

Amphotericin B

I. Applications

- A. Life-threatening mycoses
- B. Leishmaniasis

II. Mechanism

- A. Binds ergosterol in fungal membrane
 - 1. Pores form allowing electrolyte transfer

III. Adverse Effects

- A. "Ampho-terrible"
- B. Nephrotoxicity
- C. Hypotension
- D. Electrolyte disturbances
- E. Hepatotoxicity
- F. Pulmonary toxicity
- G. Headaches
- H. Anemia

Flucytosine

I. Applications

- A. Used with amphotericin B
 - 1. Candidiasis
 - 2. Cryptococcus neoformans

II. Mechanism

- A. Converted to 5-FU (antimetabolite), inhibits protein and DNA/RNA synthesis
- B. Synergism with amphotericin B (pores)

III. Adverse Effects

- A. Resistance ($\downarrow$ metabolism to 5-FU)
- B. Neutropenia/thrombocytopenia
- C. Enterocolitis

Triazoles

I. Medications

- A. Fluconazole
- B. Itraconazole
- C. Posaconazole
- D. Voriconazole

II. Applications

- A. Fungal infections

III. Mechanism

- A. Inhibits C-14 α -demethylase
 - 1. Reduces synthesis of lanosterol and ergosterol (fungal membrane lipids/steroids)

IV. Adverse Effects

- A. Resistance
 - 1. Efflux pumps
 - 2. Mutations of C-14 α demethylase
- B. Inhibits CYP450
- C. Teratogenic

Echinocandins

I. Medications

- A. Caspofungin
- B. Micafungin
- C. Anidulafungin

II. Applications

- A. Aspergillus
- B. Candida

III. Mechanism

- A. Inhibits synthesis of $\beta(1,3)$ -D-glucan

IV. Adverse Effects

- A. Phlebitis

Squalene Epoxidase Inhibitors

I. Drugs

- A. Terbinafine
- B. Naftifine
- C. Butenafine

II. Applications

- A. Tinea (topical)

III. Mechanism

- A. Inhibits squalene epoxidase
 - 1. Enzyme in production of ergosterol

Griseofulvin

I. Applications

- A. Onychomycosis

II. Mechanism

- A. Inhibits mitosis by disrupting mitotic spindle

III. Adverse Effects

- A. Induces CYP450
- B. Contraindicated in pregnancy
- C. Contraindicated in porphyria

Nystatin

I. Applications

- A. Cutaneous and oral candidiasis
- B. Vulvovaginitis

II. Mechanism

- A. Binds ergosterol in fungal membrane, forms pores, allowing electrolyte migration

Imidazoles

I. Medications

- A. Butoconazole
- B. Clotrimazole
- C. Econazole
- D. Ketoconazole
- E. Miconazole
- F. Oxiconazole
- G. Sertaconazole
- H. Sulconazole
- I. Terconazole
- J. Tioconazole

II. Applications

- A. Tinea
- B. Oral & vulvovaginal candidiasis

III. Mechanism

- A. Inhibits C-14 α -demethylase
 - 1. Reduces synthesis of lanosterol and ergosterol (fungal membrane lipids/steroids)

IV. Adverse Effects

- A. Ketoconazole (oral use)
 - 1. Hair loss
 - 2. Oligospermia
 - 3. Gynecomastia
 - 4. ↑ Liver enzymes
 - 5. CYP450 inhibition
 - 6. Contraindicated in pregnancy/breastfeeding

Ciclopirox

I. Applications

- A. Tinea (including tinea versicolor)
- B. Seborrheic dermatitis

II. Mechanism

- A. Likely chelation of ions disrupts fungal enzymes

Tolnaftate

I. Applications

- A. Tinea

II. Mechanism

- A. Inhibits sterol synthesis