ANTI-INFECTIVE AGENT

Anti-infective are medicines that work to prevent or treat infections, they include antibacterial, antivirals, antifungals and Antiparasitic medications.

11.1 ANTIFUNGAL AGENT

- An antifungal medication, also known as an antimycotic medication, is used to treat and prevent mycoses such as athlete's foot, ringworm, and others.
- Fungi have rigid cell walls composed of chitin.
- The fungal cell membrane contains ergosterol rather than the cholesterol found in mammalian membranes.

11.1.1 Classification of Drugs

CLASS	DRUGS
Antibiotics	**(a) Polyenes:** Amphotericin-B, Nystatin, Hamycin, Naftifine hydrochloride **(b) Heterocyclic Benzofuran:** Griseofulvin
Azole Derivatives	**(a) Imidazole:** Econazole, Miconazole, Clotrimazole, Ketoconazole (Systemic) **(b) Triazole:** (Systemics) Fluconazole, Itraconazole, Voriconazole

Pyrimidine derivatives	5 Flucytosine (Antimetabolite)
Allylamine Derivatives	Terbinafine
Miscellaneous Drugs	Ciclopirox, Tolnaftate, Benzoic acid, Quiniodochlor, Sodium thiosulfate.

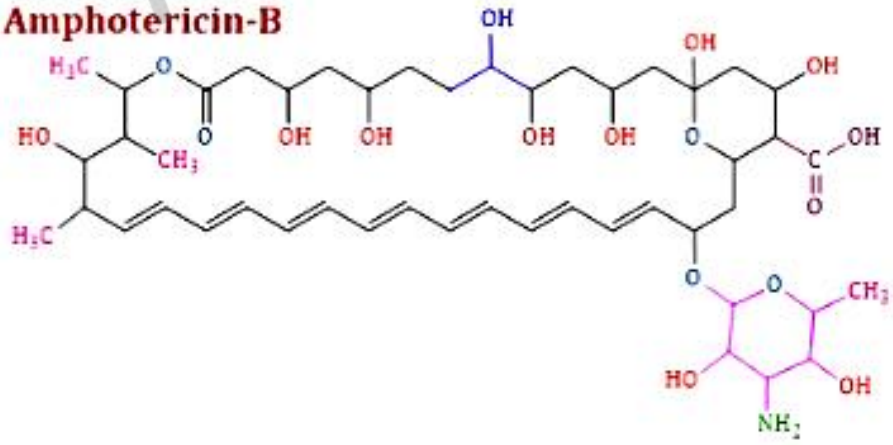
❑ AMPHOTERICIN-B

- It is called as broad-spectrum anti-fungal agent as it is active against a wide range of yeast and fungi. A polyene antibiotic obtained from ***Streptomyces nodosus***. It is a heptene macrolide containing seven conjugated double bonds in the Trans position and 3-amino-3, 6- dideoxymannose connected to the main ring by a glycosidic bond.
- It is a polyene antibiotic molecule containing macrocyclic ring, one side of which has several conjugated double bonds and is highly lipophilic, while the other side is hydrophilic with many OH groups. A polar amino sugar and a carboxylic acid group are present at one end in some. All polyenes are insoluble in water and unstable in aqueous medium.

❖ Chemical Formula - $C_{47}H_{73}NO_{17}$

❖ Structure

Amphotericin-B



❖ Physiochemical Properties

- It is a bright yellow powder.
- It is insoluble in water.

❖ **Pharmaceutical Formulation**

- This drug is formulated in the form of intravenous injection, Cream and Tablet.

❖ **Stability and storage**

- It is stored in a tightly closed light-resistant container.

❖ **Popular Brand Names**

- Fungizone
- Mysteclin-f
- Ambisome

❖ **Dose**

- The dose of Amphotericin-B is 0.3–0.7 mg/kg daily by slow I.V. infusion over 4–8 hours (total dose 3–4 g).
- The dose of Amphotericin-B is 50–100 mg four times a day orally.

❖ **Medicinal uses**

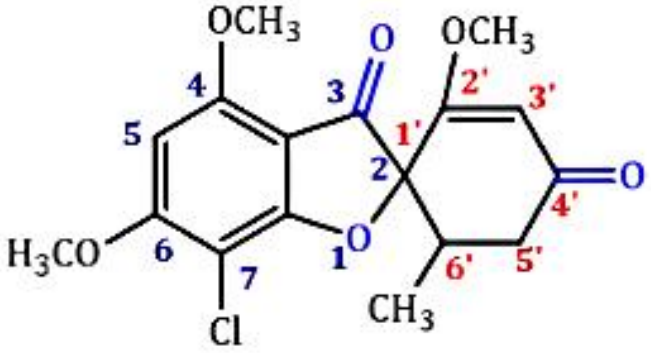
- It is the medicine of choice for treating the most severe mycoses, including candidiasis, aspergillosis, and zygomycosis.
- It is still the primary treatment for individuals with life-threatening infections caused by Cryptococcus neoformans, the most prevalent fungal pathogen linked to AIDS.

