hydrochloride).

ATC — D01AC04.

ATC Vet — QD01AC04.



(chlormidazole)

Profile

Chlormidazole hydrochloride is an imidazole antifungal used topically as the hydrochloride in the treatment of fungal infections of the skin.

For a discussion of the caution needed when using azole antifungals during pregnancy, see under Pregnancy in Precautions of Fluconazole, p.532.

Preparations

Proprietary Preparations (details are given in Part 3)

Pol.: Unifungicid.

Multi-ingredient: **Austria:** Myco-Synalar; **Pol.:** Polfungicid; **Switz.:** Myco-Synalar†.

Chlorphenesin (BAN, pINN)

Chlorphénésine; Chlorphenesinum; Clorfenesina; Kloorifenesini; Klorfenesin. 3-(4-Chlorophenoxy)propane-1,2-diol.

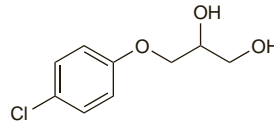
ХлорфЕНЕЗИН

$C_9H_{11}ClO_3 = 202.6$.

CAS — 104-29-0.

ATC — D01AE07.

ATC Vet — QD01AE07.



Profile

Chlorphenesin has antifungal and antibacterial properties. It has been applied locally in mild uncomplicated dermatophyte and other cutaneous infections and in vaginal infections.

Chlorphenesin carbamate (p.1894) is used as a skeletal muscle relaxant.

Preparations

Proprietary Preparations (details are given in Part 3)

Canada.: Mycil†; **Ger.:** Soorphenesin†; **India:** Dermicil†.

Multi-ingredient: **Austral.:** ZSC; **Austria:** Aleot; **Braz.:** Oto Betnovate.

Ciclopirox (BAN, USAN, rINN)

Ciclopiroxum; Ciklopiroksas; Ciklopirox; Hoe-296b; Siklopiroksi. 6-Cyclohexyl-1-hydroxy-4-methyl-2-pyridone.

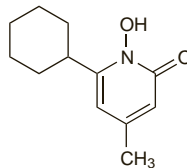
ЦиклоПИРОКС

$C_{12}H_{17}NO_2 = 207.3$.

CAS — 29342-05-0.

ATC — D01AE14; G01AX12.

ATC Vet — QD01AE14; QG01AX12.



Pharmacopoeias. In *Eur.* (see p.vii) and *US*.

Ph. Eur. 6.2 (Ciclopirox). A white or yellowish-white, crystalline powder. Slightly soluble in water; freely soluble in alcohol and in dichloromethane. Protect from light.

USP 31 (Ciclopirox). A white to slightly yellowish white, crystalline powder. Slightly soluble in water; freely soluble in dehydrated alcohol and in dichloromethane; soluble in ether. Store at a temperature of 15° to 30°. Protect from light.

Ciclopirox Olamine (BANM, USAN, rINN)

Ciclopirox olamina; Ciclopirox alaminum; Ciclopiroxi Olaminum; Ciclopiroxolamine; Ciclopiroxolaminum; Ciklopiroksas olaminas; Ciklopirox olamin; Ciklopiroxolamin; Ciklopiroxolamin; Hoe-296; Siklopiroksiolamini; Sikloproks Olamin. The 2-aminoethanol salt of 6-Cyclohexyl-1-hydroxy-4-methyl-2-pyridone.

ЦиклоПИРОКС ОЛАМИН

$C_{12}H_{17}NO_2 \cdot C_2H_7NO = 268.4$.

CAS — 41621-49-2.

ATC — D01AE14; G01AX12.

ATC Vet — QD01AE14; QG01AX12.

Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), and *US*.

Ph. Eur. 6.2 (Ciclopirox Olamine). A white or pale yellow crystalline powder. It exhibits polymorphism. Slightly soluble in water; very soluble in alcohol and in dichloromethane; slightly soluble in ethyl acetate; practically insoluble in cyclohexane. A 1%

solution in water has a pH of 8.0 to 9.0. Protect from light.

USP 31 (Ciclopirox Olamine). A white to slightly yellowish-white, crystalline powder. Slightly soluble in water; very soluble in alcohol and in dichloromethane; practically insoluble in cyclohexane. pH of a 1% solution in water is between 8.0 and 9.0. Store in airtight containers at a temperature of 5° to 25°. Protect from light.

Adverse Effects

Irritation and pruritus have been reported after topical application of ciclopirox.

Antimicrobial Action

Ciclopirox has a wide spectrum of antifungal activity. It inhibits most *Candida*, *Epidermophyton*, *Microsporium*, and *Trichophyton* spp. and is also active against *Malassezia furfur*. It has some antibacterial activity.

Uses and Administration

Ciclopirox is an antifungal that is applied topically in the treatment of fungal skin and nail infections, including cutaneous candidiasis (p.518), dermatophytosis, pityriasis versicolor (see Skin Infections, p.521), and seborrhoeic dermatitis (p.1584). It has also been used in the treatment of vaginal candidiasis.