❑ **GRISEOFULVIN**

Griseofulvin is fungistatic for most dermatophytes, Including Epidermophyton, Trichophyton, Microsporum, etc., but not against Candida and other fungi causing deep mycosis.

❖ **Chemical Formula - $C_{17}H_{17}ClO_6$**

❖ **Structure**



❖ **IUPAC Nomenclature**

- 7-chloro-2',4,6-trimethoxy-6'-methyl-3H-spiro[benzofuran-2,1'-cyclohex[2]ene]-3,4'-dione

❖ **Physiochemical Properties**

- Griseofulvin is a white or yellowish-white micro fine powder.
- It is practically insoluble in water, freely soluble in dimethylformamide and tetrachloroethane, slightly soluble in ethanol and methanol.

❖ **Pharmaceutical Formulation**

- This drug is formulated in the form of tablet and cream.

❖ **Stability and storage**

- It is stored in a tightly closed light-resistant container

❖ **Popular Brand Names**

- Gris-peg
- Grifulvin V

❖ **Dose**

- The dose of Griseofulvin is 125–250 mg four time a day oral taken with meals.

❖ **Medicinal uses**

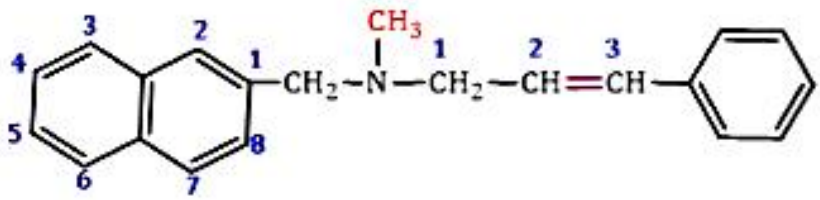
- It is used to treat fungal infections of nails, scalp and skin.

❑ NAFTIFINE HYDROCHLORIDE

Naftifine has triple action: antifungal, antibacterial, and anti-inflammatory. Its fungistatic activity is believed to be based on inhibition of the squalene-2, wq3-epoxidase enzyme, which in turn results in the shortage of ergosterol required for the formation of fungal cell membranes.

❖ **Chemical Formula - $C_{21}H_{21}N$**

❖ **Structure**



❖ **IUPAC Nomenclature**

- N-methyl-N-(1-naphthylmethyl)-3-phenylprop-2-en-1-amine

❖ Physiochemical Properties

- It is white to slightly pale yellow crystalline powder.
- It is soluble in ethanol.

❖ Pharmaceutical Formulation

- This drug is formulated in the form of cream and gel.

❖ Stability and storage

- It is stored in a closed container at room temperature, away from heat, moisture, and direct light. Keep from freezing.

❖ Popular Brand Names

- Exoderil
- Naftin

❖ Dose

- It is administered as 1% cream twice daily.

❖ Medicinal uses

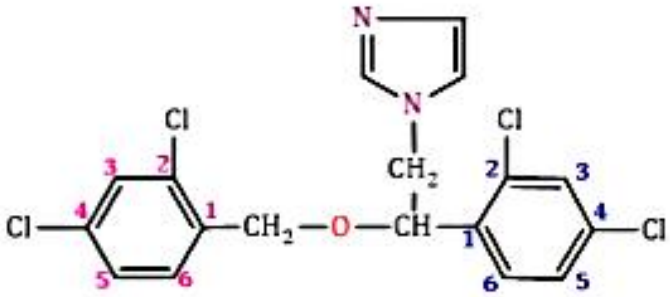
- Antifungal drug for the topical treatment of tinea pedis, tinea cruris, and tinea corporis (topical fungal. infections).

❑ MICONAZOLE

- It is a highly efficacious (>90% cure rate) drug for tinea, pityriasis versicolor, otomycosis, cutaneous and vulvovaginal candidiasis.

❖ Chemical Formula $C_{18}H_{14}Cl_4N_2O$

❖ Structure



❖ IUPAC Nomenclature

- 1-(2-(2,4-Dichlorobenzyloxy)-2-(2,4-dichlorophenyl)ethyl)-1H-imidazole

❖ **Physiochemical Properties**

- It is slightly soluble in water and soluble in propylene glycol or pyridine

❖ **Pharmaceutical Formulation**

- This drug is formulated in the form of cream and tablet.

❖ **Stability and storage**

- It is stored in a closed container at room temperature, away from heat, moisture, and direct light. Keep from freezing.

❖ **Popular Brand Names**

- Desenex
- Monistat
- Oravig

❖ **Dose**

- It is applied in skin 2% topical 2–3 times daily, 100 mg intravaginal nightly.

❖ **Medicinal uses**

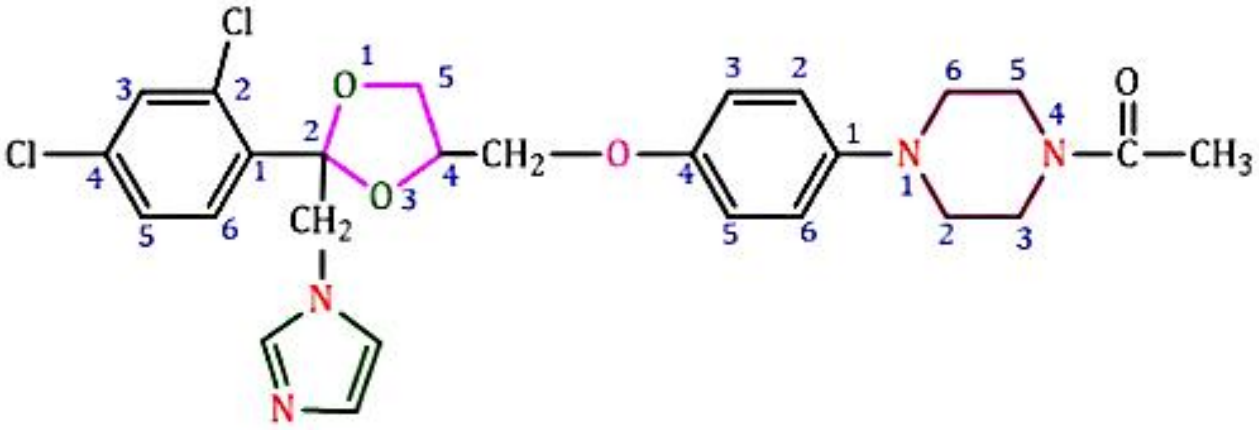
- Miconazole is used externally for the treatment of ringworm, jock itch, and athlete's foot.
- Internal application is used for oral candidiasis or vaginal thrush (yeast infection).

❑ **KETOCONAZOLE**

It is the first orally effective broad-spectrum antifungal drug, useful in both dermatophytosis and deep mycosis, but has been overshadowed by the newer triazoles.

❖ **Chemical formula $C_{26}H_{28}Cl_2N_4O_4$**

❖ **Structure**



❖ IUPAC nomenclature

- 1-[4-[4-[[2-(2,4-dichlorophenyl)-2-(imidazol-1-ylmethyl)-1,3-dioxolan-4-yl]methoxy]phenyl]piperazin-1-yl]ethanone

❖ Physiochemical properties

- Ketoconazole is a white powder, practically insoluble in water, soluble in methylene chloride and in methanol, sparingly soluble in alcohol.

❖ Pharmaceutical formulation

- This drug is formulated in the form of cream, shampoo and tablet.

❖ Stability and storage

- It is stored in a closed container at room temperature, away from heat, moisture, and direct light. Keep from freezing.

❖ Popular brand names

- Nizoral
- Antanazol
- Ketostar

❖ Dose

- It is administered as 200 mg scored tablets and 2% topical cream.

❖ Medicinal uses

- Ketoconazole is usually prescribed for fungal infections of the skin and mucous membranes, such as athlete's foot, ringworm, candidiasis (yeast infection or thrush), jock itch, and *tinea versicolor*.

❑ ITRACONAZOLE

This orally active triazole antifungal has a broader spectrum of activity than KTZ or fluconazole; includes few moulds like Aspergillus as well.

❖ Chemical Formula $C_{35}H_{38}Cl_2N_8O_4$

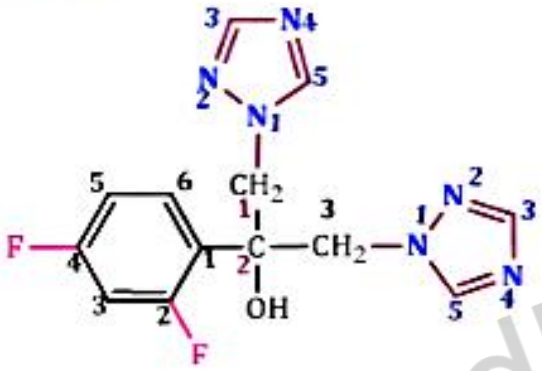
- Itraconazole capsule is used to treat fungal infections, such as aspergillosis (fungal infection in the lungs), blast mycosis (Gilchrist's disease), or histoplasmosis (Darling's disease).

❑ FLUCONAZOLE

It is a widely used bis-triazole antifungal agent. It is generally considered to be a fungi-static agent, and it is principally active against Candida spp. and Cryptococcus spp. Fluconazole has useful activity against *Coccidioides immitis*, and is often used to suppress the meningitis produced by the fungus.