It is applied twice daily for skin infections, as a cream, gel, suspension, solution, or powder; both the base and the olamine salt have been used, with products containing the equivalent of 0.77% ciclopirox base.

A lacquer containing 8% ciclopirox base is applied once daily for nail infections.

A shampoo containing 1% ciclopirox base is used twice weekly for the treatment of seborrhoeic dermatitis.

References

1. Gupta AK, Skinner AR. Ciclopirox for the treatment of superficial fungal infections: a review. *Int J Dermatol* 2003; **42** (suppl 1): 3–9.
2. Gupta AK, Nicol KA. Ciclopirox 1% shampoo for the treatment of seborrhoeic dermatitis. *Int J Dermatol* 2006; **45**: 66–9.

Preparations

USP 31: Ciclopirox Olamine Cream; Ciclopirox Olamine Topical Suspension.

Proprietary Preparations (details are given in Part 3)

Arg.: Dermaflor†; **Loprox.:** Micopirox; **Stieprox.:** **Austral.:** Stieprox; **Austria.:** Batrafen; **Braz.:** Fungirox†; **Gino Loprox.:** Micolamina; **Micoliv†.:** Stieprox; **Canada.:** Loprox; **Penlac.:** Stieprox; **Chile.:** Batrafen; **Fungoprox.:** Mikium†; **Stieprox.:** **Cz.:** Batrafen; **Dafnegin.:** Stieprox; **Denm.:** Mycofen; **Stieprox.:** **Fin.:** Mycosquam; **Fr.:** Mycosquam; **Mycofer.:** Stieprox; **Ger.:** Batrafen; **Ciclopoli.:** Inimur Myko; **Nagel Batrafen.:** Sebiopro; **Gr.:** Candimyc; **Dafnegin†.:** Mydolip; **Mycomylen.:** Neo-botacreme; **Neo-mycodermol.:** Rozolam; **Stieprox.:** **Hong Kong.:** Batrafen; **Stieprox.:** **Hung.:** Batrafen; **India.:** Olamin; **Onylac.:** **Indon.:** Batrafen; **Loprox.:** **Irl.:** Batrafen†; **Olatum Scalp Treatment.:** Stieprox; **Israel.:** Batrafen; **Cicloderm.:** **Ital.:** Batrafen; **Biroxol†.:** Brumixol†; **Dafnegin.:** Miclast; **Micomilen.:** Micoloxolamina; **Sebiopro.:** Stieprox; **Malaysia.:** Stieprox; **Mex.:** Loprox; **Stieprox.:** **Neth.:** Loprox; **Sebiopro.:** **Norw.:** Stieprox; **NZ.:** Batrafen; **Stieprox.:** **Philipp.:** Stieprox; **Pol.:** Batrafen; **Dafnegin.:** Hascofungin; **Pirolan.:** Stieprox; **Port.:** Batrafen; **Mycofer.:** Sebiopro; **Rus.:** Batrafen (Батрафен); **Singapore.:** Stieprox; **Spain.:** Batrafen; **Ciclochem.:** Fungowas; **Rimafungol†.:** Sebiopro; **Switz.:** Batrafen; **Dafnegil Neo.:** **Thai.:** Cicloderm†; **Loprox.:** Stieprox; **Turk.:** Canolen; **Nibulen.:** **UK.:** Olatum Scalp Treatment; **USA.:** Loprox; **Penlac.:** **Venez.:** Batrafen.

Multi-ingredient: **Arg.:** Derm's Shampoo; **Stieproxal.:** **Fr.:** Novophane; **Novophane S.:** Stieproxal; **India:** Flucort-C; **Israel.:** Cicloderm-C; **UK.:** Olatum Scalp Intensive.

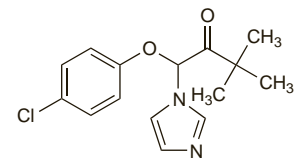
Climbazole (BAN, rINN)

Bay-e-6975; Climbazol; Climbazolum; MEB-6401. 1-(p-Chlorophenoxy)-1-imidazol-1-yl-3,3-dimethyl-2-butanone.

КЛИМБАЗОЛ

$C_{15}H_{17}ClN_2O_2 = 292.8$.

CAS — 38083-17-9.



Profile

Climbazole is an azole antifungal included in preparations for the topical treatment of seborrhoeic dermatitis.

For a discussion of the caution needed when using azole antifungals during pregnancy, see under Pregnancy in Precautions of Fluconazole, p.532.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: **Arg.:** Mencilin; **Micocert.:** **Chile.:** Eucerin Shampoo Anticaspas; **Node DS.:** Shampoo Anticaspas; **Fr.:** Item Alphazole; **Node DS.:** Node P; **Sebiopro.:** Squaphane; **Switzerland.:** Squaphane E; **Squaphane Masque-Creme.:** Squaphane P; **Switzerland.:** **Italy.:** Derman-Shampoo AF†; **Pitiren.:** **Port.:** Alphazole†; **Efluvium Anti-caspas.:** **Venez.:** Node DS; **Sensibio DS.**