❖ **Chemical Formula - $C_{13}H_{12}F_2N_6O$**

❖ **Structure**



❖ **IUPAC nomenclature**

- 2-(2,4-Difluorophenyl)-1,3-bis(1H-1,2,4-triazol-1-yl)propan-2-ol

❖ **Physiochemical properties**

- It is white crystalline powder. It is poorly soluble in water but can be dissolved in organic solvents such as chloroform, propylene glycol etc.

❖ **Pharmaceutical formulation**

- This drug is formulated in the form of a capsule, vaginal suppository and intravenous injection.

❖ **Stability and storage**

- It is stored in a closed container at room temperature **(15°C to 25°C)**, away from heat, moisture, and direct light. Keep from freezing.

❖ **Popular brand names**

- Diflucan
- Onecan
- Forcan

❖ Dose

- It is administered as 200–400 mg daily oral/I.V. for fungal keratitis 0.3% topically in eye.

❖ Medicinal Uses

- Fluconazole is used to treat serious fungal or yeast infections, including vaginal candidiasis, oropharyngeal candidiasis (thrush, oral thrush),
- It is also used to treat oesophageal candidiasis (candida esophagitis), and other candida infections (including urinary tract infections, and peritonitis.

11.2 URINARY TRACT ANTI-INFECTIVE AGENTS

- Urinary anti-infectives are drugs that are used to prevent or treat urinary tract infections.
- A urinary tract infection (UTI) is an infection in any part of the urinary system.
- The urinary system includes the kidneys, ureters, bladder and urethra.

- Most infections involve the lower urinary tract - the bladder and the urethra.
- Women are at greater risk of developing a UTI than men.
- If an infection is limited to the bladder, it can be painful and annoying.
- But serious health problems can result if a UTI spreads to the kidneys.

❖ SYMPTOMS OF UTIs

- A strong urge to urinate that doesn't go away.
- A burning feeling when urinating
- Urinating often, and passing small amounts of urine
- Urine that looks cloudy
- Urine that appears red, bright pink or cola-colored-signs of blood in the urine
- Strong-smelling urine

Pelvic pain, in women especially in the centre of the pelvis and around the area of the pubic bone

11.2.1 CLASSIFICATION OF UTI DRUGS

CLASS	DRUG
ANTIBIOTICS	Ampicillin, Gentamicin
SULPHONAMIDE	Sulphamethoxazole, Trimethoprim
QUINOLONES	Nalidixic acid, Ciprofloxacin, Norfloxacin, Ofloxacin, Moxifloxacin
MISCELLANEOUS DRUGS	Nitrofurantoin, Methenamine, Mandelate

❑ CIPROFLOXACIN

Ciprofloxacin hydrochloride is pale yellow, crystalline in nature, slightly hygroscopic powder, soluble in water, slightly soluble in methanol, very slightly soluble in ethanol, but insoluble in acetone, ethyl acetate, and methylene chloride.

❖ **Chemical Formula - $C_{17}H_{18}FN_3O_3$**

❖ **Structure**

❖ **IUPAC Nomenclature**

- 1-cyclopropyl-6-fluoro-4-oxo-7-(piperazin-1-yl)-quinoline-3-carboxylic acid

❖ **Physiochemical Properties**

- Ciprofloxacin hydrochloride is pale yellow, crystalline in nature, slightly hygroscopic powder.
- It is soluble in water, slightly soluble in methanol, very slightly soluble in ethanol, but insoluble in acetone, ethyl acetate, and methylene chloride.

❖ **Pharmaceutical Formulation**

- It is formulated form of tablets, and eye/ear drops.

❖ Stability and storage

- Store the medicine in a closed container at room temperature, away from heat, moisture, and direct light.

❖ Popular Brand Names

- Ciloxan
- Ciproxin
- Neofloxin

❖ Dose

- Its usual dose is 250–750 mg twice a day orally,
- It is injected 100–200 mg I.V. by slow infusion and 0.3% topically in eye.

❖ Medicinal Uses

- It is used for the treatment of infection of the urinary tract, respiratory tract, ear, nose, throat, soft tissue, gastrointestinal, severe systemic infections and gonorrhoea.

❑ NORFLOXACIN

Norfloxacin It is the least potent FQ: MIC values for most gram-negative bacteria are 2–8 times higher than that of ciprofloxacin. Many Pseudomonas and gram-positive organisms are not inhibited. Moreover, it attains lower concentration in tissues which are non-therapeutic.

❖ Chemical Formula - $C_{16}H_{18}FN_3O_3$

❖ Structure

❖ IUPAC Nomenclature

- 1-ethyl-6-fluoro-4-oxo-7-piperazin-1-yl-1H-quinoline-3-carboxylic acid

❖ Physiochemical Properties

- It is a white to pale yellow crystalline powder with a molecular weight of 319.34 with melting point of 221°C.

❖ Pharmaceutical Formulation

- It is formulated form of tablets, and eye/ear drops.

❖ Stability and storage

- Store the medicine in a closed container at room temperature, away from heat, moisture and direct light.

❖ Popular Brand Names

- Noroxin
- Chibroxin
- Trizolin

❖ Dose

- The usual dose is 200–400 mg twice a day orally, and 0.3% topically in eye.

❖ Medicinal Uses

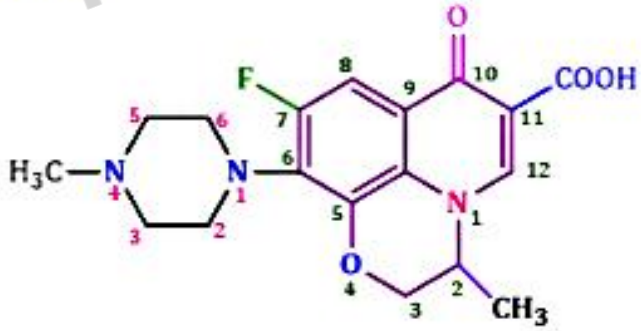
- It is used for the treatment of conjunctivitis, keratitis, and corneal ulcers or otitis extema.

❑ OFLOXACIN

This FQ is somewhat less active than ciprofloxacin against gram-negative bacteria, but equally or more potent against Strep. Pyogenes and other gram-positive cocci and certain anaerobes.

❖ Chemical Formula $C_{18}H_{20}FN_3O_4$

❖ Structure



❖ IUPAC Nomenclature

- 7-fluoro-2-methyl-6-(4-methylpiperazin-1-yl)-10-oxo-4-oxa-1-azatricyclo[7.3.1.05,13]trideca-5(13),6,8,11-tetraene-11-carboxylic acid

❖ Physiochemical Properties

- Ofloxacin is a pale yellow or bright yellow crystalline powder.
- It is slightly soluble in water and methanol, and soluble in glacial acetic acid and methylene chloride.

❖ Pharmaceutical Formulation

- It is formulated form of tablets, and eye/ear drops

❖ Stability and storage

- Store the medicine in a closed container at room temperature, away from heat, moisture, and direct light.

❖ Popular Brand Names

- Floxin
- Ocuflox
- Aroflox

❖ Dose

- Its usual dose is 200–400 mg BD oral,
- It is injected 200 mg by slow I.V. infusion and 0.3% topically in eye.

❖ Medicinal Uses

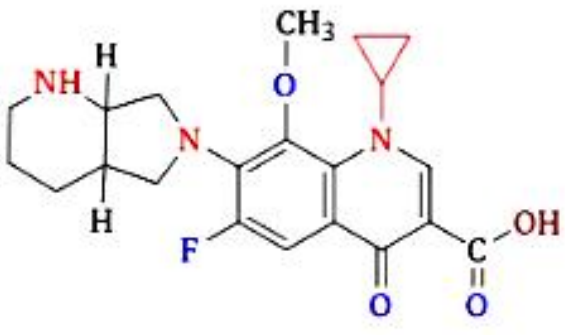
- It is used for the treatment of genito-urinary, respiratory, gastrointestinal, skin, soft tissue and eye infections.
- It is also used for the treatment of peritonitis and gonorrhoea

❑ MOXIFLOXACIN

A long-acting 2nd generation FQ having high activity against Str. pneumoniae, other gram-positive bacteria including β-lactam/ macrolide resistant ones and some anaerobes.

❖ Chemical Formula $C_{21}H_{24}FN_3O_4$

❖ Structure



❖ IUPAC Nomenclature

- 1-Cyclopropyl-7-[2,8-diazabicyclo[4.3.0]nonan-8-yl]-6-fluoro-8-methoxy-4-oxoquinoline-3-carboxylic acid

❖ Physiochemical Properties

- It is slightly yellow crystalline powder or crystalline solid. It is soluble in water.

❖ Pharmaceutical Formulation

- It is formulated form of tablets, and eye/ear drops.

❖ Stability and storage

- Store the medicine in a closed container at room temperature, away from heat, moisture, and direct light.

❖ Popular Brand Names

- Avelox
- Vigamox
- Moxiflox

❖ Dose

- Its usual dose is 400 mg once a day orally and 0.5% eye drops.

❖ Medicinal Uses

- Moxifloxacin treats several infections, including respiratory tract infections, cellulitis, anthrax, intra-abdominal infections, endocarditis, meningitis, and tuberculosis.

11.3 ANTI-TUBERCULAR AGENTS

- The agents used to treat infections caused by all forms of mycobacterium are called anti-tubercular agents.
- The microorganism ***mycobacterium tuberculosis*** causes tuberculosis (TB), an infectious, communicable disease that primarily affects the lungs and pleurae but can affect other regions of the body.
- Once within the lungs, the bacteria grow and produce inflammation, causing neutrophils and macrophages to travel to the area and engulf the germs, preventing their spread.
- If the immune system is not compromised, the bacteria remain latent for life nevertheless, compromised immunity may allow the germs to enter the blood and lymph and infect other organs.

11.3.1 CLASSIFICATION of ANTI-TUBERCULAR AGENTS

According to their clinical utility the anti-TB drugs can be divided into:

CLASS	DRUGS
FIRST LINE DRUGS	Isoniazid (INH), Rifampicin, Pyrazinamide, Ethambutol, Streptomycin
SECOND LINE DRUGS	Fluoroquinolones- Ofloxacin, Levofloxacin, Moxifloxacin, Ciprofloxacin Injectable Drugs - Kanamycin, Amikacin, Capreomycin Other Oral drugs – Ethionamide, Prothionamide, Cycloserine, Paraamino salicylic acid (PAS), Rifabutin, Thiacetazone
NEWER DRUGS	Clarithromycin, Ofloxacin, Ciprofloxacin, Azithromycin, Rifabutin

❑ ISONIAZID

It is a prodrug activated on ***M. Tuberculosis*** surface by KatG enzyme to Isonicotinic acid.

This Isonicotinic acid inhibits bacterial cell wall mycolic acid and making bacterial susceptible to reactive oxygen radicals. Isoniazid is an excellent antitubercular drug, and an essential component of all antitubercular regimens, unless the patient is not able to tolerate it or bacilli are resistant. It is primarily Tuberculocidal. Fast multiplying organisms are rapidly killed, but quiescent ones are only inhibited.

❖ **Chemical Formula - $C_6H_7N_3O$**

❖ **Structure**

❖ **IUPAC Nomenclature**

- Pyridine-4-carbohydrazide

❖ Physiochemical Properties

- It occurs as odorless, colorless or white crystals or white crystalline powder.
- It is slightly sweet at first and then bitter. It is sparingly soluble in water.

❖ Pharmaceutical Formulation

- It is formulated form of tablet and injection.

❖ Stability and Storage

- When heated to decomposition it emits toxic fumes of nitrogen oxides.
- It is stored at room temperature **(20°C to 25°C)** and protect from moisture and light.

❖ Popular Brand Names

- Isokin
- Isonex
- Solonex

❖ Dose

- The usual oral dose is 300 mg 5 mg/kg daily or 600–900 mg 10 mg/kg thrice weekly.

❖ Medicinal Uses

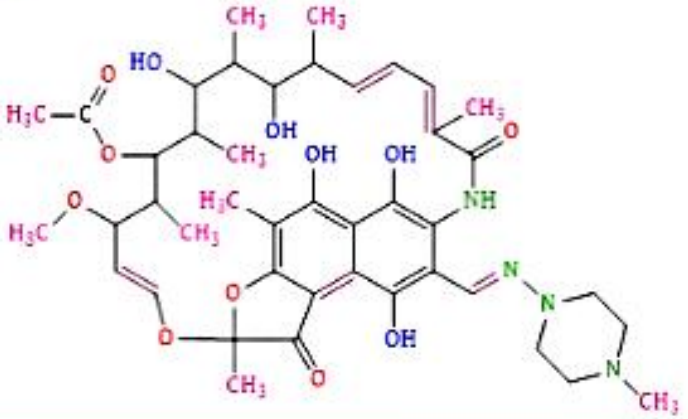
- It is used in the treatment of pulmonary and extra pulmonary TB.
- For therapy, isoniazid is combined with other antitubercular medications such as pyrazinamide and rifampicin, however it is used alone for prophylaxis.

❑ RIFAMPICIN

Rifampicin forming a stable drug-enzyme complex, it inhibits DNA-dependent RNA polymerase of mycobacteria. Thus producing suppression of initiation of chain formation in RNA synthesis. Therefore, it inhibits RNA synthesis.

❖ Chemical Formula - $C_{43}H_{58}N_4O_{12}$

❖ Structure



❖ Physiochemical Properties

- It is odorless, reddish-brown crystalline powder. It undergoes decomposition at 183- 188 °C.
- It is freely soluble in methyl chloride, dimethyl sulfoxide and slightly soluble in water.

❖ Pharmaceutical Formulation

- It is formulated form of tablet and capsule.

❖ Stability and storage

- It should be stored at a temperature of 30 °C in tightly closed light-resistant container.

❖ Popular Brand Names

- Rimactane
- Rimpin

❖ Dose

- It usual dose is 600 mg (10 mg/kg) daily or thrice weekly oral one hour before or two hours after meals.

❖ Medicinal Uses

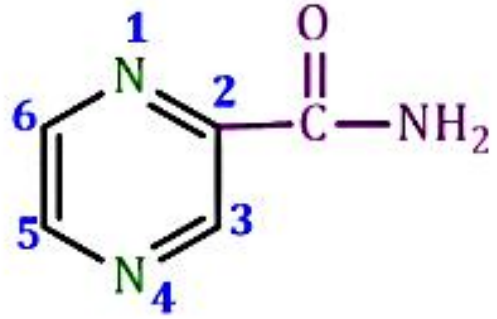
- Its clinical use is mainly in the treatment of tuberculosis.
- It is not recommended in the treatment of HIV-infected patients, since it decreases the effectiveness of protease inhibitors.

❑ PYRAZINAMIDE

It is also a prodrug converted into active form pyrazine carboxylic acid or pyrazinoic acid by bacterial amidase enzyme. This acid lowers pH of area and mycobacterium become unable to grow.

❖ Chemical Formula - $C_5H_5N_3O$

❖ Structure



❖ **IUPAC Nomenclature**

- Pyrazine-2-carboxamide

❖ **Physiochemical Properties**

- It is white crystalline powder.
- It is soluble in methanol and ethanol.

❖ **Pharmaceutical Formulation**

- It is formulated form of tablet and capsule.

❖ **Stability and storage**

- It should be stored in well-closed containers at a temperature between 15-30 °C

❖ **Popular Brand Names**

- Macrozide
- Pyzina
- Comide

❖ **Dose**

- It usual dose is 25 mg/kg daily or 35 mg/kg thrice weekly orally.

❖ **Medicinal Uses**

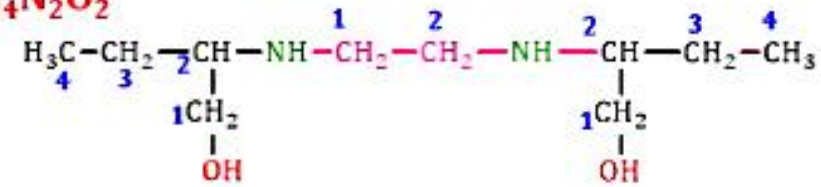
- Pyrazinamide is an antibiotic, used to treat tuberculosis (TB) in adults and children.

❑ **ETHAMBUTOL**

It is a bacteriostatic works by obstructing the cell wall formation. Inhibits arabinogalactan synthesis by inhibiting *Arabinosyl transferase* enzyme. Which prevents the cell wall mycolyl-arabinogalactan-peptidoglycan (MAP) Complex formation, Thus interfere with mycolic acid incorporation in cell wall.

❖ **Chemical Formula - $C_{10}H_{24}N_2O_2$**

❖ **Structure**



❖ **IUPAC Nomenclature**

- 2-[2-[[1-hydroxybutan-2-yl]amino]ethylamino]butan-1-ol

❖ **Physiochemical Properties**

- It is odorless, white crystalline powder with bitter taste. It is soluble in chloroform and sparingly soluble in water.

❖ **Pharmaceutical Formulation**

- It is formulated form of tablet.

❖ **Stability and storage**

- It should be stored in well-closed containers at 15-30 °C. It should be protected from light and moisture.

❖ **Popular Brand Names**

- Combutol
- Mycobutol

❖ **Dose**

- Its usual dose is 15 mg/kg daily or 30 mg/kg thrice weekly orally.

❖ **Medicinal Uses**

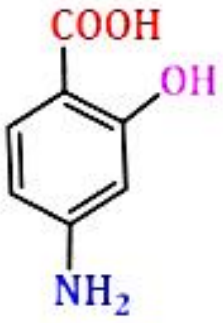
- Ethambutol is bacteriostatic against M. tuberculosis and is bactericidal at higher concentrations.
- It suppresses the growth of most isoniazid- and streptomycin-resistant tubercle bacilli

❑ PARA AMINO-SALICYLIC ACID (PAS)

Being structural analogues of PABA it inhibit bacterial dihydropteroate synthase. Which required for conversion of folic acid. PAS is tuberculostatic and one of the least active drugs: does not add to the efficacy of more active drugs that are given with it; only delays development of resistance—probably by directly inhibiting episomal resistance transfer.

❖ **Chemical Formula - $C_7H_7NO_3$**

❖ **Structure**



❖ **IUPAC Nomenclature**

- 4-Amino-2-hydroxybenzoic acid

❖ **Physiochemical Properties**

- It is a reddish-brown crystalline powder.
- It is slightly soluble in ether and insoluble in benzene.
- It is soluble in dilute nitric acid.

❖ **Pharmaceutical Formulation**

- It is formulated form of tablet and powder.

❖ **Stability and storage**

- It is stored in a tight and light resistant container.

❖ **Popular Brand Names**

- Paser
- Monopas
- P.A.S 1000

❖ **Dose**

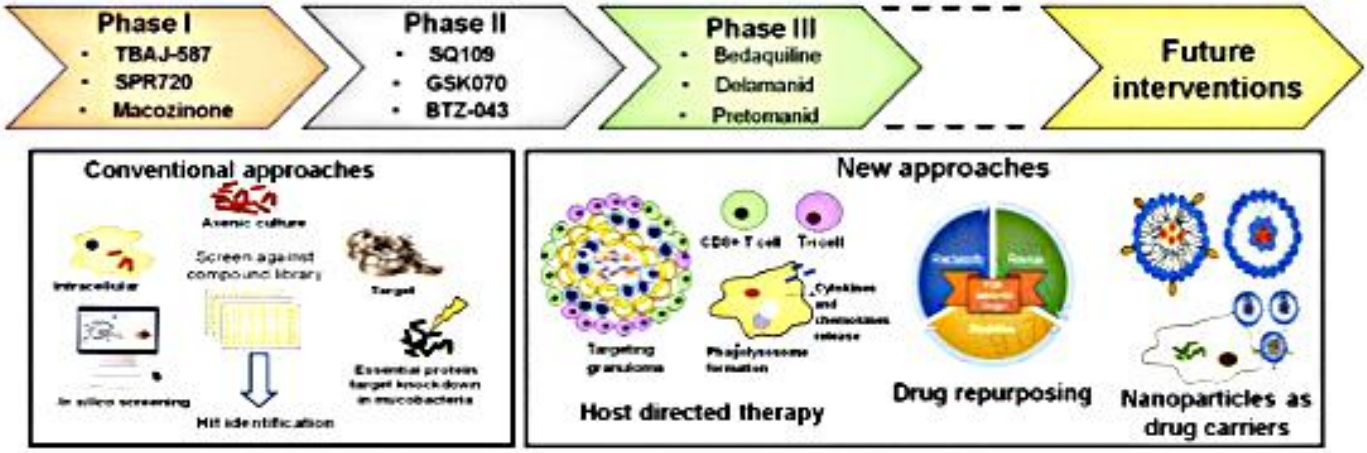
- It usual dose is 10–12 g (200 mg/kg) per day oral in divided doses.

❖ **Medicinal Uses**

- PAS is bacteriostatic and highly specific for M. tuberculosis.

11.3.3. Recent Drug Development in Tuberculosis

Modern tuberculosis (TB) chemotherapy is widely viewed as a crowning triumph of anti-infectives research. However, only one new TB drug has entered clinical practice in the past 40 years while drug resistance threatens to further destabilize the pandemic. Bedaquiline, Delamanid and Pretomanid are Phase 3 and phase 2 clinical trial drugs.

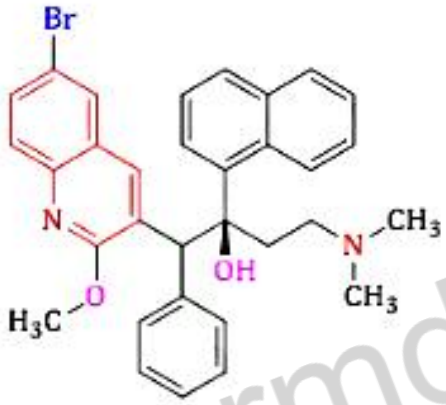


❑ BEDAQUILINE

Bedaquiline is a quinoline-based antimycobacterial drug used (as its fumarate salt) for the treatment of pulmonary multi-drug resistant tuberculosis by inhibition of ATP synthase, an enzyme essential for the replication of the mycobacteria. It has a role as an antitubercular agent and an ATP synthase inhibitor. It is a member of quinolines, a member of naphthalenes, an organobromine compound, an aromatic ether, a tertiary alcohol and a tertiary amino compound. It is a conjugate base of a bedaquiline.

❖ Chemical Formula - $C_{32}H_{31}BrN_2O_2$

❖ Structure



❖ IUPAC Nomenclature

- 1-(6-Bromo-2-methoxy-3-quinolyl)-4-dimethylamino-2-(1-naphthyl)-1-phenylbutan-2-ol

❖ Physiochemical Properties

- It is white powder and practically insoluble in aqueous solution

❖ Pharmaceutical Formulation

- It is formulated form of tablet.

❖ Stability and storage

- It should be stored in a tightly closed and light-resistant container.

❖ Popular Brand Names

- Sirturo

❖ Dose

- The usual oral dose is 400 mg daily for 02 weeks followed by 200 mg 3 times/week for 22 weeks with food.